

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF CLEAN WATER

**Approval For Coverage Under the General Permit (PAG-09)
For Beneficial Use of Residential Septage by Land Application**

PERMIT NO: PAG-09

In accordance with the provisions of the Federal Clean Water Act (33 U.S.C.A §§ 1251-1387), the Clean Streams Law (35 P.S. §§ 691.1 - 691.1001), Sections 1905-A, 1917-A and 1920-A of the Administrative Code of 1929 (71 P.S. §§ 510-5, 510-17 and 510-20), the Solid Waste Management Act (35 P.S. §§ 6018.101 - 6018.1003), and the Municipal Waste Planning, Recycling and Waste Reduction Act (53 P.S. §§ 4000.101 - 4000.1904), the Department of Environmental Protection (DEP or Department) hereby approves the Notice of Intent (NOI) submitted for coverage by:

**Insert Hauler or Facility (if applicable)
Name and Address Below**

to beneficially use residential septage that will be applied to the land as specified in this General Permit. The above-referenced facility is eligible to obtain coverage for this beneficial use as a person who land applies residential septage.

Approval of coverage for the beneficial use of residential septage by land application prepared at this facility is subject to DEP's enclosed General Permit (PAG-09) that includes requirements related to pollutant limitations, operational standards, pathogen and vector attraction reduction (VAR), recordkeeping, monitoring and reporting.

APPROVAL FOR COVERAGE UNDER THE GENERAL PERMIT IS AUTHORIZED FOR THE TERM SPECIFIED IN THE DATES SHOWN BELOW. WHEN THE GENERAL PERMIT IS RENEWED, REISSUED OR MODIFIED, THE FACILITY OR ACTIVITY COVERED BY THE APPROVAL FOR COVERAGE MUST COMPLY WITH THE FINAL RENEWED, REISSUED OR MODIFIED GENERAL PERMIT.

Coverage Approval Date:

BY: _____

Coverage Expiration Date:

TITLE: Clean Water Program Manager
Regional Office

COMMONWEALTH OF PENNSYLVANIA
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**General Permit
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In accordance with the provisions of the Federal Clean Water Act (33 U.S.C.A §§ 1251-1387), the Clean Streams Law (35 P.S. §§ 691.1 - 691.1001), Sections 1905-A, 1917-A and 1920-A of the Administrative Code of 1929 (71 P.S. §§ 510-5, 510-17 and 510-20), the Solid Waste Management Act (35 P.S. §§ 6018.101 - 6018.1003), and the Municipal Waste Planning, Recycling and Waste Reduction Act (53 P.S. §§ 4000.101 - 4000.1904), DEP issues this General Permit for use by eligible persons for the beneficial use of residential septage by land application.

Persons eligible to obtain coverage under this General Permit are persons who land apply residential septage. Persons must satisfy the eligibility requirements in Part A. Residential Septage Quality of this General Permit.

Eligible persons seeking coverage under this General Permit must submit a timely, complete and technically adequate NOI in accordance with the requirements of this General Permit using DEP's NOI form and obtain approval from DEP to beneficially use residential septage by land application in accordance with the terms and conditions of this permit.

Approval of coverage for the beneficial use of residential septage by land application is subject to DEP's enclosed General Permit (PAG-09) that includes requirements related to general requirements, management practices, site restrictions, annual application rate, pathogen and vector attraction reduction (VAR) requirements, and other terms and conditions for the land application of residential septage in the Commonwealth. The approval of coverage authorizes the beneficial use of residential septage by land application.

NOI Requirements

1. Deadlines for NOI

An applicant seeking renewal of coverage under this General Permit shall submit a complete and technically adequate NOI at least 180 days prior to the expiration of coverage. An applicant authorized to land apply residential septage under an individual permit who is seeking coverage under this General Permit may continue to land apply in accordance with the individual permit while DEP reviews the NOI and associated documents for coverage under this General Permit.

2. Contents of NOIs

Persons seeking initial approval for or renewal of coverage under this General Permit must submit a complete NOI in accordance with the requirements of this General Permit using the NOI form provided by DEP. The NOI form shall be signed in accordance with Section II of Part C (Signatory Requirements) of this General Permit and shall include the information specified on the form, and in the instructions for completing the form. The NOI form (3850-PM-BCW0341b) and instructions (3850-PM-BCW0341a) are available on DEP's website at www.pa.gov/services/dep/water/clean-water/apply-for-a-biosolids-permit.

3. Where to Submit

NOIs or modifications to NOIs must be submitted to the appropriate regional DEP office having jurisdiction over the residential septage facility. NOIs for facilities located outside the Commonwealth must be submitted to DEP's Bureau of Clean Water in Harrisburg. The NOI form and a list of DEP names, addresses and telephone numbers are included with the instructions for completing the NOI form.

Uses Not Covered Under This General Permit

The following beneficial uses of residential septage are not covered by this General Permit:

1. Land application of residential septage in watersheds where runoff from the site would drain to waters of the Commonwealth classified as "Exceptional Value (EV)" in 25 Pa. Code Chapter 93.
2. Land application of residential septage that is not, or will not be, in compliance with the requirements, terms or conditions of this General Permit.

3. Land application of residential septage that was prepared by a person who has failed and continues to fail to comply or has shown a lack of ability or intention to comply with a regulation, permit, schedule of compliance or order issued by DEP.
4. Land application of residential septage for beneficial use which DEP determines an individual permit is required to ensure compliance with the Clean Water Act, the Clean Stream Law, or the Solid Waste Management Act and rules and regulations promulgated thereunder.
5. Land application of residential septage that would adversely affect a listed endangered or threatened species, or its critical habitat.
6. Land application of wastes other than residential septage.
7. This General Permit does not constitute approval or authorization to construct a facility or modify existing facilities to meet the terms and conditions stated in this General Permit. The permittee shall comply with all other permitting requirements as necessary.

Applicability

The authority granted by this General Permit is subject to the following requirements:

1. DEP may require the permittee to apply for and obtain an individual permit for beneficial use of residential septage by land application when:
 - a. Any interested person petitions DEP to take action under this paragraph.
 - b. The permittee has been notified in writing that such permit application is required. This notice shall include the following:
 - i. a brief statement of the reasons for this decision;
 - ii. an individual permit application form; and
 - iii. a statement setting a deadline for the permittee to file the application.
2. The applicant may request to be excluded from the approval for coverage under this General Permit by applying for an Individual Permit.
3. When an Individual Permit is issued to a person covered by this General Permit, the coverage under this General Permit is automatically revoked on the effective date of the Individual Permit. When an Individual Permit is denied to a person covered by this General Permit, the coverage under this General Permit continues, provided that all conditions of the General Permit are satisfied.
4. If DEP or the permittee determines that a permittee no longer meets the requirements of this General Permit, or is otherwise prohibited from this General Permit coverage, notice of the determination shall be given, and approval of coverage under this General Permit is automatically revoked or terminated, respectively, on the date of such determination.
5. Renewal of Existing Coverage Under This General Permit

Application for renewal of coverage under this General Permit must be submitted to DEP **at least 180 days prior to** the expiration date of coverage indicated on the approval for coverage form (unless written permission has been granted by DEP for submission at a later date). A request for renewal of coverage is to be made using the PAG-09 NOI (3850-PM-BCW0341b) available on DEP's website.

In the event that a timely and complete application for renewal has been submitted and DEP is unable, through no fault of the permittee, to reissue the permit or approval for coverage before its current coverage expiration date, the terms and conditions of the approved coverage will automatically continue and will remain fully effective and enforceable pending the approval or denial of the request for renewal of permit coverage, provided the permittee is, and has been, operating in full compliance with the terms and conditions of this General Permit.

6. Issuance, Reissuance or Amendment of this General Permit

Unless extended by DEP, this General Permit will expire five (5) years from the date of its issuance. DEP will publish a notice in the *Pennsylvania Bulletin* of its intent to renew, reissue or amend this General Permit, and after a comment period, notice of the final, renewed, reissued or amended general permit will be published in the *Pennsylvania Bulletin*. The permittee shall be responsible for complying with the final renewed, reissued or amended general permit.
7. This General Permit may be terminated, amended, or revoked and reissued by DEP prior to expiration of this General Permit when necessary to protect public health and the environment from an adverse effect of a pollutant in the residential septage.

8. If there is a conflict between the approval of the application for coverage, its supporting documents and/or amendments, and the terms and conditions of this General Permit, the terms and conditions of this General Permit shall apply.
9. Failure to comply with the terms and conditions of this General Permit may result in any or all of the following:
 - a. enforcement action;
 - b. termination of permit coverage; or
 - c. denial of a renewal application.
10. In particular, in appropriate cases where DEP has validated that malodors from a particular biosolids source has caused a persistent public nuisance, DEP may require the generator to develop and implement a Biosolids Quality Enhancement Plan (BQEP), focusing on odor mitigation, to retain or obtain coverage under this General Permit. DEP may require, as part of the BQEP, that the generator adopt practices that include, but not limited to, soil incorporation, storage restrictions, and more stringent VAR practices. Soil incorporation shall not be required if it violates the farm's soil conservation plan or erosion and sedimentation control plan, if application involves top-dressing on a hay field, or if it would otherwise increase the risk of the biosolids migrating off the site. Permittee DEP may also revoke facility coverage under this General Permit if the treatment category or an individual facility is unable to mitigate its documented and persistent nuisance odor situations.
11. No condition of this General Permit shall release the permittee from any responsibility or requirement under any other federal or state statute or regulation. No condition of this General Permit releases the permittee from any responsibility or requirement under any local regulation or ordinance, provided that the local regulation or ordinance is not inconsistent with or more stringent than any provision of: the Clean Streams Law; the Solid Waste Management Act, the Administrative Code; the Municipal Waste Planning, Recycling and Waste Reduction Act; 25 Pa. Code Chapter 271; or any other applicable statute or regulation.
12. Coverage under this General Permit is an approval **ONLY** for the processing and beneficial use of residential septage by land application.

This General Permit (PAG-09) for Beneficial Use of Residential Septage by Land Application is issued upon publication in the *Pennsylvania Bulletin*, and shall expire at midnight on five (5) years from effective date, unless extended on or before the expiration date by DEP.

Date Issued:

Upon Publication in Pennsylvania Bulletin

BY:

Nicholas A. Vivian, P.E.

TITLE:

Director
Bureau of Clean Water

Part A Residential Septage Quality

I. Residential Septage Quality

The permittee shall comply with the following requirements, at all times, when preparing residential septage and beneficially applying that residential septage to the land:

- A. The residential septage must meet the pathogen reduction standards as specified in 25 Pa. Code § 271.932(c), as amended and updated.
 - 1. Residential septage shall be stabilized to meet processes to significantly reduce pathogens (See Appendix A) or processes to further reduce pathogens (See Appendix A) prior to land application.
 - 2. The following site restrictions in subsection 25 Pa. Code § 271.932(b)(5)(i)-(iv), as amended and updated, shall be met.
 - a. Food crops with harvested parts that touch the residential septage/soil mixture and are totally above the land surface may not be harvested for 14 months after application of septage.
 - b. Food crops with harvested parts below the surface of the land may not be harvested for 20 months after application of residential septage when the residential septage remains on the land surface for four months or longer prior to incorporation into the soil.
 - c. Food crops with harvested parts below the surface of the land may not be harvested for 38 months after application of residential septage when the residential septage remains on the land surface for less than four (4) months prior to incorporation into the soil.
 - d. Food crops, feed crops and fiber crops may not be harvested for 30 days after application of residential septage.
 - 3. For alkali stabilization, the pH of residential septage applied to agricultural land, forest, or a reclamation site shall be raised to 12 or higher by alkali addition and, without the addition of more alkali, shall remain at 12 or higher for 30 minutes and the site restrictions in subsection (b)(5)(i)-(iv), as listed in Paragraph 2 above, shall be met.
- B. The residential septage must meet one of the VAR requirements as specified in 25 Pa. Code § 271.933(b)(9), (10), or (11), as amended and updated, when residential septage is applied to agricultural land, forest, or a reclamation site:
 - 1. Residential septage shall be injected below the surface of the land.
 - a. No significant amount of the residential septage may be present on the land surface within one (1) hour after the residential septage is injected.
 - b. When the residential septage that is injected below the surface of the land is Class A with respect to pathogens, the residential septage shall be injected below the land surface within eight hours after being discharged from the pathogen treatment process;
 - 2. Residential septage applied to the land surface shall be incorporated into the soil within six hours after application to the land. When residential septage that is incorporated into the soil is Class A with respect to pathogens, the residential septage shall be applied within eight hours after being discharged from the pathogen treatment process; or
 - 3. The pH of residential septage shall be raised to 12 or higher by alkali addition and, without the addition of more alkali, shall remain at 12 or higher for 30 minutes.
- C. The residential septage must have the non-organic objects removed prior to spreading. Screenings must be disposed of at a facility permitted to accept such wastes.
- D. Mixtures of residential septage with other wastes including food processing waste, animal manure, agricultural process wastewater or residual materials such as cement kiln dust is prohibited. Mixtures of residential septage with other wastes may require a different permit.
- E. Residential septage shall not be land applied if it contains any deodorizers or other synthetic chemicals unless those chemicals have been specifically approved by DEP for land application of residential septage.

Part B Monitoring

I. Representative Sampling

- A. Any samples and measurements taken to monitor residential septage quality and process controls must be representative of the monitored activity.
- B. Any samples and measurements taken to monitor residential septage quality and process controls must be in accordance with the methods listed in 25 Pa. Code § 271.906 (relating to sampling and analysis) and the facility's Sampling Plan submitted with the NOI.
- C. The most current version of DEP's *Biosolids Sampling Manual* ([3850-MN-DEP4081](#)) should be used as a guide.

II. Monitoring Frequency

Each container of residential septage must be monitored for compliance with the requirements of the particular pathogen reduction alternative and VAR option used. For instance, if alkali stabilization is conducted in the transportation or application vehicle containing the residential septage, the residential septage in the vehicle must be monitored for its pH level.

III. Test Procedures

- A. Methods in the materials listed at 25 Pa. Code § 271.906, as amended and updated, as shown in Appendix C, as amended and updated, or in any later amendments to these methods published in the Federal Register, are incorporated by reference and shall be used to analyze samples of residential septage.
 - 1. No other analytical methods may be used without prior written approval from DEP.
 - 2. Requests for approval must be submitted in writing to DEP.
- B. When pH adjustment is used for either VAR or pathogen reduction, the pH readings must be temperature corrected to 25 degrees Celsius.
- C. Analysis shall be done by a Pennsylvania-accredited laboratory or a laboratory registered with DEP as being accredited by rule in compliance with 25 Pa. Code § 252.6.

IV. Recording of Results

For each measurement or sample taken pursuant to the requirements of this permit, the permittee shall record the following information:

- A. The place, date and time of sampling or measurements.
- B. The person(s) who performed the sampling or measurements.
- C. The date(s) the analyses were performed.
- D. The person(s) who performed the analyses.
- E. The analytical techniques or methods used and the associated detection level.
- F. The results of such analyses.

This data shall be submitted with annual reporting requirement outlined in Part C of this permit and maintained onsite for a minimum of five (5) years.

V. Quality Assurance Control

In an effort to assure accurate self-monitoring analyses results:

- A. The permittee shall participate in or shall use a laboratory that agrees to participate in, periodic scheduled quality assurance inspections conducted by DEP or the United States Environmental Protection Agency (EPA). (25 Pa. Code §§ 92a.3(c), 92a.41(a), 92a.61(i) and 40 CFR 122.41(e), 122.41(i)(3))
- B. The permittee shall develop and implement or shall use a laboratory that has developed and implemented, a program to assure the quality and accurateness of the analyses performed to satisfy the requirements of this permit, in accordance with 40 CFR Part 136. (25 Pa. Code §§ 92a.3(c), 92a.41(a), 92a.61(i) and 40 CFR 122.41(j)(4))

Part C Recordkeeping, Reporting, And Notification

I. Recordkeeping And Reporting

- A. The permittee must develop the information specified in 25 Pa. Code § 271.918(b) as follows:
1. The person who land applies residential septage must develop the following information:
 - a. The location, by either street address or latitude and longitude, of each field on which residential septage is applied.
 - b. The number of acres (or hectares) in each field on which residential septage is applied.
 - c. The date and time residential septage is applied to each field.
 - d. The nitrogen requirement for the crop or vegetation grown on each field during a 365-day period.
 - e. The rate, in gallons per acre (or liters per hectare) per 365-day period, at which residential septage is applied to each field.
 2. The following certification statement:
"I certify, under penalty of law, that the pathogen requirements in § 271.932(c) and the vector attraction reduction requirements in [insert either § 271.933(b)(9), § 271.933(b)(10), or § 271.933(b)(11)] have been met. This determination has been made under my direction and supervision in accordance with the system designed to ensure that qualified personnel properly gather and evaluate the information used to determine that the pathogen requirements and vector attraction reduction requirements have been met. I am aware that there are significant penalties for false certification including the possibility of fine and imprisonment."
 3. A description of how the pathogen reduction requirements at 25 Pa. Code § 271.932(c), as amended and updated are being met.
 4. A description of how the VAR requirements in 25 Pa. Code § 271.933(b)(9), (10) or-(11) (relating to vector attraction reduction), as amended and updated, are being met.
 5. This information in items 1-4 shall be retained by the permittee for five (5) years and made available to DEP upon request.
- B. A signed copy of the PAG-09 *Recordkeeping and Reporting Form* ([3850-FM-BCW0341](#)), available on DEP's eLibrary, and other supporting data must be submitted to DEP on or before March 1 for activities conducted during the previous calendar year.
- C. Notification of the date, time and location at which land application will occur shall be given to DEP, when requested, for the purpose of inspection or investigation to ascertain compliance or noncompliance with this General Permit and with applicable statutes, rules and regulations.
- D. The permittee must verbally notify DEP immediately, but no longer than 24 hours after becoming aware of non-compliance of any residential septage quality standard relating to pathogen reduction or VAR.
1. The permittee must provide a written report to DEP within five days of the verbal report.
 2. The written report must include:
 - a. the date of non-compliance;
 - b. the nature of the incident;
 - c. the actions taken to mitigate the non-compliance; and,
 - d. the date compliance occurred.

II. Signatory Requirements

All NOIs, reports, certifications, records, and other information submitted to DEP, application site landowner, adjacent landowner, or County Conservation District, or that this General Permit requires be maintained by the permittee, shall be signed as follows:

- A. For a municipality, or a State, Federal, or other public agency:
1. By either a principal executive officer, ranking elected official, or other authorized employee.

2. For purposes of this General Permit, a principal executive officer of a Federal agency includes the following:
 - a. the chief executive officer of the agency, or
 - b. a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of EPA).
- B. In the case of corporations, by a principal executive officer of at least the level of vice president, or an authorized representative.
- C. In the case of a partnership, by a general partner.
- D. In the case of a sole proprietorship, by the proprietor.
- E. A person is a duly authorized representative only if:
 1. The authorization is made, in writing, by a person described above and the authorization is submitted to DEP with the records.
 2. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or process, such as the position of manager, operator, superintendent, or position of equivalent responsibility or an individual or position having overall responsibility for the environmental matters for the facility. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.)
- F. Changes in Signatory Authorization.

If an authorization is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of Section II (Signatory Requirements) must be submitted to DEP prior to or together with any records, information, or applications to be signed by an authorized representative.

Part D Standard Conditions

I. Notification Requirements

A. A person who operates under this General Permit shall comply with the following notification requirements:

1. Obtain written consent of the landowner and provide information to the landowner or occupant as prescribed in 25 Pa. Code § 271.913(e), (f) and (m), as amended and updated, as follows:
 - a. Obtain written consent from the owner of the land upon which the residential septage will be land applied, on a form prepared by DEP, prior to land applying the residential septage;
 - b. Provide the occupant of the land with a user instruction sheet prepared by the person operating under the permit that describes the acceptable uses and limitations of the residential septage at least seven (7) days prior to land applying residential septage for the first time at a location; and,
 - c. Provide the legal or equitable owner, or lease holder, of the land on which the residential septage is applied notice and necessary information to comply with Chapter 271, Subchapter J.

2. Provide notification in accordance with 25 Pa. Code § 271.913(g) as follows:

A person who land applies residential septage at a location for agricultural, forest, or land reclamation purposes shall send or otherwise provide written notification to the adjacent landowner, the County Conservation District and DEP at least 30 days prior to the first application of the residential septage at that location. The notification shall:

- a. Include a brief description of the operation, any site restrictions, the name of the person land applying the residential septage, and the applicable permit number.
- b. Be sent by personal delivery or first-class mail and, for an adjacent landowner, shall also be given by posting at the property line in a manner sufficient to notify the adjacent landowner of the items in subparagraph (a).
- c. For the County Conservation District and DEP, include the location of the fields on a United States Geological Survey map and on a Natural Resources Conservation Service Soils Map.
- d. For DEP, be sent to DEP's regional office that has jurisdiction for the location where the sewage sludge will be applied.

DEP may modify these requirements for purposes of land reclamation where the activity is part of another permit or approval issued by the Department and public notice has been provided as part of the permit or approval. DEP recommends that a copy of the most current version of DEP's fact sheet, *Understanding Biosolids Land Application in Your Community* ([3850-FS-DEP2649](#)), available on DEP's website, be provided to the homeowners with the notification letter.

3. Notify the municipality where the site is located.

B. Upon receipt of the Notification of First Land Application, DEP will be responsible for the following activities:

1. The appropriate regional DEP office will review the site and make a determination on whether the site meets the regulatory requirements for land application of residential septage. A land application site will only be deemed suitable if it meets the applicable site suitability requirements.
2. Notification of site suitability will be sent to the municipality in which the site is located and will be published in the Pennsylvania Bulletin.
3. Land application activities may commence at the end of the 30-day timeframe even if DEP has not made a determination.

C. As required by 25 Pa. Code § 271.913(g)(2) , as amended and updated, when using residential septage on active mine sites for mine reclamation purposes, the notification procedures for the reclamation activities must conform to the notification requirements set forth by the DEP's technical guidance document, *Beneficial Use of Biosolids and Residential Septage at Active Mine Sites* ([563-2000-602](#)).

DEP may modify these requirements for purposes of land reclamation where the activity is part of another permit or approval issued by the Department and public notice has been provided as part of the permit or approval.

II. Land Application Requirements

Any person who operates under this General Permit shall comply with the following land application requirements:

- A. Residential septage may not be land applied if the annual application rate has been reached.
- B. Background soil chemical analyses as specified in 25 Pa. Code §271.913(h), as amended and updated, must be performed as follows:

Prior to the first time a site is used for land application, the first person who land applies residential septage shall obtain, at a minimum, one representative soil chemical analysis for each field on which residential septage is land applied, for pH and those constituents listed in the tables in 25 Pa. Code § 271.914(b), as shown below:

Constituents Listed in Tables in § 271.914(b)

Arsenic
Cadmium
Copper
Lead
Mercury
Molybdenum
Nickel
PCBs
Selenium
Zinc

- C. A person that operates under this General Permit shall comply with applicable sections of 25 Pa. Code Chapter 285, as amended and updated, (relating to storage, collection, and transportation of municipal waste).
- D. The person who land applies residential septage under this General Permit must display the permit number on the sides and rear of each land application vehicle, in numbers at least three (3) inches (or 7.6 centimeters) high in a color contrasting to the background.

III. Land Application Restrictions

- A. A person who operates under this General Permit shall comply with the following land application restrictions.
 - 1. Residential septage may not be applied to the land if it is likely to adversely affect a Federal or Pennsylvania threatened or endangered species, or its designated critical habitat, listed under or pursuant to Section 4 of the Endangered Species Act, 16 U.S.C. § 1533, the Fish and Boat Code, 30 Pa.C.S.A. § 2305, or the Game and Wildlife Code, 34 Pa.C.S.A. § 101 et seq.
 - 2. Residential septage may not be applied to a site that is flooded, frozen, or snow-covered, except as expressly provided in a permit issued under 25 Pa. Code Chapters 91, 92a, or 105, as applicable.
 - 3. In accordance with 25 Pa. Code § 271.914(c), residential septage may not be land applied at a rate that exceeds the annual application rate as calculated in Equation 1 below, or in the most current version of DEP's Biosolids Training Manual, unless a greater rate is approved for reclamation activities.
 - a. The Penn State Agronomy Guide, documented yields, or other applicable information sources may be used to determine appropriate yields and nutrient needs for the purpose of calculating application rates.
 - b. The source(s) used to calculate rates must be provided with the example calculations provided with the NOI or 30-Day Notice, as appropriate.

$$AAR = \frac{N}{0.0026} \quad \text{Equation (1)}$$

Where:

AAR = Annual Application Rate in gallons per acre per 365-day period.

N = Amount of nitrogen in pounds per acre per 365-day period needed by the crop or vegetation grown on the land.

4. Residential septage may not be applied at a farm if the nitrogen available from the manure produced by animals at the farm satisfies the nutrient needs of the farm for generally accepted crop yields, unless a management plan is implemented that allows for uses of the manure other than land application on that farm.
5. Residential septage may not be applied within the areas listed in 25 Pa. Code § 271.915(c), as amended and updated and (d):
 - a. Residential septage may not be applied to agricultural land, forest or a reclamation site that is:
 - i. Within 100 feet (or 30.5 meters) or less of a perennial stream or within 33 feet (or 10 meters) of an intermittent stream.
 - ii. Within 100 feet (or 30.5 meters) of the edge of a sink hole.
 - iii. Within 300 feet (or 91 meters) from an occupied dwelling unless the current owner has provided a written waiver consenting to activities closer than 300 feet (or 91 meters). The waiver shall be knowingly made and separate from a lease or deed unless the lease or deed contains an explicit waiver from the current owner. This paragraph does not apply to features that may come into existence after the date upon which adjacent landowner notification is given under 25 Pa. Code Chapter 275 or 25 Pa. Code § 271.913(g) (relating to land application of sewage sludge; and general requirements).
 - iv. In an area without an implemented erosion and sedimentation control plan or a farm conservation plan.
 - v. Within 300 feet (or 91 meters) of a water source unless the current owner has provided a written waiver consenting to the activities closer than 300 feet (or 91 meters). This paragraph does not apply to features that may come into existence after the date upon which adjacent landowner notification is given under 25 Pa. Code Chapter 275 or 25 Pa. Code § 271.913(g).
 - vi. Within 100 feet (or 30.5 meters) of an exceptional value wetland, as defined in 25 Pa. Code § 105.17 (relating to wetlands).
 - vii. Within 11 inches (or 28 centimeters) of the seasonal high-water table, nor within 3.3 feet (or one meter) of the regional groundwater table. For purposes of this section, the depths to seasonal high-water table and to regional groundwater table shall be based on the most recent soil mapping as published by the United States Department of Agriculture (USDA) Natural Resources Conservation Service, or more detailed mapping data as mapped by an expert in soil science using standard and acceptable mapping procedures as developed by the USDA Natural Resources Conservation Service.
 - b. A person may not apply residential septage when residential septage is to be land applied for:
 - i. Agricultural utilization on slopes that exceed 25%, unless otherwise approved in writing by the Department.
 - ii. Land reclamation on slopes that exceed 35%, unless otherwise approved in writing by the Department.
6. As required by 25 Pa. Code § 271.915(e) , as amended and updated, a person may not apply residential septage unless the soil pH is 6.0 or greater prior to land application unless DEP allows the increase of pH by application of residential septage or other material, in which case the soil pH shall be 6.0 or greater within six (6) months following the application of residential septage, or unless otherwise approved in writing by DEP.
7. Soil fertility testing for each field shall be conducted prior to first application and each subsequent three years for the purpose of complying with the requirements in Item 6 above. Tests shall include pH and Mehlich 3 soil test Phosphorus.
8. The site restrictions listed under 25 Pa. Code § 271.932(b)(5)(vi-vii), as amended and updated, must be followed when residential septage is applied to a public contact site. These state:
 - a. Turf grown on land where residential septage is applied may not be harvested for one (1) year after application of the residential septage when the harvested turf is placed on either land with a high potential for public exposure or a lawn, unless otherwise specified by DEP.
 - b. Public access to land with a high potential for public exposure shall be restricted for one (1) year after application of residential septage.

- B. A person who operates under this General Permit must comply with the following requirements in addition to the applicable restrictions in Section III.A when land applying residential septage on a land reclamation site.
 - 1. No person may apply residential septage to a reclamation site unless the reclamation activity is permitted or otherwise approved by DEP.
 - 2. A person may not apply residential septage on slopes that exceed 35 percent, unless otherwise approved in writing by DEP.
 - 3. Residential septage may not be applied at a rate that is greater than the annual application rate, unless a greater rate is approved in writing by DEP for reclamation activities.
 - 4. Residential septage shall be incorporated into the soil within 24 hours of land application.

IV. Residential Septage Treatment and Storage

The permittee is considered to have a processing permit for the beneficial use of residential septage by land application if the permittee complies with the following requirements. This permit does not cover storage or processing for residential septage that is solely intended for transport to a landfill or a treatment facility.

- A. Treatment is limited to the screening and alkaline addition when residential septage is intended for beneficial use. The receipt for the purchase of the lime or other alkali materials used to treat residential septage prior to land application shall be retained by the permittee for a period of five years and submitted to DEP upon request.
- B. Treatment and storage designs must be submitted with the NOI application and approved by DEP. The designs must be in compliance with, at a minimum, the requirements listed in clauses IV.C. through IV.F. Modifications to the treatment or storage facilities must be submitted to, and approved by, DEP prior to installation.
- C. The total combined capacity of the treatment and storage tanks shall not exceed 500,000 gallons.
- D. The storage and treatment locations may not be conducted within 50 feet of a property boundary.
- E. Storage and treatment tanks must comply with 25 Pa. Code § 285.122, the applicable sections of Chapter 285 and the following additional requirements:
 - 1. Containment area must be capable of holding the volume of the largest tank.
 - 2. Tanks and components must be compatible with the stored material and be protected from corrosion.
 - 3. Storage and treatment tanks that are not prefabricated must have the design and construction certified by a Pennsylvania licensed Professional Engineer (PE). The PE certification must be provided to DEP prior to the use of the tanks.
 - 4. Underground tanks may not be used for storage or treatment unless otherwise approved by DEP.
 - 5. The tanks must be inspected for leaks at least once per week and inspection results recorded in a log that must be made available to DEP upon request.
 - 6. Tanks must be labeled Residential Septage.
- F. The treatment and storage must not create conditions that harbor, breed, or attract vectors.
- G. If a spill or leak from the tank(s) occurs, appropriate and immediate action shall be taken to mitigate the problem and prevent adverse impacts to the environment or public health.
 - 1. DEP must also be verbally notified within 24 hours in the event of a spill or leaking tank.
 - 2. The permittee shall provide a written report to DEP within five (5) days of the verbal report detailing the date the incident occurred, the nature of the incident, and the actions taken to mitigate the problem.
- H. The treatment and storage can only be performed at, or adjacent to, a site that has undergone the Notification of First Land Application procedure or are covered by an Individual Site Permit for the hauler or the facility listed on the approval for coverage under this General Permit unless otherwise approved by DEP.
- I. Treated residential septage that meets the requirements for land application can be land applied at other land application sites that have undergone the Notification of First Land Application procedure or are covered by an Individual Site Permit for the hauler or the facility listed on the approval for coverage under this General Permit.
- J. Construction activities that involve an earth disturbance must comply with appropriate erosion and sedimentation controls as specified in 25 Pa. Code Chapter 102.

V. Training

Training obligations must be completed as required by § 271.915(j), as amended and updated, as follows:

- A. Persons land applying residential septage are required to complete training courses sponsored by DEP in a timely and satisfactory manner.
- B. Satisfactory completion means attendance at all sessions of training, and attainment of a minimum grade of 70% on tests given as part of the training courses.
- C. In the case of a person who prepares residential septage that will be land applied, and a person who land applies residential septage, at least one person with responsibility for the land application of residential septage shall satisfactorily complete the training in a timely fashion.
- D. DEP may suspend or revoke an individual permit or coverage under this General Permit to beneficially use residential septage by land application if the person does not satisfactorily complete the training courses within the following time periods:
 - 1. Two (2) years for a person conducting land application operations as of January 25, 1997.
 - 2. One (1) year for a person that begins conducting land application operations after January 25, 1997.

VI. Right of Entry for Inspections

A person operating under this General Permit shall allow authorized representatives of the Commonwealth, without advance notice or a search warrant, upon presentation of appropriate credentials, and without delay:

- A. To enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this General Permit.
- B. To have access to and copy, at reasonable times, any records that must be kept under the conditions of this General Permit.
- C. To inspect at reasonable times any facilities (including land application sites), equipment (including monitoring and control equipment), practices or operations regulated or required under this General Permit.
- D. To sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Clean Water Act or the Clean Streams Law, any substances or parameters at any location.

VII. Responsibilities

A. Duty to Comply

The permittee must comply with all terms and conditions of this General Permit and all renewals and reissuances thereof. Any permit non-compliance constitutes a violation of the Federal Clean Water Act, the Pennsylvania Clean Streams Law or Solid Waste Management Act and constitutes grounds for enforcement action, including, but not limited to, civil and criminal penalties, termination of coverage, denial of coverage renewal, or denial of an application for an individual permit.

B. Need to Halt or Reduce Activity Not a Defense

The permittee may not use as a defense in an enforcement action that it would have been necessary to halt or reduce the permitted activity to maintain compliance with the conditions of this General Permit.

C. Penalties and Liability

- 1. Nothing in this General Permit shall be construed to relieve the permittee from civil or criminal penalties for non-compliance pursuant to Sections 602 or 605 of the Clean Streams Law (35 P.S. §§ 691.602 or 691.605) and the Federal Clean Water Act.
- 2. Nothing in this General Permit shall be construed to preclude the institution of any legal action or to relieve the permittee from any responsibilities, liabilities or penalties to which the permittee is or may be subject to under the Clean Water Act and the Clean Streams Law.

D. Property Rights

The approval of coverage under this General Permit does not convey any property rights of any sort, nor any exclusive privileges, nor does it authorize any injury to private property nor any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations.

E. Severability

The provisions of this General Permit are severable, and if any provision of this General Permit, or the application of any provision of this General Permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this General Permit shall not be affected thereby.

F. Duty to Reapply

If the permittee wishes to continue an activity regulated by this General Permit after the expiration date of this General Permit, the permittee shall submit a timely and administratively complete request for renewal of approval at least 180 days prior to the expiration date specified in the approval of coverage under this General Permit, unless permission is granted by DEP to submit the request at a later date.

G. Duty to Provide Information

1. The permittee shall furnish to DEP any information that DEP may request to determine whether cause exists for modifying, revoking or reissuing, or terminating this General Permit or coverage approved under this General Permit, or to determine compliance with this General Permit.
2. The permittee shall furnish to DEP, upon request, copies of records required to be kept by this General Permit.
3. Where the permittee becomes aware that it failed to submit any relevant facts in an NOI, or has submitted incorrect information in an NOI or in any record to DEP, it shall promptly submit such facts or information to DEP. Submitting incorrect information or making any false statements, representation, or certification may result in the imposition of significant penalties including the possibility of fine and imprisonment.
4. The permittee must give written advance notice to DEP of major changes or expansion(s) of the existing treatment facilities or any planned physical alterations or additions to the permitted operation which could affect the established quality and/or quantity of the residential septage covered under this General Permit. If such a change disqualifies the residential septage for land application, the land application of such residential septage shall stop immediately.

H. Proper Operation and Maintenance

1. The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the terms and conditions of this General Permit.
2. Proper operation and maintenance includes, but is not limited to, adequate laboratory controls such as appropriate quality assurance procedures.
3. The permittee shall properly operate and maintain backup or auxiliary facilities or similar systems installed by the permittee, as necessary to achieve compliance with the terms and conditions of this General Permit.

I. Duty to Mitigate

The permittee shall take all reasonable steps to minimize or prevent any residential septage use or disposal in violation of this permit that has a reasonable likelihood of adversely affecting human health or the environment.

J. Adverse Impacts

The permittee shall take all reasonable steps to minimize or prevent any adverse impact on the environment or human health resulting from noncompliance with this General Permit.

K. Transfer of Ownership or Control

1. No approval under this General Permit may be transferred unless the transfer is approved, in writing, by DEP.
2. In the event of any pending change in control or ownership of facilities from which the authorized processes emanate, the permittee must submit to DEP an *Application for Transfer of Coverage Under a Biosolids General Permit or Individual Permit* (3800-PM-BCW0479) notifying DEP of such pending change at least 30 days before the proposed transfer date. An application for transfer can be found in the Permits and Forms section of the DEP Biosolids web page at www.dep.pa.gov/biosolids.
3. The new owner or controller must submit a new 30-Day Notice to DEP and the County Conservation District prior to land application.
4. After receipt of the documentation described above, DEP shall notify the existing permittee and the new owner or controller of its decision concerning approval of the transfer.

L. Confidentiality of Records

Except for data determined to be confidential under § 607 of the Clean Streams Law, or 25 Pa. Code Chapter 92a, all records prepared in accordance with the terms of this General Permit shall be available for public inspection at the offices of DEP. Monitoring data shall not be considered confidential.

M. Violations of Permit Conditions

1. DEP may take an enforcement action to restrain violations, to impose criminal or civil penalties, to withhold a permit, or to seek other remedies or relief as authorized by the Clean Streams Law against a permittee that violates any condition or limitation of this General Permit, or any rule, regulation or order issued by DEP pursuant to the Clean Streams Law.
2. In addition, EPA may take an enforcement action to restrain violations, to impose criminal or civil penalties, or to seek other remedies or relief as authorized by the Clean Water Act against a permittee that violates any condition or limitation of this General Permit, or any rule, regulation or order issued by EPA pursuant to the Clean Water Act.

N. Falsifying Information

The permittee or any person who engages in the conduct described below may, upon conviction, be punished by a fine and/or imprisonment pursuant to 18 Pa.C.S.A. § 4904, or 40 CFR 122.41(j)(5) or (k)(2). (25 Pa. Code §§ 92a.3(c), 92a.41(c)):

1. Falsifies, tampers with, or knowingly renders inaccurate, any monitoring device or method required to be maintained under this General Permit, or
2. Knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this General Permit (including monitoring reports or reports of compliance or non-compliance)

VIII. Notification of Withdrawal by the Permittee

When coverage under this General Permit is withdrawn, the following information should be submitted to DEP.

A. A notification of withdrawal that includes:

1. Name, mailing address, and location of the facility for which the notification is submitted.
2. The permittee's name, address, telephone number, ownership status and status as federal, state, private, public or other entity.
3. The general permit number for the beneficial use of residential septage by land application identified by the notice of withdrawal.

B. A completed Recordkeeping and Reporting Form for the current year's activities.

C. A plan for the removal and proper disposal of any residential septage remaining at the processing, storage, or land application sites.

D. The following certification signed in accordance with Section C.II. (Signatory Requirements) of this General Permit:

"I certify under penalty of law that all treatment, storage and land application of residential septage that is authorized under PAG-09 (insert permit coverage number) has ceased. I understand that by submitting this notice of withdrawal I am no longer authorized to treat, store or land apply residential septage under this General Permit and that treatment, storage and land application of residential septage without a permit is unlawful under the Clean Streams Law and the Solid Waste Management Act."

IX. Definitions

"Adjacent Landowner" – Includes all landowners whose deeds touch the deed for the parcel of land on which the residential septage will be applied.

"Agricultural Land" – Land on which a food crop, a feed crop, a fiber crop, a silvicultural crop, or a horticultural crop is grown. This includes range land and land used as pasture. (25 Pa. Code § 271.907)

"Agronomic Rate" – The annual whole residential septage application rate (dry weight basis) designed:

- (1) To provide the amount of nitrogen needed by the food crop, feed crop, fiber crop, silvicultural crop, cover crop, horticultural crop, or vegetation grown on the land; and
- (2) To minimize the amount of nitrogen in the residential septage that passes below the root zone of the crop or vegetation grown on the land to the groundwater. (25 Pa. Code § 271.907)

"Annual Application Rate" – The amount of residential septage that can be applied to a unit area of land during a 365-day period.

"Food Processing Waste" – Residual materials in liquid and solid form generated in the slaughtering of poultry and livestock, or in processing and converting fish, seafood, milk, meat and eggs to food products. The term

includes residual materials generated in the processing, converting, or manufacturing of fruits, vegetables, crops and other commodities into marketable food items. The term also includes vegetative residuals from food processing activities that are usually recognizable as part of a plant or vegetable, including cabbage leaves, bean snips, onion skins, apple pomace and grape pomace.

"Forest" – A tract of land thick with trees and underbrush. (25 Pa. Code § 271.907)

"Frozen Ground" – Ground frozen to a depth of at least two (2) inches for a period of 72 consecutive hours. (25 Pa. Code § 271.907)

"Land Application" – The spraying or spreading of residential septage onto the land surface for beneficial use; the injection of residential septage below the land surface for beneficial use; or the incorporation of residential septage into the soil for beneficial use so that the residential septage can either condition the soil or fertilize crops for vegetation grown in the soil.

"Municipality" – A city, town, borough, county, township, or an authority created by any of the foregoing under state law, including an intermunicipal agency of two or more of the foregoing entities. (25 Pa. Code § 271.907)

"Pasture" – Land on which animals feed directly on feed crops such as legumes, grasses, grain stubble or stover. (25 Pa. Code § 271.907)

"Pathogen Reduction" – Decreasing the presence of pathogens through residential septage treatment.

"Permit" – A permit issued by DEP to operate a municipal waste disposal or processing facility, or to beneficially use municipal waste. The term includes a general permit, permit modification, permit by rule, permit reissuance and permit renewal. (25 Pa. Code § 271.1)

"Person" – Any individual, corporation, partnership, association, municipality, political subdivision, or any instrumentality of state, federal or local government, or any agent or employee thereof; or any other legal entity. (25 Pa. Code § 271.907)

"Person who operates under this General Permit" – Includes the permittee or other agents for the permittee as applicable and the land applier.

"pH" – The logarithm of the reciprocal of the hydrogen ion concentration at 25 degrees Celsius.

"Pollutant" – An organic substance, an inorganic substance, a combination of organic substances, a pathogenic organism, or any other substance identified by DEP that, after discharge and upon exposure, ingestion, inhalation, or assimilation into an organism either directly from the environment or indirectly by ingestion through the food chain, could, on the basis of information available to DEP cause death, disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunctions (including malfunction in reproduction), or physical deformations in either organisms or offspring of the organisms. (25 Pa. Code § 271.907)

"Public Contact Site" – Land with a high potential for contact by the public. This includes, but is not limited to, public parks, ball fields, cemeteries, plant nurseries, turf farms, and golf courses. (25 Pa. Code § 271.907)

"Public Nuisance" – A nuisance which affects numerous members of the public or the public at large, as distinguished from a nuisance which only does harm to a neighbor or a few private individuals.

"Reclamation Site" – Drastically disturbed land that is reclaimed using residential septage. This includes, but is not limited to, active and abandoned coal and non-coal surface mines and construction sites. (25 Pa. Code § 271.907)

"Representative Sample" – A sample that, based on the specific operation and to the best of the permittee's knowledge, adequately characterizes the quality and/or attributes of the residential septage at the permitted facility.

"Residential Septage" – Liquid or solid material removed from a septic tank, cesspool or similar treatment works that receives only waste or wastewater from human or household operations. The term includes processed residential septage from a residential septage treatment facility. The term does not include liquid or solid material removed from a septic tank, cesspool, portable toilet, type III marine sanitation device, or similar treatment works that receives either commercial or industrial wastewater and does not include grease removed from a grease trap at a restaurant. (25 Pa. Code § 271.1)

"Snow Cover" – Snow cover is defined as snow which covers approximately 95 percent of the area to be used for land application of residential septage.

"Storage" – The containment of any waste on a temporary basis in such a manner as not to constitute disposal of such waste. It shall be presumed that the containment of waste in excess of one (1) year constitutes disposal. This presumption can be overcome by clear and convincing evidence to the contrary.

"Vector Attraction" – The characteristic of residential septage that attracts rodents, flies, mosquitoes, or other organisms capable of transporting infectious agents.

Appendix A
Pathogen Reduction
25 Pa. Code Chapter 271, Appendix A, as amended and updated

I. Processes to Significantly Reduce Pathogens

1. *Aerobic Digestion*

Sewage sludge is agitated with air or oxygen to maintain aerobic conditions for a specific mean cell residence time at a specific temperature. Values for the mean cell residence time and temperature shall be between 40 days at 68°F (or 20°C) and 60 days at 59°F (or 15°C).

2. *Air Drying*

Sewage sludge is dried on sand beds or on paved or unpaved basins. The sewage sludge dries for a minimum of three (3) months. During two of the three months, the ambient average daily temperature is above 32°F (or 0°C).

3. *Anaerobic Digestion*

Sewage sludge is treated in the absence of air for a specific mean cell residence time at a specific temperature. Values for the mean cell residence time and temperature shall be between 15 days at 95° to 131°F (or 35° to 55°C) and 60 days at 68°F (or 20°C).

4. *Composting*

Using either the within-vessel, static aerated pile, or windrow composting methods, the temperature of the sewage sludge is raised to 104°F (or 40°C) or higher and remains at 104°F (or 40°C) or higher for five (5) days. For four (4) hours during the five (5) days, the temperature in the compost pile exceeds 131°F (or 55°C).

5. *Lime Stabilization*

Sufficient lime is added to the sewage sludge to raise the pH of the sewage sludge to 12 after two (2) hours of contact.

II. Processes to Further Reduce Pathogens

1. *Composting*

Using either the within-vessel composting method or the static aerated pile composting method, the temperature of the sewage sludge is maintained at 131°F (or 55°C) or higher for three (3) days. Using the windrow composting method, the temperature of the sewage sludge is maintained at 131°F (or 55°C) or higher for 15 days or longer. During the period when the compost is maintained at 131°F (or 55°C) or higher, there shall be a minimum of five turnings of the windrow.

2. *Heat Drying*

Sewage sludge is dried by direct or indirect contact with hot gases to reduce the moisture content of the sewage sludge to 10% or lower. Either the temperature of the sewage sludge particles exceeds 176°F (or 80°C) or the wet bulb temperature of the gas in contact with the sewage sludge as the sewage sludge leaves the dryer exceeds 176°F (or 80°C).

3. *Heat Treatment*

Liquid sewage sludge is heated to a temperature of 356°F (or 180°C) or higher for 30 minutes.

4. *Thermophilic Aerobic Digestion*

Liquid sewage sludge is agitated with air or oxygen to maintain aerobic conditions and the mean cell residence time of the sewage sludge is 10 days at 131° to 140°F (or 55° to 60°C).

5. *Beta Ray Irradiation*

Sewage sludge is irradiated with beta rays from an accelerator at dosages of at least 1.0 megarad at room temperature (CA. 68°F or 20°C).

6. *Gamma Ray Irradiation*

Sewage sludge is irradiated with gamma rays from certain isotopes, such as Cobalt 60 and Cesium 137, at room temperature (CA. 68°F or 20°C).

7. *Pasteurization*

The temperature of the sewage sludge is maintained at 158°F (or 70°C) or higher for 30 minutes or longer.

Appendix B
Analytical Methods
As referenced in 25 Pa. Code § 271.906(b), as amended and updated

Methods in the materials listed in this subsection, or in any later amendments published in the Federal Register, are incorporated by reference and shall be used to analyze samples of sewage sludge. Other methods may be approved by the Department.

1. Enteric viruses. ASTM Designation: D 4994-89, "Standard Practice for Recovery of Viruses from Wastewater Sludges," 1992 Annual Book of ASTM Standards: Section 11—Water and Environmental Technology, ASTM, 1916 Race Street, Philadelphia, Pennsylvania 19103-1187.
2. Fecal coliform. Part 9221 E. or Part 9222 D., "Standard Methods for the Examination of Water and Wastewater," 18th Edition, 1992, American Public Health Association, 1015 15th Street, NW., Washington, DC 20005.
3. Helminth Ova. Yanko, W. A. "Occurrence of Pathogens in Distribution and Marketing Municipal Sludges," EPA 600/1-87-014, 1987. National Technical Information Service, 5285 Port Royal Road, Springfield, Virginia 22161 (PB 88-154273/AS).
4. Inorganic pollutants. "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication SW-846, Second Edition (1982) with Updates I (April 1984) and II (April 1985) and Third Edition (November 1986) with Revision I (December 1987). Second Edition and Updates I and II are available from the National Technical Information Service, 5285 Port Royal Road, Springfield, Virginia 22161 (PB-87-120-291). Third Edition and Revision I are available from Superintendent of Documents, Government Printing Office, 941 North Capitol Street, NE., Washington, DC 20002 (Document Number 955-001-00000-1).
5. Salmonella SP. Bacteria. Part 9260 D., "Standard Methods for the Examination of Water and Wastewater," 18th Edition, 1992, American Public Health Association, 1015 15th Street, NW., Washington, DC 20005; or Kenner, B. A. and H. P. Clark, "Detection and Enumeration of Salmonella and Pseudomonas Aeruginosa," Journal of the Water Pollution Control Federation, Vol. 46, No. 9, September 1974, pp. 2163-2171. Water Environment Federation, 601 Wythe Street, Alexandria, Virginia 22314.
6. Specific oxygen uptake rate. Part 2710 B., "Standard Methods for the Examination of Water and Wastewater," 18th Edition, 1992, American Public Health Association, 1015 15th Street, NW., Washington, DC 20005.
7. Total, fixed and volatile solids. Part 2540 G., "Standard Methods for the Examination of Water and Wastewater," 18th Edition, 1992, American Public Health Association, 1015 15th Street, NW., Washington, DC 20005.