

## 4.10 Extended Treatment Package System

Revision: October 31, 2013

### 4.10.1 Description

Manufactured and *packaged* mechanical treatment devices that provide additional biological treatment to septic tank effluent. Such units may use extended aeration, contact stabilization, rotating biological contact, trickling filters, or other approved methods to achieve enhanced treatment after primary clarification occurs in an appropriately sized septic tank. These systems provide secondary wastewater treatment capable of yielding high-quality effluent suitable for discharge in environmentally sensitive areas.

ETPS are required to have annual maintenance and effluent quality testing performed and reported to the Director as described in section 4.10 (IDAPA 58.01.03.005.14). This maintenance is to be performed by an approved O&M entity (IDAPA 58.01.03.009.03). Property owners that install an ETPS unit must choose an O&M entity capable of meeting their maintenance and effluent testing needs. Verification of the chosen O&M entity shall be submitted with the subsurface sewage disposal permit application ensuring that the operation, maintenance, and monitoring (effluent quality testing) will occur (IDAPA 58.01.03.005.04.k). Property owners that do not want to meet these O&M requirements must meet the requirements of section 4.10.2(2) or choose another alternative system that will meet the conditions required for subsurface sewage disposal permit issuance.

### 4.10.2 Approval Conditions

1. A maintenance entity will be available to provide continued device operation and maintenance. Approval of the O&M entity will be made by the Director prior to permit issuance. Approvable entities may include, but are not limited to, the following:
  - a. Municipal wastewater treatment departments
  - b. Water or sewer districts
  - c. Nonprofit corporations (section 4.2)

An O&M entity membership agreement and an accompanying general access easement should be entered into between the property owner and the O&M entity, as a necessary condition for issuing an installation permit (IDAPA 58.01.03.005.04.k). This agreement and the easement will be recorded with the county as a condition for issuing an installation permit.

2. ETPSs may be used for properties without an approved O&M entity **only under all of the following conditions**:
  - a. The site is acceptable for a standard system. All separation distances from ground water, surface water, and limiting layers shall be met.
  - b. Enough land is available, and suitable, for two full-size drainfields. One complete full-size drainfield shall be installed.

3. Final effluent disposal through subsurface discharge will meet the following criteria:
  - a. If an 85% reduction or better in CBOD<sub>5</sub> and TSS can be achieved, the effluent may be discharged to a drainfield satisfying Section 4.22.5 “Recirculating Gravel Filter Gravity Disposal Trenches” application rate criteria and vertical setback requirements.
    - 1) Otherwise, the effluent must be discharged to a standard drainfield, sized as directed in IDAPA 58.01.03.008 (section 8.1), and meet the required effective soil depth for standard drainfields as directed in IDAPA 58.01.03.008.02.
    - 2) Additional drainfield-sizing reduction granted for use of gravelless trench products is not allowed.
  - b. The 85% reduction will be accepted as being met if the effluent exhibits a quantitative value obtained from laboratory analysis not to exceed 40 milligrams per liter (mg/L) (40 parts per million [ppm]) CBOD<sub>5</sub> and 45 mg/L (45 ppm) TSS.
  - c. TN reduction may be required for ETPS units located in an area of concern as determined through a nutrient-pathogen (NP) evaluation. Permit-specific TN reduction levels will be determined through the NP evaluation. Results for TN are determined through the addition of TKN and nitrate-nitrite nitrogen (TN = TKN + [NO<sub>3</sub>+NO<sub>2</sub>-N]). TN reduction will be accepted as being met if the effluent exhibits a quantitative value obtained from laboratory analysis not to exceed the TN level stipulated on the subsurface sewage disposal permit.

#### 4.10.3 Operation, Maintenance, and Monitoring

Procedures relating to operation, maintenance, and monitoring are required by IDAPA 58.01.03 (section 8.1) or may be required as a condition of issuing a permit, per IDAPA 58.01.03.005.14 (section 8.1) to ensure protection of public health and the environment.

1. Operation and maintenance
  - a. Annual maintenance shall be performed on the ETPS unit as described in the ETPS manufacturer’s O&M manual for the ETPS model as submitted under section 4.2.
  - b. Additional maintenance not specified in the O&M manual may be required to ensure the ETPS functions properly.
  - c. Records of each maintenance visit shall be kept and should include the following information for the primary maintenance visit:
    - 1) Date and time.
    - 2) Observations for objectionable odors.
    - 3) Observation for surfacing of effluent from the treatment unit or drainfield.
    - 4) Notation as to whether the system was pumped since the last maintenance visit including the portions of the system pumped, pumping date, and volume.

- 5) Sludge depth and scum layer thickness in the primary septic tank and treatment unit.
- 6) If responding to an alarm event, provide the cause of the alarm and any maintenance necessary to address the alarm situation.
- 7) Field testing results for any system effluent quality indicators included in the approved sampling plan as submitted under section 4.2.4 or as recommended in item 2(b) below.
- 8) Record of any cleaning and lubrication.
- 9) Notation of any adjustments to control settings or equipment.
- 10) Test results for pumps, switches, alarms, and blowers.
- 11) Notation of any equipment or component failures.
- 12) Equipment or component replacement including the reason for replacement.
- 13) Recommendations for future service or maintenance and the reason for the recommendations.
- 14) Any maintenance occurring after the primary annual maintenance visit should only record and address the reason for the visit and the associated activities that occur.

## 2. Monitoring

- a. Annual effluent monitoring will be required for all ETPS units that discharge to a reduced size drainfield, to a drainfield with a reduced separation distance to limiting layers, and/or to a drainfield located in an environmentally sensitive area (area of concern).

Annual monitoring included in the annual report must occur within the reporting period (Figure 4-8).

- b. DEQ recommends prior to collecting effluent samples from the treatment unit for laboratory analysis that effluent quality indicators be field tested as described in the approved sampling plan for the O&M entity. Recommendations included in this section are recommendations only and should be verified with the treatment technology manufacturer as acceptable with their field sampling plan and as suitable effluent quality indicators. Field testing is recommended to include, but may not be limited to the following:
  - 1) Visual examination for wastewater color, odor, and effluent solids
  - 2) Constituents shown in Table 4-5:

**Table 4-5. Recommended field testing constituents for effluent quality indication.**

Constituent	Acceptable Range
pH	6 to 9
Dissolved oxygen	≥ 2 mg/L
Turbidity	≤ 40 NTU

Notes: milligram per liter (mg/L); nephelometric turbidity unit (NTU)

- c. Monitoring samples provided to a laboratory will analytically quantify that the units are operating in compliance if samples do not exceed 40 mg/L (40 ppm) for CBOD<sub>5</sub> and 45 mg/L (45 ppm) for TSS.

Results for CBOD<sub>5</sub> and TSS that exceed these levels indicate the ETPS unit is not achieving the required reduction levels.

- d. For those systems installed in areas of concern, including nitrogen sensitive areas, or are used to fulfill NP evaluation results and requirements, the following additional constituents may be monitored as stipulated on the permit:

- 1) Total Kjeldahl nitrogen (TKN)
- 2) Nitrate-nitrite nitrogen (NO<sub>3</sub>+NO<sub>2</sub>-N)
- 3) Results for total nitrogen (TN = TKN + [NO<sub>3</sub>+NO<sub>2</sub>-N]) that exceed the levels stipulated on the installation permit, in the subdivision approval for sanitary restrictions release, or the approved NP evaluation, indicate that the device is failing to achieve the required reductions

- e. Samples will be collected, stored, transported, and analyzed according to the latest version of *Standard Methods for the Examination of Water and Wastewater* (Rice et al. 2012) and other acceptable procedures.

- 1) Each sample will have a chain-of-custody form, identifying, at a minimum, the sample's source (street address or installation permit number), date and time of collection, and the person who extracted the sample.
- 2) Chain-of-custody form should also specify the laboratory analyses to be performed on the sample.
- 3) Sample storage and transport will take place in appropriate containers under appropriate temperature control.

- f. Sample analysis will be performed by a certified laboratory capable of analyzing wastewater according to the acceptable standards identified in Table 4-6, and the monitoring results will be submitted as part of the annual report to the local health district.

- 1) ETPS effluent analysis shall be performed using the standards in Table 4-6 from the *Standard Methods for the Examination of Water and Wastewater* (Rice et al. 2012). NSF uses the same standards in their Standard 40 and 245 evaluations.
- 2) Annual reports submitted with laboratory analysis results differing from these standard methods will be rejected.

**Table 4-6. Standard methods required for the analysis of ETPS effluent in annual testing.**

Analysis	Standard Method Number
Total suspended solids (TSS)	SM 2540 D
Carbonaceous biological oxygen demand (CBOD <sub>5</sub> ) <sup>a</sup>	SM 5210 B
Total Kjeldahl nitrogen (TKN)	SM 4500-NH <sub>3</sub> C
Nitrate-nitrite nitrogen (NO <sub>3</sub> + NO <sub>2</sub> -N)	SM 4500-NO <sub>3</sub> <sup>-</sup> F

a. Person requesting the analysis from the laboratory must specify the CBOD<sub>5</sub> on the chain-of-custody form.

- g. Samples failing to achieve the required effluent constituent levels shall require the following:
- 1) Additional operation and maintenance.
  - 2) Additional sampling to demonstrate the operation and maintenance performed successfully restored the treatment system to proper operation.
  - 3) Sample extraction and analysis should occur within 30 days after servicing the system.
  - 4) A maximum of three sampling events, within 90 days, will be allowed to return the system to proper operation. Failure to correct the system within this time frame will result in the system being classified as a *failing system* (section 4.10.5).

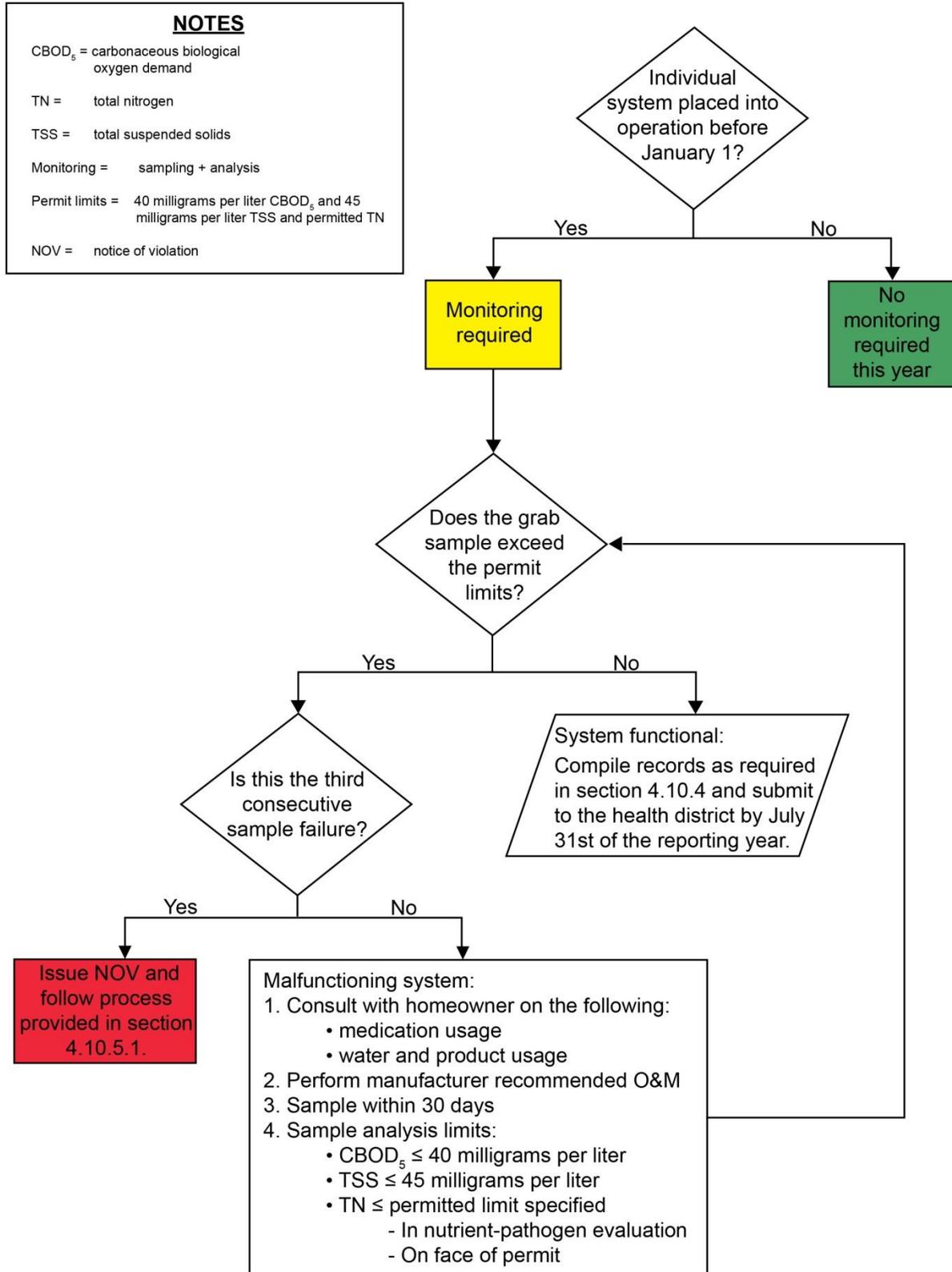


Figure 4-8. ETPS unit individual sampling process.

#### 4.10.4 Annual Report

The reporting period is from July 1 of the preceding year through June 30 of the reporting year. Annual reporting is the responsibility of the property owner (member), and DEQ recommends that the property owner have their O&M entity compile and submit their annual report. The property owner responsible for the ETPS unit under IDAPA 58.01.03 shall ensure the following annual reporting requirements are met:

1. Annual report for each property owner shall include these items:
  - a. A copy of all maintenance records for the reporting period as required under section 4.10.3(1)
  - b. A copy of all certified laboratory records for effluent sampling
  - c. A copy of each chain-of-custody form associated with each effluent sample
2. If the O&M entity is fulfilling annual reporting requirements for their members, DEQ recommends that the following additional information be included within the annual report:
  - a. A current list of all O&M entity members within the health district to which the annual report was submitted.
  - b. The member list should clearly identify which members the O&M entity is contracted with for annual reporting requirements and the status of each member in regards to completing the annual reporting requirements.
  - c. If annual reporting requirements are not complete for any member who the O&M entity is responsible for providing the annual report, an explanation should be included with that member's records within the annual report.
3. Annual report exemptions
  - a. A member may be exempt from effluent testing based upon extreme medical conditions.

Annual service and maintenance on the member's ETPS unit shall not be exempt due to medical conditions, and record of annual service and maintenance shall still be submitted with the member's annual report.
  - b. An O&M entity contracted by a member to fulfill annual reporting requirements may be exempt from reporting annual service and testing results for individual members if that member's activities fall within the guidelines in section 4.10.6.

The O&M entity should still report the activities described in section 4.10.6 for each member exempt from annual reporting based on the guidelines in section 4.10.6.
4. Annual reporting process
  - a. The annual report shall be submitted to the local health district through mail by the property owner or the O&M entity on behalf of the member no later than July 31 of each year for the preceding 12-month period.

The annual report shall be submitted to the local health district that issued the subsurface sewage disposal permit for, and has jurisdiction over, the ETPS unit.

- b. The local health district shall provide the O&M entity a written response within 45 days of receipt of the annual report detailing compliance or noncompliance with septic permit requirements.
    - 1) The O&M entity should inform individual members of their compliance status.
    - 2) All correspondence from the health district regarding a noncompliant annual report shall be copied to DEQ.
5. Delinquent annual reports
- a. If the property owner or O&M entity contracted to submit the member's annual report does not submit the annual report by July 31 of the reporting year, the local health district shall send the property owner, or O&M entity contracted to submit the member's annual report, a reminder letter providing a secondary deadline of August 31 of the reporting year for the annual report submission. The reminder letter shall detail the report requirements and that failure to submit the annual report by the secondary deadline will result in the health district forwarding a notice of nonreport to DEQ. DEQ may seek any remedy available under IDAPA 58.01.03 including, without limitation, requiring the property owner to replace the ETPS unit with another system, as outlined in section 4.10.5.
  - b. All correspondence from the health district regarding delinquent annual reports shall be copied to DEQ.

#### 4.10.5 ETPS System Failure, Disapproval, and Reinstatement

Commercially manufactured wastewater treatment components must be approved by DEQ (IDAPA 58.01.03.009.01). Manufactured ETPS units are subject to this approval. In addition, the installation of an ETPS unit requires a subsurface sewage disposal permit pursuant to IDAPA 58.01.03.005. ETPS units are alternative systems that must be approved by the Director pursuant to IDAPA 58.01.03.004.10. As part of the alternative system approval for ETPS units, DEQ defines the specific circumstances under which the ETPS units may be installed, used, operated, and maintained within section 4.10 (IDAPA 58.01.03.009.03 and 58.01.03.005.14).

If an ETPS product is not shown to be installed, used, operated, or maintained as described in section 4.10, DEQ may pursue enforcement against a property owner and seek those remedies available under IDAPA 58.01.03. Enforcement and remedies against the property owner may include a determination that the ETPS system has failed and the requirement that the property owner replace the ETPS unit with a different system authorized by DEQ. Replacement may include installing another ETPS unit approved by DEQ, or engineering and installing another alternative system that is capable of meeting the requirements of the property owner's subsurface sewage disposal permit. If an ETPS product is not shown to comply or consistently function in compliance with IDAPA 58.01.03 and the O&M requirements outlined in section 4.10, DEQ may disapprove the ETPS unit. Reasons for DEQ enforcement, which may include seeking remedies against a property owner or disapproval of an ETPS manufacturer's technology as outlined herein, include, but are not limited to, the following:

1. Failure to submit an annual report by the secondary deadline of August 31.
2. Annual reports for a particular ETPS technology identify a malfunctioning system rate of 10% or more.

Malfunctioning systems are defined as any system that fails to receive annual maintenance or exceeds the effluent reduction levels for any constituent required as part of the septic permit (i.e., TSS, CBOD<sub>5</sub>, or TN).

3. Property owner's ETPS unit has been determined to be a failing system. Failing ETPS units are defined in section 4.10.3(2)(g).

#### **4.10.5.1 Failing System Enforcements**

The regulatory authority shall follow the procedures below upon determination that an ETPS unit is a failing system (Figure 4-9):

1. When the regulatory authority is notified that a system is failing, a notice of violation (NOV) shall be issued to the property owner. The property owner shall have the opportunity to hold a compliance conference with the regulatory authority to enter into a consent order.
2. Consent orders should allow a property owner a 12-month period to return the system to proper operation or replace the failing system.
  - a. Over this 12-month period, the property owner should have their O&M entity service the ETPS unit at least monthly.
  - b. Monthly effluent samples should be taken by the O&M entity until the ETPS unit passes 3 consecutive monthly samples.

Three consecutive passing monthly samples taken 1 month apart would be cause for the regulatory authority to terminate the consent order and NOV, and reclassify the system as compliant.

- c. O&M records as described in section 4.10.3(1), certified laboratory records, and chain-of-custody forms for each sample should be submitted to the regulatory authority on a monthly basis as part of the consent order.
- d. If the ETPS unit cannot produce 3 consecutive monthly samples over the 12-month period, the system shall be replaced with another alternative system that meets the effluent quality requirements based upon applicable site conditions.
- e. Replacement systems must meet the treatment requirements of the original septic permit. Appropriate replacement systems may include a sand mound with 24 inches of sand beneath the absorption bed, intermittent sand filter, recirculating gravel filter, or a different ETPS unit that is approved and has an active O&M entity.

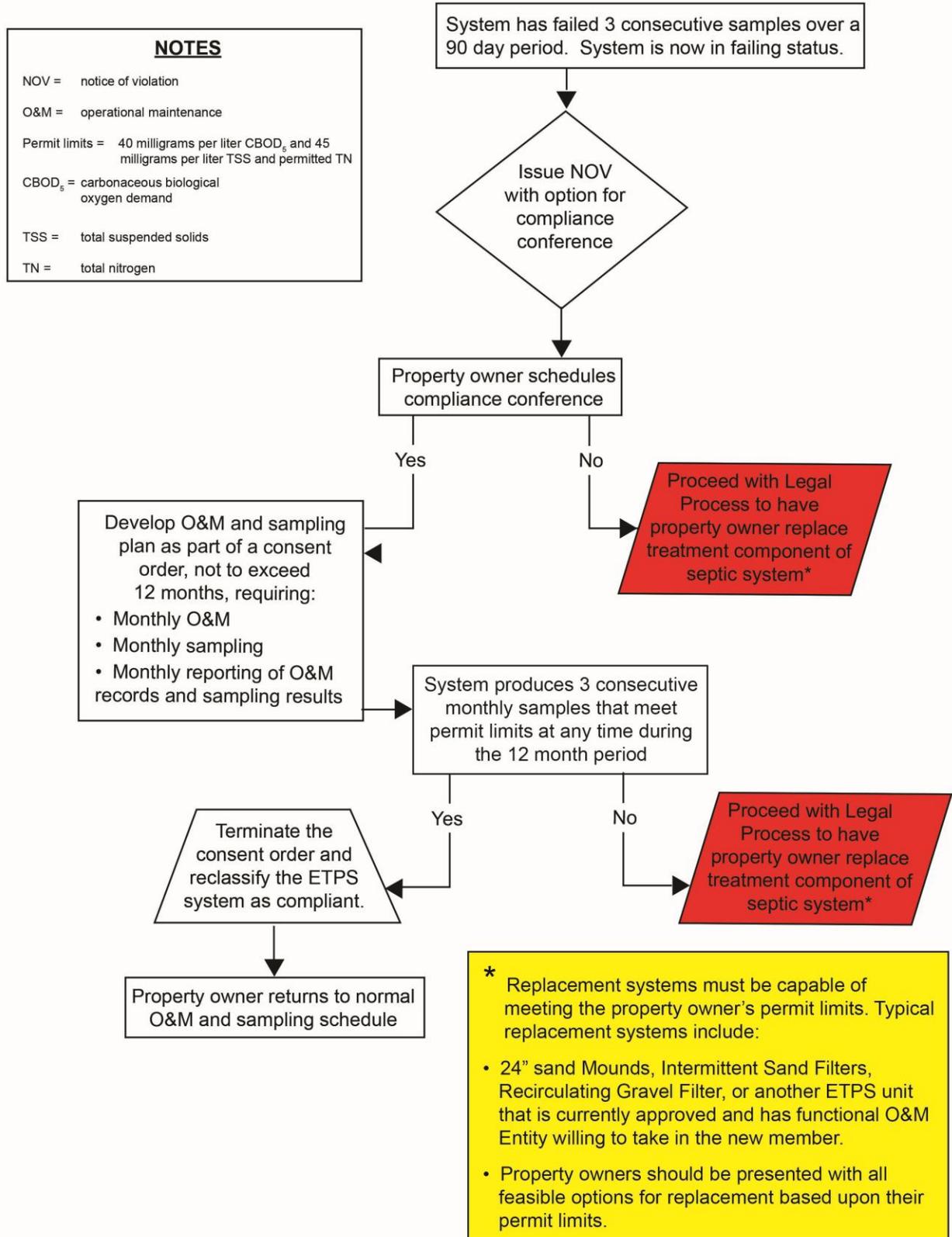


Figure 4-9. ETPS failing system enforcement flowchart.

#### **4.10.5.2 ETPS Product Disapproval**

In addition to determining a particular system is a failing system as set forth in section 4.10.5.1, if DEQ determines that an ETPS unit cannot consistently function in compliance with IDAPA 58.01.03, DEQ may disapprove the product (IDAPA 58.01.03.009.04). A written notice of DEQ's intent to disapprove the product will be provided following Idaho Code §67-52 and sent to the ETPS product manufacturer, O&M entity, and health districts. The ETPS manufacturer will be allowed an opportunity to respond prior to product disapproval. Upon disapproval of a manufacturer's ETPS product line, the health districts shall not issue septic permits on new applications for ETPSs from the disapproved product manufacturer. Monitoring, reporting, and servicing requirements of existing ETPS unit installations will not be affected by the product disapproval (Figure 4-10).

#### **ETPS Product Reinstatement**

Upon ETPS product disapproval, DEQ will provide the ETPS product manufacturer the opportunity to enter into a corrective action plan (CAP) for product reinstatement. The CAP should establish the time frame to return the noncomplying or failing systems to proper operation. The product disapproval will remain in effect until the malfunctioning and failing system rate for the ETPS manufacturer's technology is below 10%.

#### **4.10.6 Member Refusal of Maintenance or Testing Requirements**

The individual nonprofit O&M entity members (property owners) are responsible for ensuring the O&M entity can perform the annual maintenance and effluent testing required for their ETPS unit. Failure of an individual member to permit the O&M entity from carrying out the required services is considered a violation of IDAPA 58.01.03.012.01. Activities engaged in by a property owner toward the O&M entity that may be considered a refusal of service action by a member, include, but are not limited to, the following:

1. Refusal to allow annual maintenance or effluent quality testing (e.g., refusal to pay annual dues preventing the financial capability of service or denial of property access).
2. Refusal to maintain the ETPS unit in operating condition (e.g., refusal to replace broken components or refusal to provide electricity to the unit).
3. If the refusal of service continues through the annual reporting period, the nonprofit O&M entity should substitute and submit the following documents in the annual report for members refusing service that the O&M entity is contracted with:
  - a. Copies of all correspondence and associated certified mail receipts documenting the property owner's receipt of the correspondence regarding the refusal of service. Refusal of service by a member through nonpayment should include documentation of a lien being placed on the member's property.
  - b. If the documentation is not included within the annual report, there will be insufficient documentation of the property owner's refusal to allow maintenance and monitoring, and therefore, the lack of maintenance and monitoring may count against the malfunctioning rate for the ETPS technology.

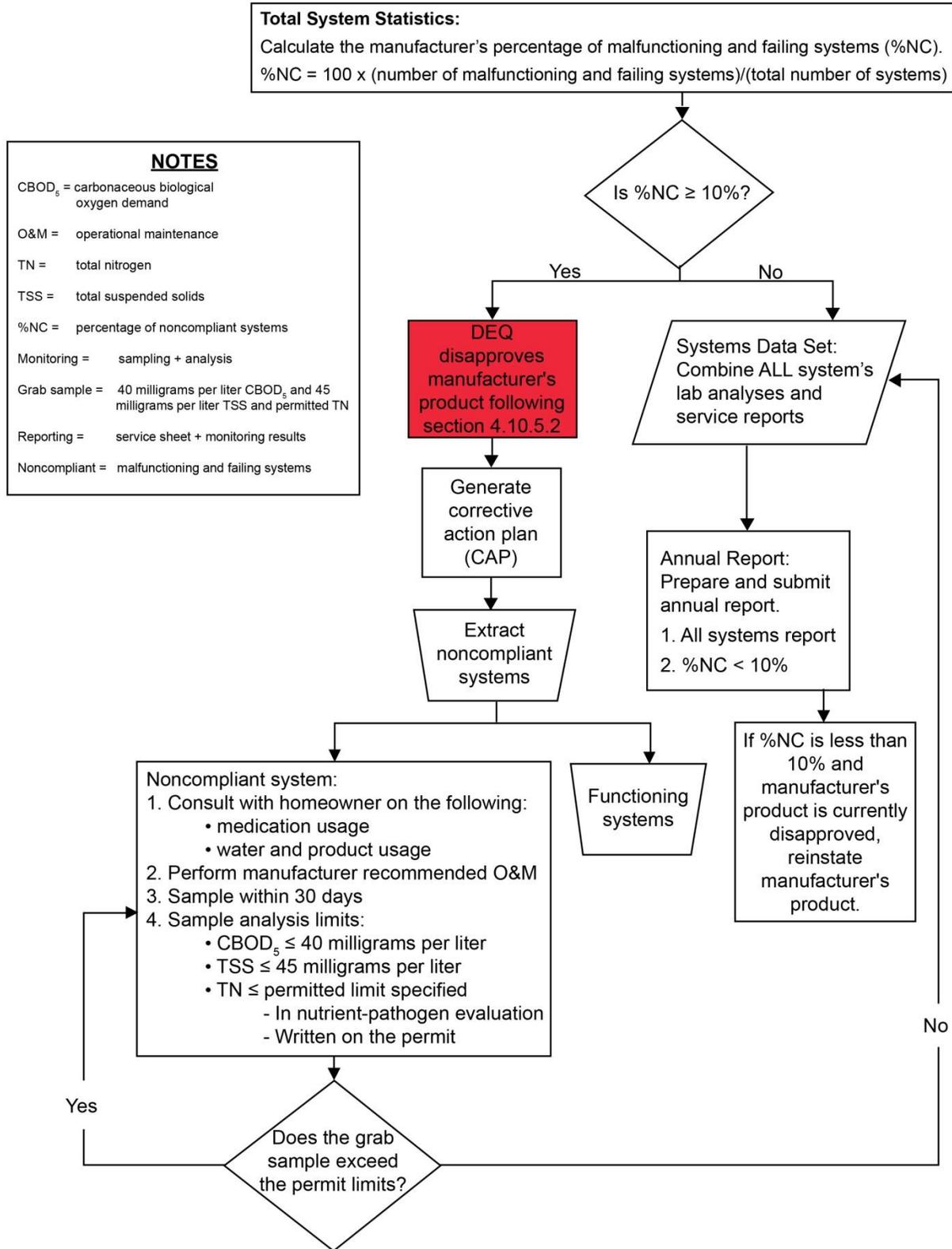


Figure 4-10. ETPS product disapproval process based upon annual reports.

### ***Refusal of Service Enforcement Procedures***

Upon receipt of an annual report showing that individual O&M entity members have refused to allow maintenance and monitoring as described in section 4.10.6, the following guidelines apply:

1. The regulatory authority shall issue Letter 1 with the associated enclosure provided in the DEQ program directive, “Extended Treatment Package System Education and Enforcement Letters.”
  - a. Letter 1 shall be sent to the property owner by certified mail and copied to the associated O&M entity.
  - b. The property owner is responsible for working with the regulatory authority and the O&M entity to address their delinquent responsibilities. The O&M entity should contact the regulatory authority and associated property owner 30 days after receiving Letter 1 to inform the regulatory authority of the property owner’s voluntary compliance status.
2. If the property owner fails to voluntarily comply within the 30-day time frame, the regulatory authority shall issue Letter 2 provided in the DEQ program directive, “Extended Treatment Package System Education and Enforcement Letters.”
  - a. Letter 2 shall be sent to the property owner by certified mail and copied to the associated O&M entity.
  - b. The property owner is responsible for working with the regulatory authority and their O&M entity to address their delinquent responsibilities. The O&M entity should contact the regulatory authority and associated property owner by the voluntary compliance date provided in Letter 2 to inform the regulatory authority of the property owner’s voluntary compliance status.
3. If the property owner fails to voluntarily comply by the date provided in Letter 2, the regulatory authority may issue a NOV to the property owner to ensure compliance with the property owner’s subsurface sewage disposal permit requirements for the ETPS unit.

#### **4.10.7 ETPS Unit Design**

Procedures relating to design are required by IDAPA 53.01.03 (section 8.1) or may be required as permit conditions, as appropriate, to ensure protection of public health and the environment.

1. All materials will be durable, corrosion resistant, and designed for the intended use.
2. All electrical connections completed on site shall comply with the National Fire Protection Association (NFPA) Standard NFPA 70, National Electrical Code, as required by the Idaho Division of Building Safety, Electrical Bureau.
3. Design for each specific application should be provided by a PE licensed in Idaho.
4. The system’s aerobic treatment section will be preceded by an appropriately sized septic tank. The septic tank may be either a separate septic tank, a volume integral with the system’s package, or a combination of internal clarifier volume coupled with an external tank. The septic tank shall provide the minimum tank capacity for residential facilities as specified in IDAPA 58.01.03.007.07.a, or for nonresidential facilities, a minimum of 2 days of hydraulic residence time (HRT) as stipulated in IDAPA 58.01.03.007.07.b.

Timed dosing from the clarifier to the aerobic treatment unit is preferred and highly recommended to maintain a constant source of nutrients for the system’s aerobic microbes.

5. Manufactured and *packaged* mechanical treatment devices will be required to prove that the specified equipment model meets the ETPS product approval policy outlined in section 1.4.2.2.

#### 4.10.8 Construction

Procedures relating to construction are required by IDAPA 58.01.03 (section 8.1) or may be required as permit conditions, as appropriate, to ensure the protection of public health and the environment.

1. Installation
  - a. A licensed complex system installer shall be required to install an ETPS unit and all other portions of the septic system connected to the ETPS unit or that the ETPS unit discharges to (IDAPA 58.01.03.006.01.b).
  - b. A public works contractor may install an ETPS unit if they are under the direct supervision of a PE licensed in Idaho.
  - c. Licensed plumbers and electricians will be required to install specific devices and components for proper system operation. If the device requires any on-site fabrication or component assembly, a public works contractor should be used.
  - d. A sample port will be installed in the effluent line after the aerobic treatment unit. Figure 4-11 shows the placement of a sampling port after the ETPS unit, and Figure 4-12 shows the sample port and drainfield after the septic and treatment tank.

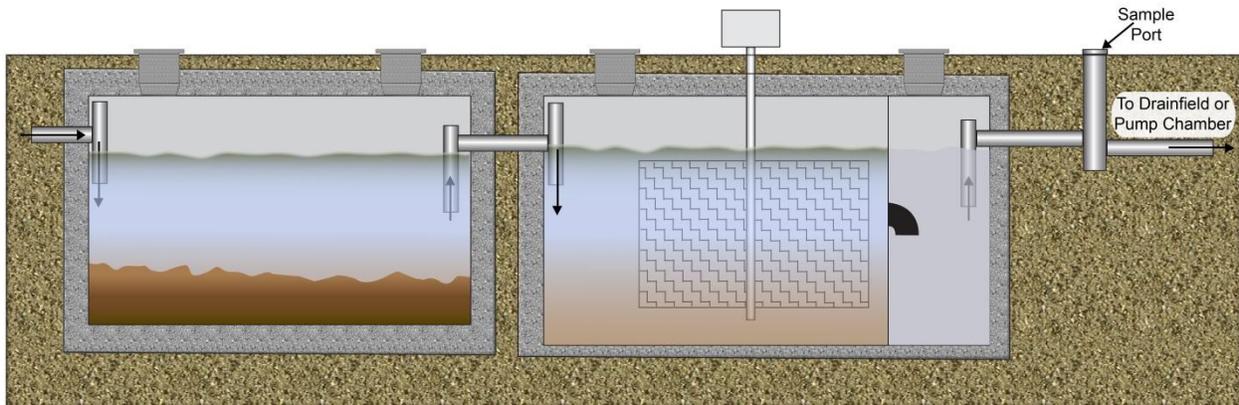
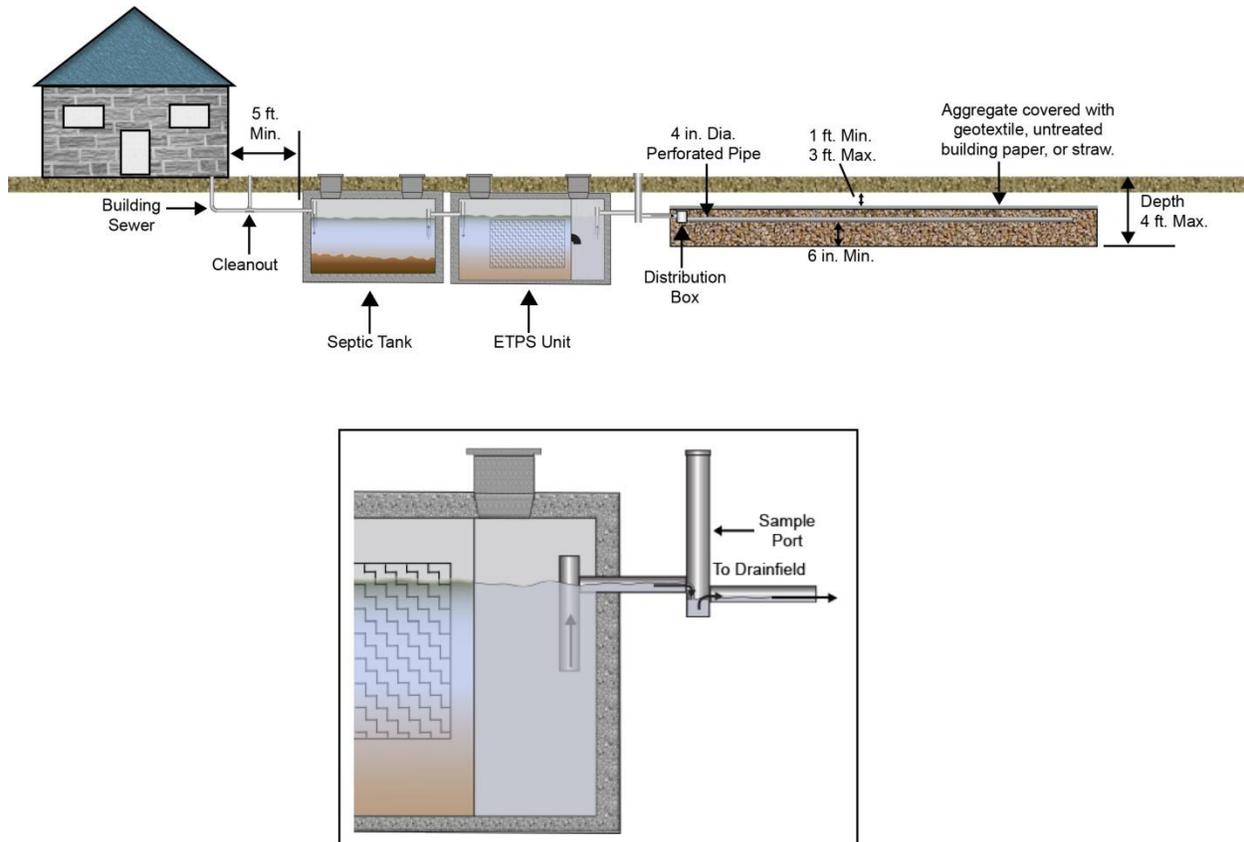


Figure 4-11. Sampling port example.



**Figure 4-12. Sampling port and drainfield.**

2. Within 30 days of completing the installation, the property owner shall provide certification to the regulatory authority, from their O&M entity, that the system has been installed and is operating in accordance with the manufacturer's recommendations (IDAPA 58.01.03.005.15).
  - a. A statement requiring the submission of the installation verification form described above shall be written on the face of the subsurface sewage disposal permit.
  - b. The regulatory authority shall not finalize the subsurface sewage disposal permit until the certification of proper installation and operation is received.