BEFORE THE TENNESSEE REGULATORY AUTHORITY

NASHVILLE, TENNESSEE

March 24, 2011

IN RE: **PETITION OF AQUA GREEN UTILITY INC. TO AMEND ITS CERTIFICATE OF CONVENIENCE AND NECESSTIY**

DOCKET NO: **1000145**

Petition of Aqua Green Utility Inc. to amend its Certificate of Convenience and Necessity

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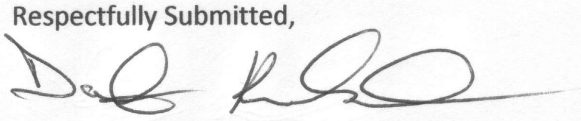
Aqua Green Utility Inc. would like to add our enclosed State Operating Permit to our petition requesting to add the Stonebridge subdivision to our service area. The operating permit is for 50 homes, not the 107 requested. Aqua Green Utility Inc. will do additional soil testing in cooperation with TDEC (second paragraph, first page). Once the soil testing is complete, Aqua Green Utility Inc. plans to add the additional 57 homes to the system. If the soil testing shows that additional soils are needed, then they will be purchased by the developer and added to the system as per the contract agreement with the developer. Until the soil testing is complete, the system will be held to 50 homes. There are currently 6 homes in Stonebridge and we do not anticipate having 50 homes built for many years to come, leaving plenty of time for testing and land purchase if needed.

Respectfully Submitted,



Dart Kendall
Aqua Green Utility Inc.

STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
401 CHURCH STREET
L & C ANNEX 6TH FLOOR
NASHVILLE TN 37243

March 23, 2011

Mr. Dart Kendall, President
Aqua Green Utility, Inc.
3350 Galts Road
Acworth, GA 30102

Re: State Operating Permit No. SOP-10042
Aqua Green Utility Inc. - Stonebridge on Douglas Lake
Dandridge, Jefferson County, Tennessee

Dear Mr. Kendall:

In accordance with the provisions of the "Tennessee Water Quality Control Act" (Tennessee Code Annotated Sections 69-3-101 through 69-3-120) the enclosed State Operating Permit is hereby issued by the Division of Water Pollution Control. The continuance and/or reissuance of this Permit is contingent upon your meeting the conditions and requirements as stated therein.

The division understands that the permittee will submit a plan to evaluate the capability of dandridge soil for land application. This study may include evaluation of additional sites/soils at the discretion of the permittee. Should the results of this study demonstrate that additional flow can be accommodated, the permittee may request that the permit be modified to reflect the additional capacity.

Please be advised that a petition for permit appeal may be filed, pursuant to T.C.A. Section 69-3-105, subsection (i), by the permit applicant or by any aggrieved person who participated in the public comment period or gave testimony at a formal public hearing whose appeal is based upon any of the issues that were provided to the commissioner in writing during the public comment period or in testimony at a formal public hearing on the permit application. Additionally, for those permits for which the department gives public notice of a draft permit, any permit applicant or aggrieved person may base a permit appeal on any material change to conditions in the final permit from those in the draft, unless the material change has been subject to additional opportunity for public comment. Any petition for permit appeal under this subsection (i) shall be filed with the board within thirty (30) days after public notice of the commissioner's decision to issue or deny the permit.

If you have questions, please contact the Division of Water Pollution Control at your local Environmental Field Office at 1-888-891-TDEC; or, at this office, please contact Mr. Hari Akunuri at (615) 532-0650 or by E-mail at *Hari.Akunuri@tn.gov*.

Sincerely,

Vojin Janjić
Manager, Permit Section
Division of Water Pollution Control

Enclosure

cc/ec: Division of Water Pollution Control, Permit Section and Knoxville Environmental Field Office
Mr. Bob Faulhaber, Faulhaber Engineering and Sustainability, bob@fesconsulting.com
Ms. Michelle Ramsey, Utilities Division, Tennessee Regulatory Authority, michelle.ramsey@tn.gov

TENNESSEEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF WATER POLLUTION CONTROL
6th Floor, L & C Annex
401 Church Street
Nashville, TN 37243

Permit No. SOP-10042

PERMIT
For the operation of Wastewater Treatment Facilities

In accordance with the provision of Tennessee Code Annotated section 69-3-108 and Regulations promulgated pursuant thereto:

PERMISSION IS HEREBY GRANTED TO

Aqua Green Utility Inc. - Stonebridge on Douglas Lake
Dandridge, Jefferson County, Tennessee

FOR THE OPERATION OF

Septic tanks, collection system, low trickling filter and 1.42 acre drip irrigation system located at latitude 36.0061500 and longitude -83.3234833 in Jefferson County, Tennessee to serve 50 residential units in the Stonebridge on Douglas Lake Subdivision. The design capacity of the system is 0.015 MGD.

This permit is issued as a result of the application filed on August 7, 2010, and completed on February 8, 2011, in the office of the Tennessee Division of Water Pollution Control and in conformity with data submitted to the Department in support of the above application, all of which are filed with and considered as a part of this permit, together with the following named conditions and requirements.

This permit shall become effective on: **May 01, 2011**

This permit shall expire on: **March 01, 2016**

Issuance date: **March 23, 2011**

B Tarbet FOR

Paul E. Davis
Director
Division of Water Pollution Control

CN-0759 RDAs 2352 & 2366

A. GENERAL REQUIREMENTS

The treatment system shall be monitored by the permittee as specified below:

Parameter	Sample Type	Daily Maximum	Monthly Average	Measurement Frequency
Effluent Flow	Continuous	**15,000 GPD**	Report	Daily
BOD_5	Grab	**45** mg/l	N/A	Once/Quarter
Nitrate as N	Grab	**Report**	N/A	Once/Month
Ammonia as N	Grab	**Report**	N/A	Once/Month

Sampling requirements in the table above apply to effluent being discharged to the drip irrigation plots.

This permit allows the operation of a wastewater drip irrigation system. The operation of the wastewater drip irrigation system is limited to 15,000 GPD and to 50 residential units, Condominiums will not allowed and shall not be included as part of the 50 residential units. On the quarterly operating report, the permittee shall report the number of homes being served by the wastewater treatment system. There shall be no wastewater ponding or pools on the surface of the disposal field as a result of improper application or irrigation of wastewater except in direct response to precipitation. There shall be no discharge of wastewater to any surface stream or any location where it is likely to enter surface waters. There shall be no discharge of wastewater to any open throat sinkhole. In addition, the drip irrigation system shall be operated in a manner preventing the creation of a health hazard or a nuisance.

Instances of ponding or pools under dry weather conditions shall be promptly investigated and remedied. Instances of ponding or pools, or any wastewater runoff shall be noted on the monthly operation report. The report shall include details regarding the location(s), determined cause(s), the actions taken to eliminate the ponding or pools, or any wastewater runoff, and the dates the corrective actions were made. Any wastewater runoff due to improper operation must be reported in writing to the Division of Water Pollution Control, Knoxville Environmental Field Office within 5 days of discovery by the permittee.

All drip fields must be fenced sufficiently to prevent or impede unauthorized entry as well as to protect the facility from vandalism. Fencing shall be a minimum of four feet in height. Fencing shall be constructed of durable materials. Gates shall be designed and constructed in a manner to prevent or impede unauthorized entry. All designs are subject to division approval. Fence must be installed prior to beginning of operation.

All drip lines shall be buried and maintained 6 to 10 inches below the ground surface.

When flow is present, the site shall be inspected by the certified operator or his/her designee, at a minimum, once per week The following shall be recorded for each inspection and reported on the quarterly operating report:

- the condition of the treatment facility security controls (doors, fencing, gates, etc.),
- the condition of the drip area security controls (doors, fencing, gates, etc.),
- the condition of the site signage,
- the condition of the drip lines under pressure,
- the condition of the drip area including the location of any ponding and the height of the cover crop,
- the condition of the mechanical parts of the treatment system (pumps, filters, telemetry equipment, etc.)
- the condition of the UV bulbs (if applicable),
- the last date the UV bulbs were cleaned (if UV is used),
- the date and time of inspection,
- the name of the inspector,
- the description of any corrective actions taken.

B. MONITORING PROCEDURES

1. Representative Sampling

Samples and measurements taken in compliance with the monitoring requirements specified above shall be representative of the volume and nature of the monitored discharge, and shall be taken at the following location(s):

Effluent to drip irrigation plots.

2. Test Procedures

Unless otherwise noted in the permit, all pollutant parameters shall be determined according to methods prescribed in Title 40, CFR, Part 136.

C. DEFINITIONS

The "daily maximum concentration" is a limitation on the average concentration, in milligrams per liter, of the discharge during any calendar day.

The "***monthly average concentration***", other than for *E. coli* bacteria, is the arithmetic mean of all the composite or grab samples collected in a one-calendar month period.

A "grab sample" is a single influent or effluent sample collected at a particular time.

For the purpose of this permit, "*continuous monitoring*" means collection of samples using a probe and a recorder with at least one data point per dosing cycle.

A "quarter" is defined as any one of the following three-month periods: January 1 through March 31, April 1 through June 30, July 1 through September 30, and/or October 1 through December 31.

D. REPORTING

1. Monitoring Results

Monitoring results shall be recorded monthly and submitted quarterly. Submittals shall be postmarked no later then 15 days after the completion of the reporting period. A copy should be retained for the permittee's files. Operation reports and any communication regarding compliance with the conditions of this permit must be sent to:

Division of Water Pollution Control
Knoxville Environmental Field Office
3711 Middlebrook Pike
Knoxville, TN 37921

The first operation report is due on the 15th of the month following permit effective date.

2. Additional Monitoring by Permittee

If the permittee monitors any pollutant at the location(s) designated herein more frequently than required by this permit, using approved analytical methods as specified in 1200-4-5-.07(4)(h)2, the results of such monitoring shall be included in the calculation and reporting of the values required in the Quarterly Operation Report. Such increased frequency shall also be indicated.

3. Falsifying Reports

Knowingly making any false statement on any report required by this permit may result in the imposition of criminal penalties as provided for in Section 69-3-115 of the Tennessee Water Quality Control Act.

4. Signatory Requirement

All reports or information submitted to the commissioner shall be signed and certified by the persons identified in Rules 1200-4-5-.05(6)(a-c).

E. SCHEDULE OF COMPLIANCE

Full operational level shall be attained from the effective date of this permit.

F. REOPENER CLAUSE

This permit may be reopened and modified, by either the permittee or the State of Tennessee, subject to permittee comment and appeal and to applicable public notice procedures, to allow additional flow to the drip irrigation system based on identification of additional soils or soil characteristics that would provide more capacity for disposal as allowed by state rule.

PART II

A. GENERAL PROVISIONS

1. Duty to Reapply

The permittee is not authorized to discharge after the expiration date of this permit. In order to receive authorization to discharge beyond the expiration date, the permittee shall submit such information and forms as are required to the Director of Water Pollution Control (the "Director") no later than 180 days prior to the expiration date.

2. Right of Entry

The permittee shall allow the Director, or authorized representatives, upon the presentation of credentials:

a. To enter upon the permittee's premises where an effluent source is located or where records are required to be kept under the terms and conditions of this permit, and at reasonable times to copy these records;

b. To inspect at reasonable times any monitoring equipment or method or any collection, treatment, pollution management, or discharge facilities required under this permit; and

c. To sample at reasonable times any discharge of pollutants.

3. Availability of Reports

All reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the Division of Water Pollution Control.

4. Proper Operation and Maintenance

The permittee shall at all times properly operate and maintain all facilities and systems (and related appurtenances) for collection and treatment which are installed or used by the permittee to achieve compliance with the terms and conditions of this permit. Proper operation and maintenance also includes adequate laboratory and process controls and appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit. Backup continuous pH and flow monitoring equipment are not required.

The permittee must develop and implement a preventative maintenance schedule which corresponds to the manufacturer's reccomendations for each of the appurtenances in the treatment system. Documentation supporting this preventative maintenance schedule, and its implementation, must be retained for a period of three years.

The monitoring frequency stated in this permit shall not be construed as specifying a minimum level of operator attention to the facility. It is anticipated that visits to the treatment facility by the operator will occur at intervals frequent enough to assure proper operation and maintenance, but in no case less than one visit every week. If monitoring reports, WPC inspection reports, or other information indicates a problem with the facility, the permittee may be subject to enforcement action and/or the permit may be modified to include increased parameter monitoring, increased monitoring frequency or other requirements as deemed necessary by the ivision to correct the problem. The permittee shall ensure that the certified operator is in charge of the facility and observes the operation of the system frequently enough to ensure its proper operation and maintenance regardless of the monitoring frequency stated in the permit.

Dilution water shall not be added to comply with effluent requirements.

Final Plan of Operation, prepared in accordance with the State Design Criteria and manufacturer's specifications, shall be submitted to the Division of Water Pollution Control, Knoxville Environmental Field Office, 3711 Middlebrook Pike, Knoxville, TN 37921 within thirty (30) days of a request by divison personnel. The permittee must comply with the submitted Final Plan of Operation.

The drip dispersal area shall not be used for vehicular traffic or vehicular parking. Dozers, trucks, tractors, and other heavy vehicles shall not be allowed to run over the drip dispersal area lines or other parts of the system.

5. Property Rights

The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Federal, State, or local laws or regulations.

6. Severability

The provisions of this permit are severable. If any provision of this permit due to any circumstance, is held invalid, then the application of such provision to other circumstances and to the remainder of this permit shall not be affected thereby.

7. Other Information

If the permittee becomes aware that he failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Director, then he shall promptly submit such facts or information.

B. CHANGES AFFECTING THE PERMIT

1. Planned Changes

The permittee shall give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility.

2. Permit Modification, Revocation, or Termination

a. This permit may be modified, revoked and reissued, or terminated for cause as described in section 69-108-(F) The Tennessee Water Quality Control Act as amended.

b. The permittee shall furnish to the Director, within a reasonable time, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Director, upon request, copies of records required to be kept by this permit.

3. Change of Ownership

This permit may be transferred to another person by the permittee if:

a. The permittee notifies the Director of the proposed transfer at least 30 days in advance of the proposed transfer date;

b. The notice includes a written agreement between the existing and new permittees containing a specified date for transfer of permit responsibility, coverage, and liability between them; and

c. The Director, within 30 days, does not notify the current permittee and the new permittee of his intent to modify, revoke or reissue, or terminate the permit and to require that a new application be filed rather than agreeing to the transfer of the permit.

4. Change of Mailing Address

The permittee shall promptly provide to the Director written notice of any change of mailing address. In the absence of such notice the original address of the permittee will be assumed to be correct.

C. NONCOMPLIANCE

1. Effect of Noncompliance

Any permit noncompliance constitutes a violation of applicable State laws and is grounds for enforcement action, permit termination, permit modification, or denial of permit reissuance.

2. Reporting of Noncompliance

a. 24-Hour Reporting

In the case of any noncompliance which could cause a threat to public drinking supplies, or any other discharge which could constitute a threat to human health or the environment, the required notice of non-compliance shall be provided to the appropriate Division environmental assistance center within 24 hours from the time the permittee becomes aware of the circumstances. (The environmental field office should be contacted for names and phone numbers of emergency response personnel.)

A written submission must be provided within five days of the time the permittee becomes aware of the circumstances unless this requirement is waived by the Director on a case-by-case basis. The permittee shall provide the Director with the following information:

i. A description of the discharge and cause of noncompliance;

ii. The period of noncompliance, including exact dates and times or, if not corrected, the anticipated time the noncompliance is expected to continue; and

iii. The steps being taken to reduce, eliminate, and prevent recurrence of the non complying discharge.

b. Scheduled Reporting

For instances of noncompliance which are not reported under subparagraph 2.a. above, the permittee shall report the noncompliance on the Quarterly Operation Report. The report shall contain all information concerning the steps taken, or planned, to reduce, eliminate, and prevent recurrence of the violation and the anticipated time the violation is expected to continue.

3. Overflow

a. "***Overflow***" means the unintended discharge to land or waters of Tennessee of wastes from any portion of the collection, transmission, or treatment system other than through permitted outfalls.

b. Overflows are prohibited.

c. The permittee shall operate the collection system so as to avoid overflows. No new or additional flows shall be added upstream of any point in the collection system, which experiences chronic overflows (greater than 5 events per year) or would otherwise overload any portion of the system.

d. Unless there is specific enforcement action to the contrary, the permittee is relieved of this requirement after: 1) an authorized representative of the Commissioner of the Department of Environment and Conservation has approved an engineering report and construction plans and specifications prepared in accordance with accepted engineering practices for correction of the problem; 2) the correction work is underway; and 3) the cumulative, peak-design, flows potentially added from new connections and line extensions upstream of any chronic overflow point are less than or proportional to the amount of inflow and infiltration removal documented upstream of that point. The inflow and infiltration reduction must be measured by the permittee using practices that are customary in the environmental engineering field and reported in an attachment to a Quarterly Operating Report submitted to the local TDEC Environmental Field Office on a quarterly basis. The data measurement period shall be sufficient to account for seasonal rainfall patterns and seasonal groundwater table elevations.

e. In the event that more than 5 overflows have occurred from a single point in the collection system for reasons that may not warrant the self-imposed moratorium or completion of the actions identified in this paragraph, the permittee may request a meeting with the Division of Water Pollution Control EFO staff to petition for a waiver based on mitigating evidence.

4. Upset

a. "***Upset***" means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

b. An upset shall constitute an affirmative defense to an action brought for noncompliance with such technology-based permit effluent limitations if the permittee demonstrates, through properly signed, contemporaneous operating logs, or other relevant evidence that:

i. An upset occurred and that the permittee can identify the cause(s) of the upset;

ii. The permitted facility was at the time being operated in a prudent and workman-like manner and in compliance with proper operation and maintenance procedures;

iii. The permittee submitted information required under "Reporting of Noncompliance" within 24-hours of becoming aware of the upset (if this information is provided orally, a written submission must be provided within five days); and

iv. The permittee complied with any remedial measures required under "Adverse Impact."

5. Adverse Impact

The permittee shall take all reasonable steps to minimize any adverse impact to the waters of Tennessee resulting from noncompliance with this permit, including such accelerated or additional monitoring as necessary to determine the nature and impact of the noncomplying discharge. It shall not be a defense for the permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

6. Bypass

a. "***Bypass***" is the intentional diversion of wastewater away from any portion of a treatment facility. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which would cause them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

b. Bypasses are prohibited unless all of the following 3 conditions are met:

i. The bypass is unavoidable to prevent loss of life, personal injury, or severe property damage;

ii. There are no feasible alternatives to bypass, such as the construction and use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass, which occurred during normal periods of equipment downtime or preventative maintenance;

iii. The permittee submits notice of an unanticipated bypass to the Division of Water Pollution Control in the appropriate Environmental Field Office within 24 hours of becoming aware of the bypass (if this information is provided orally, a written submission must be provided within five days). When the need for the bypass is foreseeable, prior notification shall be submitted to the director, if possible, at least 10 days before the date of the bypass.

c. Bypasses not exceeding permit limitations are allowed **only** if the bypass is necessary for essential maintenance to assure efficient operation. All other bypasses are prohibited. Allowable bypasses not exceeding limitations are not subject to the reporting requirements of 6.b.iii, above.

7. Washout

a. For domestic wastewater plants only, a "washout" shall be defined as loss of Mixed Liquor Suspended Solids (MLSS) of 30.00% or more. This refers to the MLSS in the aeration basin(s) only. This does not include MLSS decrease due to solids wasting to the sludge disposal system. A washout can be caused by improper operation or from peak flows due to infiltration and inflow.

b. A washout is prohibited. If a washout occurs the permittee must report the incident to the Division of Water Pollution Control in the appropriate Environmental Field Office within 24 hours by telephone. A written submission must be provided within five days. The washout must be noted on the discharge monitoring report. Each day of a washout is a separate violation.

D. LIABILITIES

1. Civil and Criminal Liability

Nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance. Notwithstanding this permit, the permittee shall remain liable for any damages sustained by the State of Tennessee, including but not limited to fish kills and losses of aquatic life and/or wildlife, as a result of the discharge of wastewater to any surface or subsurface waters. Additionally, notwithstanding this Permit, it shall be the responsibility of the permittee to conduct its wastewater treatment and/or discharge activities in a manner such that public or private nuisances or health hazards will not be created.

2. Liability Under State Law

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law.

PART III
OTHER REQUIREMENTS

A. CERTIFIED OPERATOR

The waste treatment facilities shall be operated under the supervision of a Biological Natural System certified wastewater treatment operator and collection system shall be operated under the supervision of a the grade I certified collection system operator in accordance with the Water Environmental Health Act of 1984.

B. PLACEMENT OF SIGNS

Signs shall be posted at regular intervals around the perimeter of the area, and at each entrance pursuant to the approved construction plans and specifications. Each sign shall be made of durable material.

TREATED DOMESTIC WASTEWATER
DRIP IRRIGATED PLOTS
(PERMITTEE'S NAME)
(PERMITTEE'S PHONE NUMBER)
TENNESSEE DIVISION OF WATER
POLLUTION CONTROL
Knoxville Environmental Field Office
PHONE NUMBER: 1-888-891-8332

No later than sixty (60) days from the effective date of the permit, the permittee shall have the above sign(s) on display in the location specified. New facilities must have the signs installed upon commencing operation.

C. ADDITION OF WASTE LOADS

The permittee may not add wasteloads to the existing treatment system without the knowledge and approval of the division.

D. SEPTIC TANK OPERATION

The proper operation of this treatment system depends, largely, on the efficient use of the septic tank. The solids that accumulate in the tank shall be removed at a frequency that is sufficient to insure that the treatment plant will comply with the discharge requirements of this permit.

E. SEPTAGE MANAGEMENT PRACTICES

The permittee must comply with the provisions of Chapter 0400-48-01-.22. If the septage is transported to another POTW for disposal, the permittee shall note the amount of septage wasted in gallons and the name of the facility to which the septage was taken on the monthly operation

report. Sludge or any other material removed by any treatment works must be disposed of in a manner which prevents its entrance into or pollution of any surface or subsurface waters. Additionally, the disposal of such sludge or other material must be in compliance with the Tennessee Solid Waste Disposal Act, TCA 68-31-101 et seq. and Tennessee Hazardous Waste Management Act, TCA 68-46-101 et seq.

F. DRIP SITE MANAGEMENT

The drip irrigation system must have appropriate site management practices to ensure that the nitrogen design assumptions will be achieved. For cover crops other than trees, the cover crop shall be cut on a regular basis and the cuttings removed from the site. This requirement shall not be construed to warrant any use of the harvested product and the permittee shall assume full responsibility for its proper use or disposal.

G. OWNERSHIP OF THE TREATMENT FACILITIES

a. The permittee shall own the treatment facilities (and the land upon which they are constructed) including the land to be utilized for drip or spray irrigation. A perpetual easement (properly recorded) may be accepted in lieu of ownership. If the permittee elects to make the treated wastewater available for reuse (irrigation of a golf course for example) a backup dedicated land application site must be provided or a perpetual easement must be obtained for the property where reuse is to take place. The perpetual easement must allow year-round application of the wastewater except where the permittee has provided (and the division has approved) storage facilities for periods when reuse is not available. Evidence of ownership of the treatment facility land application site(s) and/or a copy of the perpetual easement(s) must be furnished to the division for approval prior to the final and complete construction of the wastewater collection and treatment system.

b. Where the treatment facility serves private homes, condominiums, apartments, retirement homes, nursing homes, trailer parks, or any other place where the individuals being served have property ownership, rental agreements, or other agreements that would prevent their being displaced in the even of abandonment or noncompliance of the sewerage system, ownership of the treatment facilities must be by a municipality, a public utility, a wastewater authority, or a privately owned public utility (having a Certificate of Convenience and Necessity from the Tennessee Regulatory Authority), or another public agency.

H. UIC AUTHORIZATION

The authorization and requirements associated with the operation of a Class V injection well (drip dispersal field) is attached to this permit in Attachment 1.

Attachment 1

STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF WATER SUPPLY
GROUND WATER MANAGEMENT SECTION
9th Floor, 401 Church Street
Nashville, Tennessee 37243-1549

MEMORANDUM

TO: Hari Akunuri, WPC-CO

FROM: Allen Rather, DWS- Ground Water Management Section

DATE: 8/16/2010

SUBJECT: Large capacity septic system (Class V Injection) Approval
Stonebridge Subdivision
Dandridge, Jefferson County, Tennessee
UIC File JEF 0000044

The Division of Water Supply has reviewed the submittal of an Application for Authorization to Operate a Class V Underground Injection Well (Large Capacity Septic System) utilizing drip disposal for the waste water at the Stonebridge Subdivision located at Dandridge, Jefferson County, Tennessee. This Division approves the application dated 8/12/2010.

If at any time the Division learns that a ground water discharge system may be in violation of The Tennessee Water Quality Control Act, the Division shall:

a. require the injector to apply for an individual permit;
b. order the injector to take such actions including, where required, closure of the injection well as may be necessary to prevent the violation; or
c. take enforcement action.

All groundwater discharge activities must operate in such a manner that they do not present a hazard to groundwater.

Aque Green Utility District shall also conduct a monthly visual inspection of the complete drip field looking for any signs of failure.

In accordance with Underground Injection Control (UIC) Rule 1200-4-6-.14 (3) " The owner of a Class V well shall be responsible for notifying the Department of change in ownership." This notification must be made to this Division within thirty (30) days of the change in ownership.

Also note that according to Underground Injection Control (UIC) Rule 1200-4-6-.14 (8)(d) "Upon completion of the well, the owner or operator must certify to the Department that the well has been completed in accordance with the approved construction plan, and must submit any other additional information required". The certification must be submitted to the UIC Program within thirty (30) days upon the completion/closure of the Class V well.

Our concurrence with your approach does not imply that this procedure is exempt from future changes or restrictions in the Underground Injection Control (UIC) Regulations, or any additional requirements set forth by the Division in order to protect the groundwater of Tennessee.

This Division will require a minimum of seven (7) working days advance notice before the construction on the drip system is to begin to allow for a witness from this Division to be present.

No drip emitters are to discharge directly into an open throat or crevice in the subsurface.

A copy of this authorization must be kept on site until the development has been completed and must be made available to inspection personnel.

Should you have any questions or comments please feel free to contact me at (615) 532-5819 or allen.rather@tn.gov.

c: Brad Harris, GWP- NCO
file

Addendum to Rationale
March 23, 2011
SOP-10042
Stonebridge on Douglas Lake
Jefferson County

On March 23, 2011, representatives from TDEC met with representatives from Aqua-Green Utility and Stonebridge regarding the February 22, 2011 draft permit. As a result of this meeting, the final permit will include the following changes:

- 50 homes to be served instead of 55
- A flow limit of 15,000 gpd to the drip irrigation system
- Influent flow monitoring requirement is replaced with a requirement to report the number of homes served on the quarterly operation report
- Replacing the 25 mg/l BOD_5 limit with a 45 mg/l BOD_5 limit
- Replacing the Nitrate as N limit with a report only requirement
- Addition of fencing requirement and elimination of the E. coli limit.
- Changing the inspection frequency from once per 7 days to once per week
- Addition of a reopener clause regarding future flow based on new soil information
- Changing the language regarding sign placement
- Requiring evidence of ownership prior to the final and complete construction of the project

Rationale
SOP-10042
Stonebridge on Douglas Lake
Jefferson County

The application dated August 2010 proposed a wastewater treatment and drip disposal system serving 107 homes at a flow rate of 300 gpd each. This permit proposes limiting the activity to 55 homes and a flow rate of 16,620 gpd total maximum flow in conformance with state design criteria.

Our design criteria for surface and subsurface land application of wastewater was revised effective July 29, 2007, and was based upon research and recommendations from experts with a wide range of experience (academia, consulting, public sector, contractors, and regulatory). The basic requirements of Chapter 17 (Subsurface Drip Dispersal) related to acceptable soils and soil-loading rates have not changed since implementation.

The Stonebridge project has a planned drip dispersal area that contains about half Muskingum and Sequoia soils, and about half Dandridge soil. The typical Muskingum and Sequoia soils profiles meet WPC's design criteria for use with subsurface drip dispersal wastewater treatment systems. However, the typical Dandridge soil profile does not meet WPC's design criteria for use with subsurface drip dispersal systems. This has been confirmed by Billy Roach, Soil Scientist with GWP.

Billy Roach indicated that the Dandridge soils are typically shallow and can be extremely variable as evidenced by the site-specific pit profiles (see Table 1).

Table 1 is a summary of the pit profiles for the Dandridge soil areas for the Stonebridge project.

TABLE 1 – Summary of Pit Profiles for Dandridge Soil Areas

Dandridge Pits	Limiting Horizon	Texture	Structure	WPC Loading Rate	GWP Loading Rate
D-south	Bt 2-15	SiCL	WK-BL	X	X
D-south	Shale 15+			X	X
D-se	Bt 2-16	SiCl	WK-BL	X	X
D-se	Shale 16+			X	X
E-north	Bt 2-14	SiC	WK-BL	X	X
E-north	Shale 14+			X	X
E-south	B/c 15-24	SiL/SiCL	WK-BL	X	X
F	Bw 2-15	SCL	WK-BL	X	X
F	Shale 16+			X	X

X means the profile does meet the WPC design criteria or GWP rule.

None of the pit profiles meet the Chapter 17 soil requirements. The reason for this is the fact that hydraulic loading rates listed in Table 17-2 (Chapter 17-WPC design criteria) and Table V (GWP rule 1200-01-06-.15) are only applicable if that texture is extended to 20 inches.

The profiles for Pit E exemplify the variability of Dandridge. One side of Pit E shows acceptable depth (24 inches) and acceptable texture and structure. However, just a few feet away in the same pit, on the north side of Pit E, the depth is too shallow (14 inches) and the texture and structure for the Bt horizons are significantly different.

It is important to understand that the pit profiles do not in and of themselves determine suitability. The soil map is the reflection of suitable soil. The profiles are merely to "ground-truth" the series (Dandridge, Muskingum, Sequoia, etc.) as shown on the map. (Figures 1 and 2 show the final soils map with pit locations noted). The area available is determined by the map. The profile is used to determine the hydraulic loading rate (Lwh).

Conclusion 1: None of the Dandridge soils meet the state design criteria and thus can not be considered for use at any hydraulic loading rate.

The Sequoia soils meet our design criteria with an allowable Lwh of 0.30 GPD/SF. The Muskigum soils meet our design criteria with an allowable Lwh of 0.60 GPD/SF. The applicant is proposing a high level of nutrient removal (21 mg/L nitrate-nitrogen) via the treatment system. The nutrient loading rate (Lwn) for a nitrate effluent concentration of 21 mg/L proposed by the applicant equates to approximately 0.30 GPD/SF (see spreadsheet attached for confirmation). Therefore, for both the Sequoia and Muskigum soil areas with slopes less than 30% a variance to the design criteria is allowed so that the maximum loading rate is limited to 0.30 GPD/SF rather than 0.25 GPD/SF. Due to the importance of meeting the nitrate-nitrogen limit, the monitoring frequency for nitrate-nitrogen will be once per month as opposed to once per quarter. Furthermore, to ensure that a high level of nitrogen removal is achieved, ammonia nitrogen will also be required to be monitored once per month.

Some of the soil areas have steep slopes (30% to 50%). In consideration of slope, the Sequoia and Muskingum soil areas with slopes between 30% and 50% the loading rate will be limited to the maximum allowable rated in the design criteria of 0.25 GPD/SF.

Slope corrections are necessary because drip lines will need to be laid on contour lines and will have more vertical separation than on flatter areas. As line spacing increases from 2-foot spacing to 5 and 10-foot spacing, the number of emitters per square foot of drip area decreases requiring dosing times to increase proportionally to achieve the same dose. Unless soil area is increased appropriately, each emitter will be dosing 2.5 to 5 times the dosing time of a system with the same design flow with 2-foot spacing's, thus increasing the propensity for mounding, ponding and the potential for runoff from the drip dispersal site. GWP rule 1200-01-06-.15 requires an increase of soil area for profiles with a depth to restrictive layer $\leq$ 23 inches (the Stonebridge scenario) as follows:

- Slopes 10% to 20% - correction factor = 15%
- Slopes 20% to 30% - correction factor = 35%
- Slopes 30% to 50% - requires a special investigation.

The application of the provisions of the GWP rule results in a larger area requirement for slope correction, thus ensuring that the flow rate per emitter would either stay the same or go down. The GWP rule requirements for area corrections for slope are more specific, but consistent with WPC's design criteria Chapter 17 requirements (Section 17.1.3.). For the Stonebridge project the rate will be reduced from 0.3 GPD/SF to 0.25 GPD/SF for those soil areas with slopes greater than 30%.

Conclusion 2: Sequoia and Muskigum soils will be allowed a loading rate of 0.30 GPD/SF for slopes less than 30%. For slopes greater than 30% the loading rate will be limited to 0.25 GPD/SF.

Another major impact on the hydraulic loading rate is the water use per residential unit. Since July 29, 2007, WPC has required that projects involving residential units be designed on the basis of 300 gallons per day per unit (GPD/unit).

For a comparative perspective, GWP uses 150 GPD/bedroom and requires a 100% duplicate area for the sewage disposal system (see Regulations to Govern Subsurface Sewage Chapter 1200-01-06). These GWP rules cover Advanced Treatment Systems (ATS) that are separate and distinct from the disposal field and are used to improve the quality of septic tank effluent to secondary levels. The ATS concept is essentially the same as used in decentralized systems regulated by WPC, and are configured with subsurface drip dispersal, but on a smaller scale (i.e., GWP systems are all constructed on individual lots, WPC systems convey septic tank effluent by gravity or pressure lines to an ATS and drip dispersal lines which are located a site away from the individual lots.)

The rationale for WPC's use of the 300 GPD/Unit is anchored in the fact that this is the only conservative factor used in our evaluation and permitting of these systems. WPC does not require a duplicate or reserve area and we do not use 150 GPD/bedroom. If WPC used those criteria, the drip dispersal area would be three times larger. A hydraulic loading rate of 0.25 GPD/SF is 2.81 inches per week and equivalent to over 146 inches of rainfall annually. Adding the natural rainfall, the equivalent loading rate approaches 200 inches of rainfall annually. The 0.25 GPD/SF loading rate produces rainfall equivalent to those in a tropical rain forest. Furthermore, utilizing Muskingum and Sequoia soils at a loading rate of 0.3 GPD/SF which is above our recommended design criteria maximum is equivalent to more than 175 inches of rainfall per year. Adding about 50 inches of natural rainfall the total equivalent rainfall is about 225 inches per year. This is an extremely high rate and is only being allowed in areas where the slope is less than 30% on the proviso that the nutrient levels are adequately reduced.

Since July 2007, WPC has operated under a firm policy on design of effluent drip dispersal systems. That policy requires that such design be based strictly on the ability of the soils to receive the secondary quality effluent and move it away from the application site without surfacing and running off into area streams or watercourses.

While actual water use may average below 300 GPD per unit, we know from experience that some developments have had overload problems on weekends, holidays and during vacation times. Therefore, we have empirical data that suggests that 300 GPD per unit may not be enough, but the 300 GPD per unit has been used consistently since July 29, 2007, and is believed to be a reasonable number on which to base the design flow for this project.

Conclusion 3: The design flow for the Stonebridge project will be based upon 300 GPD per unit.

On the basis of Conclusions 1 through 3 above, Table 2 provides a summary of the useable soil areas for the Stonebridge project, showing area, hydraulic loading rate and capacity to handle wastewater effluent.

TABLE 2 – Summary of Useable Soil Areas

Soil	Area (SF)	Hydraulic Loading Rate (GPD/SF)	Wastewater Capacity (GPD)
Muskingum (10% - 30%)	14,926	0.30	4,477.80
Muskingum (30% - 50%)	26,798	0.25	6,699.50
Sequoia (20% - 30%)	8,411	0.30	2,523.30
Sequoia (30% - 50%	11,681	0.25	2,920.25
TOTAL	**61,816**		**16,620.85**
	(**1.42** acres)		(**55** Units)

SOP REQUIREMENTS

The SOP for Stonebridge will be limited by the drip irrigation system to a maximum flow of 16,620 GPD and 55 residential units. The SOP will also limit nitrate-nitrogen to 21 mg/L, the requirement needed to raise the Lwn to 0.3 GPD/SF. Additionally, BOD will be limited to 25 mg/L and E. coli to 23 colonies/100 ML in accordance with the engineering report submitted on behalf of the applicant. Furthermore, to ensure that the highest level of biological treatment is being achieved with regard to total nitrogen, monitoring will be required for ammonia.

FIGURE 1 – Final Soils Map for Stonebridge

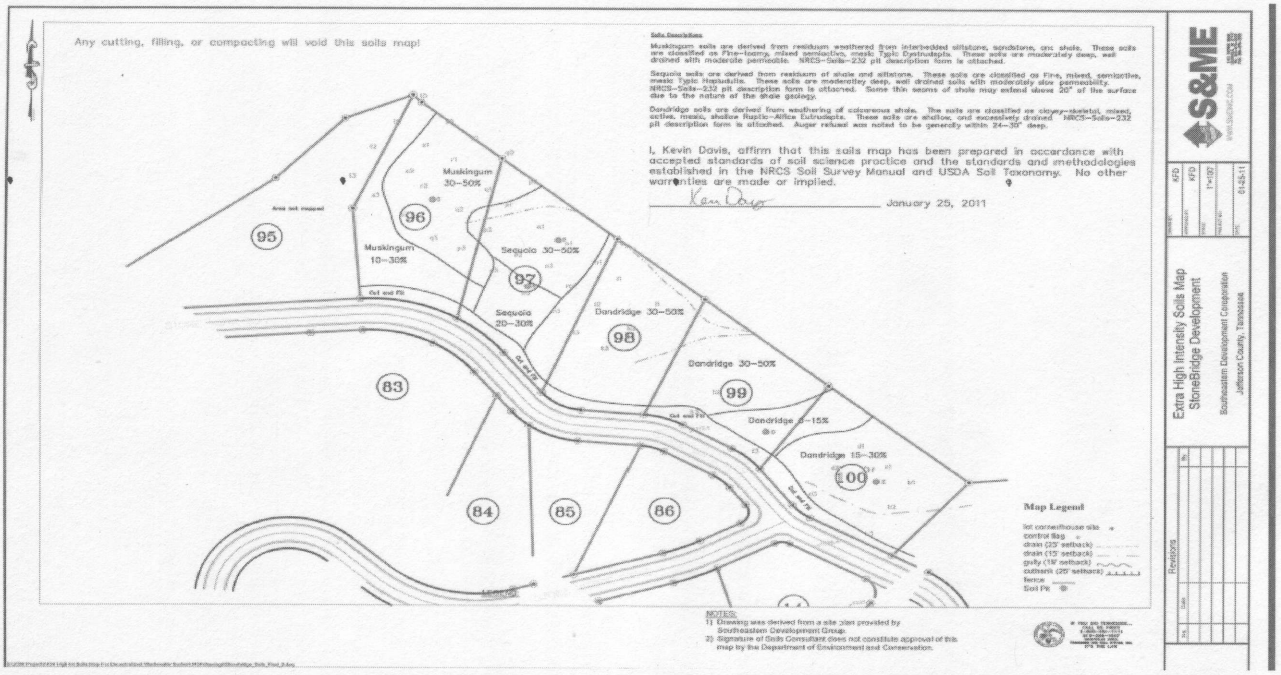


FIGURE 2 – Final Soil Map for Stonebridge, Dandridge Soils