DEPARTMENT OF PLANNING & NATURAL RESOURCES

PROPOSED ONSITE SEWAGE DISPOSAL SYSTEM

VIRGIN ISLANDS COASTAL MANAGEMENT

RULES AND REGULATIONS

V.I.R. & REGS. tit. 12, CHAPTER 21

AMENDMENTS TO SUBCHAPTER 902 AND 910

September 21, 2001
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SECTION 1.
VI R & REGS, tit. 12, Chapter 21
Subchapter 902
§902-2 Definitions
Insert the following:

Alternative OSDS: An Onsite Sewage Disposal System (OSDS) that is not a traditional OSDS. This definition includes constructed wetlands and modified traditional OSDS.

Alternative Toilet: A device to treat only blackwaste. Such a device must meet the National Sanitation Foundation Certification Standard Number 41 for Wastewater Recycle/Reuse and Water Conservation System.

Application: A standard form provided by DPNR that must be completed and submitted to DPNR for consideration prior to DPNR granting any Coastal Zone Permit.

Backfill: Soil placed around the disposal area that is clean and free of foreign debris. (See "Disposal Area" this section.)

Bedrock: Solid or fractured rock that underlies soil material at depths ranging from zero to hundreds of feet or soil made up of more than 50% by volume of fractured rock.

Blackwaste: Waste containing human excrement, urine or both.

Building Drain: That portion of the lowest horizontal piping of a drainage system that receives the discharge from waste and other drainage pipes inside a building and conveys it five feet outside the building wall to the building sewer.

Building Sewer: That part of the sewer system extending from the end of the building drain to an OSDS or other approved point of disposal.

Certificate of Occupancy: A document issued by DPNR pursuant to V.I. R. & REGS. tit. 12, §910-13. It is also issued after OSDS construction has been completed and prior to OSDS operation.

Cesspool: A lined excavation that receives the discharge of a drainage system or part thereof, designed to retain the organic matter and solids discharging therein, but permitting the liquids to seep through the bottom and sides.

Chamber: A pre-cast concrete, plastic, or other approved manufactured device used in a disposal area as an alternative to stone and distribution pipes.
Cluster or Community System: Two or more separately owned dwelling units connected to a single alternative onsite sewage disposal system.

Coastal Zone Management (CZM) Permit: Any permit that is issued pursuant to V.I. Code tit. 12, §§ 910 and 911 of the Coastal Zone Management Act.

Constructed Wetland Sewage Treatment System: A subsurface flow artificial wetland in which the water level is maintained below the surface of gravel or other media placed in the constructed wetland bed.

Contractor: A person hired by a permittee to install an OSDS or supervise that development allowed under a Coastal Zone Management Permit.

Conventional OSDS: A traditional septic tank system that consists of a treatment tank and one of several different disposal fields or leach pits.

Department or DPNR: The abbreviation for the Virgin Islands Department of Planning and Natural Resources.

Discharge or Disposal: The addition of any pollutant to Virgin Islands waters from any point or nonpoint source.

Discharge or Disposal Area: That component of an OSDS designed for the subsurface disposal of wastewater into the soil.

Disposal System: A system for disposing sewage, either by surface or underground methods, and includes sewerage systems, treatment works, disposal wells and other systems.

Domestic Wastewater: (See "Wastewater – Domestic" this section)

Dosed: (See "Dosing" this section)

Dosing: The pumping or siphoning of a specific volume of wastewater to a disposal area.

Dosing Chamber: A receptacle for retaining wastewater until it is pumped or siphoned to the disposal area.

Effluent: Any liquid waste material discharged into the environment through any part of an OSDS.

Elevation Reference Point: A reference elevation used during construction and inspection to establish the relative elevation of the bottom of a disposal area as well as the other components of an OSDS.

Experimental System: A method of disposing blackwaste that has not been officially approved for use by the Department of Planning and Natural Resources.

Fill: Soil that has been placed over the original soil or bedrock and is characterized by a lack of
distinct horizons or color patterns as found in naturally developed and undisturbed soils.

Fine: A monetary punishment imposed by DPNR upon a person found to be in violation of the Coastal Zone Management Act.

Fines: Small particles of dirt or dust.

Flood Height: The height water will rise due to a storm of a certain intensity, variably denoted as a 1-year storm, 2-year storm, 5-year storm, 10-year storm, 25-year storm, 50-year storm or 100-year storm event.

Flood Plain: The land area within the V-Zone as indicated on Federal Insurance Rate Maps, or below the 10-year storm surge elevation, whichever is more restrictive.

Graywater: Untreated household wastewater that does not contain black waste, but includes water from bathtubs, showers, bathroom washbasins, kitchen sinks or dishwashers and laundry water. Does not include Stormwater Runoff (See definition this section).

H-20 WHEEL LOAD: A wheel loading configuration as defined by the American Association of State Highway Transportation Officials (AASHTO).

Handbook: The United States Virgin Islands Handbook on Onsite Sewage Disposal Systems prepared by the Department of Planning and Natural Resources.

Hardship: That condition which occurs when the applicant is unable to meet the requirements of these rules and regulations due to conflict with other governing laws or rules and regulations.

Holding Tank: A watertight receptacle with an alarm which receives and holds wastewater prior to disposal at a location licensed by the Department.

Installer: (See "Contractor" this section)

Interested, affected and aggrieved person: Any person who has been denied a legal right by an action of DPNR; one whose financial interest is directly affected by an order of DPNR; or one upon whom DPNR has imposed an obligation.

Limiting Factor: Any feature or item that influences the type and installation of an OSDS, including but not limited to the slope of the land, the soil’s clay content, the soil’s permeability, the distance to the water table or bedrock, or a classification of “severe” or “moderate” by the USDA-NRCS in the “Classification and Correlation of the Soils of the Virgin Islands of the United States”, 1995.

Liquid Capacity or Liquid Working Capacity: The minimum amount of liquid an OSDS, or part thereof, is designed to accommodate.

Low Volume Toilet: Any toilet that utilizes 1.5 gallons of water or less per flush.
Malfunctioning or Failed System: An inadequately functioning system as evidenced by, but not limited to, the following conditions:

1. Failure of a system to accept wastewater discharge or the backup of wastewater into the structure served by the system.

2. Discharge of wastewater directly or indirectly into the ground, surface waters or bedrock without proper treatment and without a license to do so.

3. A manufactured or package treatment plant that fails to meet effluent standards established by DPNR.

4. The release of odors into the air or the surfacing of liquids on top of the soil.

Onsite Sewage Disposal System or OSDS: Any system designed for the treatment and disposal of sewage on the same property where it is generated.

Owner: Any person who can show proof of legal interest in the subject property.

OSDS Component: includes, but is not limited to, any or all of the following:

(1) Treatment tank
(2) Holding tank
(3) Disposal area
(4) Sand filter or other in-ground disposal system
(5) Low pressure system
(6) Replacement system
(7) Alternative system
(8) Piping and related components

Pea Gravel: Small rocks from one-eighth (1/8) inch to one (1) inch in diameter.

Penalty: A liability imposed upon a violator of the CZM Act which is not limited to a fine, revocation or suspension of a CZM permit.

Permittee: A person that has obtained a valid Coastal Zone Management Permit from DPNR.

Person: An individual, organization, partnership, association, corporation or other entity and any officer or governing or managing body of such entity; and further includes the Government of the Virgin Islands, and any board, commission, authority or instrumentality thereof.

Potable Water: Water for human consumption.

Proper Treatment: The processing of sewage through an OSDS as provided for in §910-1.(e) these rules and regulations.

Replacement System: A system intended to replace an existing system, in whole or in part, that is either malfunctioning or being upgraded with no significant change of sewerage flow or use of the
structure.

Rules: An abbreviation for the Rules and Regulations adopted by the Department of Planning and Natural Resources pursuant to V.I. Code tit. 3, §401; V.I. Code tit. 12, §910; and V.I. Code tit. 29, §312.

Septic Tank Cleaner: Person licensed by the Government of the Virgin Islands to clean septic tanks and transport the sludge and other material to a disposal site.

Setback Distance: For purposes of V.I. R & REGS, tit. 12, §910-1.(e) only, the horizontal distance between a selected site feature or structure and the closest point to an OSDS.

Sewage: Human body wastes, including domestic wastewater, and wastes from toilets and other receptacles intended to receive or retain body wastes.

Single Family Dwelling: Any residence intended for use by a single family.

Stormwater Runoff: That part of rainfall that runs off land, driveways, parking areas or other impervious surfaces and can carry soils, petroleum products, toxic metals, pesticides and other pollutants.

Toilet: A fixture for defecation and urination, consisting of a bowl fitted with a hinged seat and connected to a waste pipe and a flushing apparatus.

Traditional OSDS: Any OSDS that is composed of a septic tank and in-ground disposal area such as a leach pit, seepage pit or other disposal field.

Treatment Tank: Any DPNR approved watertight receptacle that is used for pre-treatment of wastewater before disposal.

Underdrain: Pipe placed in the bottom of a disposal area to conduct effluent elsewhere for further treatment or dispersion.

Violation: Any action or inaction which breaches the provisions of the Coastal Zone Management Act of 1978, as amended, or any rules or regulations promulgated thereunder.

Wastewater – Domestic: Any liquid and other wastes derived from ordinary living processes that may be disposed of without pre-treatment into the public sewer or an OSDS.

Water Closet: See "Toilet", this section.

Well: Any potable water supply from the earth, includes but is not limited to a drilled well, dug well or spring. Wetland Cells: Impervious forms through which treated effluent flows.
SECTION 2.
VI R & REGS, tit. 12, Chapter 21
SUBCHAPTER 910
§910-1 Insert a new subsection (e).
(e). ONSITE SEWAGE DISPOSAL SYSTEMS.

(1) General Requirements
a. No person shall install any component of an OSDS, either a conventional or alternative system, without first obtaining a Coastal Zone Permit.

b. Applicants for an Onsite Sewage Disposal System must use a CZM Minor Land Development Permit Application to apply for an OSDS permit.

c. Any person operating an OSDS, either a conventional or alternative system, must obtain a Certificate of Occupancy pursuant to V.I. R. & REGS. tit. 12, section 910-13 prior to operating the system.

d. No person may expand, retrofit or upgrade an OSDS without the permits required under this section.

e. Upon a finding of hardship the requirements of these rules and regulations may be waived by the Commissioner. The applicant must provide documentation or proof of hardship.

(2) Application Requirements for an OSDS Permit
The following must be submitted to DPNR with the completed application form.

a. A Federal Emergency Management Agency Flood Insurance Rate Map, with the property accurately plotted.

b. A flood plain screening may be required to determine whether a specific site is above the 10-year flood plain. No OSDS shall be constructed within the 10-year flood plain. Special mitigation measures are required for areas between the 10-year level flood height and the 100-year level flood height.

c. Site plans and calculations must be drawn to scale, signed, dated and stamped by a V.I. Licensed Engineer or Architect, and include the following:
   (1) The type, size, location and elevation of the proposed system must be clearly identified.
   (2) The lot and immediate vicinity, all property lines, buildings, wells, guts, springs, wetlands, roads, drives and water bodies must be clearly identified.
   (3) Ground contours at five (5) foot intervals on slopes over ten (10) percent and two (2) foot intervals on slopes under ten (10) percent shall be shown.
   (4) Trees with a diameter of four (4) inches or larger, large rocks, and rock outcrops must be clearly identified.
   (5) OSDS details with cross sections, a description of the facilities served (existing and
proposed) and all sewerage flow calculations must be included, along with the calculations for the system's liquid capacity.

(6) The distance from at least two corners must be referenced from established control points, i.e., property corners, existing structures, trees or markers, etc., that are in the field and must be shown on the plans.

(7) An elevation reference point must be used to establish the elevation of the system’s structures and pipes. The reference point must be clearly indicated on the plans, must be established and clearly marked in the field outside of the proposed construction and must be accurate to within two (2) inches.

(8) Setback distances from property lines, water supply, water bodies, and all existing and proposed structures must be included and must be drawn to scale. Minimum setback distances for treatment tanks and in-ground disposal areas are described in Table 1. Minimum setback distances for wetland cells must be consistent with the current Virgin Islands Zoning Code setback requirements for structures. See Zoning and Subdivision Law, V.I. Code Annot. tit. 29 §§ 221 et seq.

**TABLE 1**

**MINIMUM SETBACK REQUIREMENTS FOR OSDS**

<table>
<thead>
<tr>
<th>DISTANCE IN FEET BETWEEN</th>
<th>TREATMENT TANK</th>
<th>DISPOSAL AREA (1)</th>
<th>SAND FILTER</th>
<th>IRRIGATION LINE</th>
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<tr>
<td>PROPERTY LINE</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Dwellings</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>25</td>
</tr>
<tr>
<td>Upslope &amp; Sideslope</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Downslope (6)</td>
<td>3 X Slope (2)</td>
<td></td>
<td></td>
<td>30</td>
</tr>
<tr>
<td>Potable Water Supply (3)</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Upslope</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Sideslope</td>
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<td>50</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Wetlands (4)</td>
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<td>100</td>
<td>100</td>
<td>100</td>
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<td>Drainage Ways (5)</td>
<td>25</td>
<td>50</td>
<td>50</td>
<td>100</td>
</tr>
<tr>
<td>Escarpments &amp; Mannmade Cuts (8)</td>
<td>20</td>
<td>20</td>
<td>20</td>
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**NOTES:**

(1) Includes beds, trenches or chambers in mounds.
(2) 1.5 times the slope of the existing land in percent to the nearest 5%, but no less than 5 feet.
(3) Includes cisterns and wells.
(4) Coastal wetlands only, measured from the mean high tide line or the landward edge of the mangrove trees, whichever is greater.
(5) Ditches, stream beds or guts. The distance shall be measured from the top of the stream bed/gut embankment, or the calculated interface of the land and the 10-year flood level, whichever is greater.
(6) Downslope is perpendicular to slope of land. Sideslope is parallel to the slope of the land.
(7) For cisterns, may be reduced to 15 feet if the top of the tank, or the top of the disposal field or sand filter, or the irrigation line is below the bottom of the cistern respectively, or if the cistern is above ground.
(8) Escarpments or cuts over 3 feet deep.

d. No person may locate an OSDS anywhere, except on the property occupied by the structure to be served.
e. An operations and maintenance manual or plan must accompany all applications.

f. A Site Soil Map and a Site Soil Analysis must accompany the application. The site soil analysis must describe the suitability of the soils and site conditions for the disposal of the effluent. The soil's parent material, textural classification, drainage conditions, bulk density, color and the depth to limiting factors must be identified. The presence of swelling clays, seasonally saturated soils, depth to bedrock, and the groundwater elevation must also be included. An applicant may rely upon the property’s soil classification and characteristics as defined by the USDA-NRCS in the “Classification and Correlation of the Soils of the Virgin Islands of the United States”, 1995, instead of conducting a site soil analysis.

g. Any test pit that is required for a proper soil analysis must be excavated to a depth of 48 inches, or until bedrock, impervious soils or swelling clays are encountered. Test pits must be sampled according to the procedures outlined in the handbook and the results must be submitted with the application.

(3) General Design Criteria for All OSDS

a. OSDS sewerage flow specifications for a single-family dwelling are 100 gallons per day (gpd) per bedroom. The minimum sewerage flow must be 200 gpd.

b. Sewerage flow specifications for other than a single-family residential building may be established through actual water use records that have been collected over a minimum of a one-year period. Readings must have been taken from the actual establishment or a similar establishment. If this methodology is used, then sewerage flow must be the calculated flow plus ten (10) percent.

c. Sewerage flow specifications may be calculated as required by the plumbing code adopted by DPNR/Division of Permits rules and regulations. See National Standard Plumbing Code (National Association of Plumbing – Heating – Cooling Contractors, 1996, or most recent update).

d. Reductions in Calculated Sewerage Flow

(1) Combinations and additive reductions are allowed for alternative toilets connected to a separate laundry disposal system or a low volume toilet connected to a separate laundry disposal system. Maximum allowable reductions in calculated sewerage flows are:

(a) Alternative Toilets: 30%. Alternative toilets may be connected to a graywater disposal system. If so, the conventional septic tank and disposal area are not required.

(b) Low Volume Toilets: 10%

(c) Separate Laundry Disposal System: 20%. A separate graywater disposal system is required when this option is proposed. See V.I. R & REGS tit. 12, §910-
1.(e)(8).

(2) The OSDS must be enlarged to original specifications if the conservation device or system is removed or malfunctions.

e. Any addition of one or more bedrooms, the replacement of an alternative toilet, or any other modification of a structure that increases the sewerage flow of a system requires that the OSDS be upgraded to meet the requirements of the rules and regulations under this section.

f. Community or cluster systems serving more than one dwelling must have a sewerage flow of the total individual dwellings' sewerage flows.

g. The liquid capacity of an OSDS must meet the requirements of the National Standard Plumbing Code or other plumbing code adopted by DPNR/Division of Permits rules and regulations. See National Standard Plumbing Code (National Association of Plumbing – Heating – Cooling Contractors, 1996, or most recent update), but must be 1000 gallons or more.

h. Materials used in the installation and construction of the OSDS must meet all requirements of the National Standard Plumbing Code or other plumbing code adopted by DPNR/Division of Permits rules and regulations. See National Standard Plumbing Code (National Association of Plumbing – Heating – Cooling Contractors, 1996, or most recent update).

(4) Conventional Septic System Design Criteria and Requirements

a. A septic or treatment tank must be pumped at least once every five years by a licensed septic tank cleaner.

b. No permits will be issued for a septic system with a sewerage flow of more than 1000 gallons per day (gpd), or for flows that are other than domestic in composition, except for a constructed wetland system.

c. Community or cluster systems serving more than one dwelling must not exceed 1000 gpd sewerage flow, unless a constructed wetland system is utilized.

d. If a disposal area is to be utilized, the approximate corners of the disposal area must be located in the field and clearly marked.

e. If a conventional OSDS is unsuitable for a site due to any limiting factor, then a constructed wetland or other alternative disposal system must be utilized.

f. If a conventional OSDS malfunctions and cannot be repaired to a condition that meets current OSDS standards, a replacement system must be installed. The replacement system must be either a constructed wetland disposal system design or other alternative
disposal system approved by DPNR. A replacement system application shall be considered an application for a new OSDS.

g. Wastewater from a septic tank must be discharged to an in-ground trench, bed or chamber; mound, sand filter or other discharge system. The disposal area and system must be constructed parallel to the ground contour and meet the requirements of the National Standard Plumbing Code or other plumbing code adopted by DPNR/Division of Permits rules and regulations. See National Standard Plumbing Code (National Association of Plumbing – Heating – Cooling Contractors, 1996, or most recent update).

(1) In-ground Trench Disposal Area Details
An In-ground Trench Disposal Area must be designed to a length as specified in Table 2 and according to the following criteria.
(a) Trenches must range in depth from 2 to 5 feet; the minimum required width is 24 inches.

(b) The trenches must be separated by a minimum of 6 feet and must not exceed 100 feet in length.

(c) A minimum of 12 inches of stone or other durable and insoluble material of uniform size, 1/2 to 2 1/2 inches in diameter must be placed in the bottom of the trench. Stone must be free of fines, dust, ashes and clay. The distribution line must be completely surrounded by the stone. The distribution line must be designed to uniformly disperse the wastewater throughout the entire trench length using one of the following methods:
   (i) Perforated distribution pipe must be installed and aligned so that the holes are located in the lower half of the pipe.

   (ii) A pressure distribution system that utilizes a small diameter pressure pipe.

(d) The stone must be completely covered with a minimum of 2 inches of compressed hay, 1 layer of approved non-woven filter fabric, or 1 inch of fiberglass insulation.

(e) Clean backfill, at least 12 inches in depth, must be carefully placed over the hay layer or approved substitute.

(f) An In-ground Trench Disposal Area must be located away from any paved area, driveway, roadway, well, other water supply or waterbody.
(2) In-ground Bed Disposal Area Details
An In-ground Bed Disposal Area must be designed to a size as specified in Table 2 and according to the following criteria.
(a) An In-ground Bed must range in depth from 2 to 5 feet.
(b) Maximum bed length must be 100 feet and a distance of two (2) times their width must separate multiple fields.
(c) Distribution lines must be installed a maximum of 5 feet from the bed's edge and at intervals of no more than 5 feet.
(d) A minimum of 12 inches of stone or other durable and insoluble material of uniform size, 1/2 to 2 1/2 inches in diameter must be placed in the bottom of the trench. Stone must be free of fines, dust, ashes and clay. The distribution system must be completely surrounded by the stone. The distribution system must be designed to uniformly disperse the wastewater throughout the entire bed area using one of the following methods.
   (i) Perforated distribution pipe must be installed and aligned so that the holes are located in the lower half of the pipe.
   (ii) A pressure distribution system that utilizes a small diameter pressure pipe.
(e) The stone must be completely covered with a minimum of 2 inches of compressed hay, 1 layer of approved non-woven filter fabric, or 1 inch of fiberglass insulation.
(f) Clean backfill, at least 12 inches in depth, must be carefully placed over the hay layer or approved substitute.
(g) An In-ground Bed Disposal Area must be located away from any paved area, driveway, roadway, well, other water supply or waterbody.

(3) In-ground Chamber Disposal Area Details
(a) Maximum allowable reductions in calculated disposal area are:
   (i) In-ground Trench Disposal Area: 40% of the trench length.
   (ii) In-ground Bed Disposal Area: 15% of the bed disposal area.
(b) Only chambers designed for H-20 wheel load are allowed for installation under driveways or parking areas.
(c) Chambers must be vented per manufacturer's specifications.
(d) The 12-inch stone layer and barrier material required for an In-ground Trench Disposal Area or an In-ground Bed Disposal Area may be eliminated with the use of an In-ground Chamber Disposal Area.
(e) A minimum of 12 inches of soil must cover the in-ground chamber.

(4) Mound Disposal Area Details
(a) All vegetation must be removed from the proposed disposal area and fill extension. The topsoil must not be stripped.

(b) The grade tolerance for the bottom of the disposal area and distribution line must be one inch per 100 feet.

(c) Fill must be free of foreign material, placed in 12-inch lifts, and lightly compacted. Fill must be sandy loam or coarser, be specified on the permit application and extend a minimum of 24 inches above the original ground surface.

(d) The finished grade of a mound disposal area must extend 5 feet beyond the edge of the disposal area and have a 3% slope. Beyond the 5-foot outer limit, the fill must be sloped at a uniform grade of no greater than 33% (3:1) to the original ground.

(e) The land adjacent to the mound disposal area must be graded to prevent surface water from accumulating or flowing across the mound disposal area.

(f) The finished mound disposal area and fill extension must be seeded or otherwise vegetated. Woody shrubs are not allowed on the mound disposal area.

(5) Sand Filter Details
(a) The filter area must be calculated by the methods in Table 2. Disposal of filter effluent must be by subsurface disposal or, where surface irrigation will be employed, the effluent must be disinfected after discharge from the sand filter and prior to use for irrigation.

(b) Filter Sand - The filter sand must be clean, coarse sand, passing a screen having four meshes per inch (U.S. Std. Sieve No. 3 1/2). The effective size of the sand must be between 0.3 mm (Sieve No. 50) and 0.6 mm (Sieve No. 30) and preferably be between 0.4 mm (Sieve No. 40) and 0.6 mm. The uniformity coefficient must be less than 4.0. Total organic matter and/or clay particles must not exceed 1%.
   • Effective Size = the screen size (opening) which passes no more than 10% of the dried sample.
   • Uniformity Coefficient = the screen size (opening) which passes 60% of the dried sample effective size.
(c) Crushed stone - Except for an open sand filter, clean, washed, crushed stone must surround underdrains and distribution pipes. All of the stone must pass a 1-1/2 inch screen and must be retained on a 1/2-inch screen.

(d) Design Details
(i) The treatment tank and dosing chamber pipes must uniformly distribute wastewater throughout the entire sand filter.

(ii) The effluent must be collected in underdrains and directed to a disinfection unit before final discharge. The disinfection unit must be regularly inspected and maintained by a DPNR-approved technician.

(iii) The property owner must have the effluent from the disinfection unit tested every six months for bacterial and fecal coliform counts and proper chlorine levels and must report the test results to DPNR.

(e) Construction Details for Buried Sand Filter
(i) General - Following site excavation, the bottom must be hand graded to remove any material that can puncture a plastic liner. The excavation must be backfilled with 2 inches of select fill or sand. If the excavation is in bedrock, 6 inches of select fill must be placed below the liner.

(ii) Filter Liner - The filter must be sealed by a liner on the bottom and sides to at least the height of the distribution piping. The liner may be a minimum of two layers seamless or sealed seam polyethylene, PVC, hyperlon or EPDM rubber at least 20 mils (0.5 millimeters) thick each. A minimum of 20 to 36 inches may be used as a liner.

(iii) Areas where piping passes through the liner must be thoroughly sealed and waterproofed.

(iv) Excess liner must not be folded over the top of the filter.

(v) Two inches of select fill or sand must be placed over the liner to prevent punctures. An eight-inch layer of washed gravel 1/2 to 1 1/2 inches in diameter must be placed over the select fill or sand.

(vi) The underdrain pipes must be centered in the 8 inch layer of gravel. A 15-inch wide layer of geotextile filter must be installed over each of the underdrain pipes.

(vii) A sand depth of 24 to 36 inches must be placed over the geotextile filter.

(viii) Eight inches or more of stone or other durable and insoluble material of uniform size, 3/4 to 2 1/2 inches in diameter must be placed on top of the sand. Stone must be free of fines, dust, ashes and clay. The distribution
The system must be completely surrounded by the stone and must be designed to uniformly disperse the wastewater throughout the entire mound area using one of the following methods.

(a) A perforated distribution pipe system that is installed and aligned so that the holes are located in the lower half of the pipe.

(b) A pressure distribution system that utilizes a small diameter pressure pipe.

(ix) The sand filter must be covered with 6 to 10 inches of loamy material and seeded with grass.

(x) Diversion dikes or ditches may be constructed to divert surface runoff.

(xi) Pipes outside of the sand filter must have a slope of 2.0% or more.

(f) Construction Details for Open (Free Access) Sand Filter

(i) General - The container for the sand filter must be constructed of reinforced concrete or other durable material approved by the Department. Container walls must be constructed to a sufficient height to prevent external surface water from entering the container.

(ii) The minimum thickness of concrete for the bottom and sides of the filter box must be 4 inches. A liner of seamless or sealed seam polyethylene, PVC, hyperlon or EPDM rubber consisting of a minimum of two layers that are at least 20 mils (0.5 millimeters) thick each may be used to waterproof the filter box.

(iii) The filter box must have a removable cover. The cover must be secured to prevent its unauthorized removal or being blown off by wind. A space of 12 to 24 inches must remain between the cover and the top of the sand filter surface.

(iv) The bottom of the filter box must be sloped to effect drainage into the underdrain pipe(s). The underdrain pipes must be centered in a 10-inch layer of gravel or stone between 1/2 to 1 1/2 inches in diameter. The perforated underdrain pipes must be 4 inches in diameter and slope between 0.5 % to 1.0 %. The upstream end of the underdrain pipe must be vented with a vertical pipe that ends above the filter surface but within the covered area. A 15-inch wide layer of geotextile fabric must be installed over each underdrain.

(v) A sand depth of 24 to 36 inches must be placed over the geotextile filter.

(vi) The distribution system must be designed so no scouring or erosion of the sand surface occurs.
(vii) Piping outside of the sand filter must have a minimum slope of 2.0%.
# TABLE 2 DESIGN MATRIX
## LIMITING FACTORS AND SIZING OF DISPOSAL AREA (1)

<table>
<thead>
<tr>
<th>Soil Group</th>
<th>Slope Factor (3)</th>
<th>Depth to Rock or Water Table (5)(6)</th>
<th>System Size (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&lt;24&quot;</td>
<td>24&quot; to 48&quot;</td>
<td>Inground</td>
</tr>
<tr>
<td></td>
<td>48&quot;</td>
<td></td>
<td>Mound</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Mound Basal</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sand Filter Buried</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sand Filter Open</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Wetland (2)</td>
</tr>
<tr>
<td>Volcanic A (0.45 g/d/sq.ft)</td>
<td>&lt;20% 20 to 30%</td>
<td>S, A, A, A, S, A</td>
<td>Bed Area: 3.2 x SF Trench Length: 1.1 x SF</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Bed Area: 1.5 x SF Trench Length: 0.6 x SF</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3.2 x SF or 5 ft. fill extension &amp; 3:1 sideslope, whichever is greater</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1.0 X SF</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.43 X SF</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.75</td>
</tr>
<tr>
<td>Volcanic B (0.2 g/d/sq.ft)</td>
<td>&lt;20% 20 to 30%</td>
<td>S, A, A, A, S, A</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Bed Area: 1.5 x SF Trench Length: 0.6 x SF</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>5.0 x SF or 5 ft. fill extension &amp; 3:1 sideslope, whichever is greater</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>1.0 X SF</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>0.43 X SF</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>0.75</td>
</tr>
<tr>
<td>Calcareous (0.45 g/d/sq.ft)</td>
<td>&lt;20% 20 to 30%</td>
<td>S, A, A, A, S, A</td>
<td>Bed Area: 3.2 x SF Trench Length: 1.1 x SF</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Bed Area: 1.5 x SF Trench Length: 0.6 x SF</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3.2 x SF or 5 ft. fill extension &amp; 3:1 sideslope, whichever is greater</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>1.0 X SF</td>
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<td></td>
<td></td>
<td></td>
<td>0.43 X SF</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>0.75</td>
</tr>
<tr>
<td>Alluvial A (0.45 g/d/sq.ft)</td>
<td>&lt;20% 20 to 30%</td>
<td>S, A, A, A, S, A</td>
<td>Bed Area: 3.2 x SF Trench Length: 1.1 x SF</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Bed Area: 1.5 x SF Trench Length: 0.6 x SF</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>3.2 x SF or 5 ft. fill extension &amp; 3:1 sideslope, whichever is greater</td>
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<td></td>
<td>1.0 X SF</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>0.43 X SF</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.75</td>
</tr>
<tr>
<td>Alluvial B (0.2 g/d/sq.ft)</td>
<td>&lt;20% 20 to 30%</td>
<td>S, A, A, A, A, S, A</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Bed Area: 1.5 x SF Trench Length: 0.6 x SF</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3.2 x SF or 5 ft. fill extension &amp; 3:1 sideslope, whichever is greater</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1.0 X SF</td>
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<tr>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
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<td>0.75</td>
</tr>
<tr>
<td>Other Soils</td>
<td>All</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NA</td>
<td>NA</td>
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<tr>
<td></td>
<td></td>
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<td>NA</td>
<td>NA</td>
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<tr>
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<td></td>
<td>NA</td>
<td>1.0 X SF</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>0.43 X SF</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>0.75</td>
</tr>
</tbody>
</table>

### TYPE OF SYSTEM ALLOWED
- A = Alternative OSDS - Constructed Wetland variety.
- I = Inground system: Leach beds or trenches with system bottom a minimum of 24" above bedrock. Chamber size minimum is 60% of trench length or 85% of bed area.
- M = Mound system: Leach beds or trenches constructed in sandy loam or coarser sand fill with the system bottom a minimum of 36" above bedrock.
- S = Sand filter with chlorinated discharge or irrigation system disposal.
- NA = Not allowed
- SF = Sewerage flow (see Section 910-1E.3 in these CZM rules and regulations or section 3.2 in the Handbook).

### NOTES:
1. The sizing for beds, mounds and sand filters is in square feet, and for trenches it is in feet.
2. Wetland cell size is 0.75 cubic feet per gallon of septic tank.
3. Slope limit does not apply to wetland systems.
4. Trench width minimum is 24 inches.
5. Rock means solid or fractured rock.
6. Measured from the original ground surface.
(5) Holding Tank System and Holding Tank
a. Holding Tank System
On or after the effective date of this subsection no holding tank system will be permitted.

b. Holding Tank
On or after the effective date of this subsection a holding tank will be permitted only under the following conditions:
(1) As a temporary replacement of an existing failed system when no other means of disposal is possible, and
(2) when connection to a public sewer system or an OSDS is made within one year of the permit's approval.

c. A holding tank permit is valid for only one year and is not subject to renewal.

d. A copy of a signed contract between a licensed septic tank cleaner and the applicant for a holding tank permit must accompany an application for a holding tank. The contract must identify one or more DPNR approved sites to which the sewage will be hauled.

e. Holding tanks must be waterproofed and be fitted with an audio and visual warning device that indicates when the tank is three-quarters (3/4) full and requires pumping.

f. The owner of the property on which a holding tank has been installed must retain all receipts for pumping services and must submit copies of the receipts to DPNR on a quarterly basis.

(6) Abandoned Septic or Holding Tanks
An abandoned septic or holding tank must be disconnected and either filled with soil or be removed from the property.

(7) Seepage Pits, Boreholes and Cesspools
Seepage pits, boreholes and cesspools for the disposal of septic tank or aeration tank effluent are not allowed.

(8) Graywater System
a. The graywater system must not connect to any potable water system and must not result in any surfacing of graywater.

b. The graywater system must accept all graywater connected to the OSDS.

c. The graywater system must have it’s own septic tank. The graywater septic tank can be no smaller than 65% the size of the septic tank required for the entire OSDS.

d. The minimum setback requirements for a graywater system are as follows:
### TABLE 3
MINIMUM SETBACK REQUIREMENTS FOR GRAYWATER SYSTEMS

<table>
<thead>
<tr>
<th>DISTANCE IN FEET BETWEEN</th>
<th>HOLDING TANK</th>
<th>IRRIGATION LINE</th>
</tr>
</thead>
<tbody>
<tr>
<td>DWELLINGS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PROPERTY LINE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upslope &amp; Sideslope (1)</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Downslope</td>
<td>5</td>
<td>15</td>
</tr>
<tr>
<td>POTABLE WATER SUPPLY (2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upslope</td>
<td>50 (3)</td>
<td>50 (3)</td>
</tr>
<tr>
<td>Downslope</td>
<td>50</td>
<td>100</td>
</tr>
<tr>
<td>WETLANDS (5)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OSDS FIELD (4)</td>
<td>5</td>
<td>10</td>
</tr>
</tbody>
</table>

**NOTES:**
(1) Downslope is perpendicular to slope of land. Sideslope is parallel to slope of land.
(2) Includes cisterns and wells
(3) For cisterns, may be reduced to 10' if top of tank or irrigation pipe is below bottom of cistern elevation.
(4) Measured from toe of slope on mound system and sand filter.
(5) Coastal wetlands only, measured from the mean high tide line or the landward edge of mangrove trees, whichever is greater.

e. The sewerage flow for the graywater system must be calculated using the following parameters:
   (1) Showers, bathtubs, kitchen sinks, dishwashers and wash basins – 40 gpd per bedroom,
   (2) Laundry facilities – 20 gpd per bedroom.

f. The required total length for subsurface irrigation lines must be 1.7 times the sewerage flow.

g. All other specifications must meet any applicable requirements of the National Standard Plumbing Code, or other plumbing code adopted by DPNR/Division of Permits rules and regulations, whichever is higher. See National Standard Plumbing Code (National Association of Plumbing – Heating – Cooling Contractors, 1996, or most recent update).

(9) Alternative Toilets
   a. Blackwaste may be disposed in an alternative toilet. Chemical toilets are not permitted.
   b. Alternative toilets must be installed, maintained, repaired and replaced according to these rules and regulations, DPNR/Division of Permits rules and regulations, or the manufacturer's recommendations.

(10) Experimental Systems
   a. An application for an experimental system must:
      (1) Demonstrate that a suitable backup system can be installed in the event the
experimental system malfunctions,
(2) Supply documentation of the theory and applied research that supports the experimental system, and
(3) Include a monitoring plan for the installation and use of the experimental system.

b. Maintenance and Operation
(1) Applicants must provide DPNR with documents as proof that they have obtained training from the experimental systems' manufacturer and are qualified to operate and maintain the experimental system, or
(2) Applicants must provide DPNR with documents as proof that a contractor that has obtained training from the experimental system's manufacturer and is qualified to operate and maintain the experimental system has been contracted to maintain the experimental system. Copies of all maintenance contracts must be submitted to DPNR.

(11) Alternative OSDS Design Criteria and Requirements
a. Alternative OSDS will be permitted only for domestic wastewater flows.

b. Septic tanks utilized in this system must meet size requirements of section 910-1(e)(3). Septic tanks with a liquid capacity of 1000 gallons must be not less than two chamber tanks. Septic tanks with a liquid capacity greater than 1000 gallons must be three chamber tanks. Existing septic tanks must be retrofitted to have three chambers when the OSDS is converted to the system in this section.

c. Stormwater runoff must not enter wetland cells. Drainage from wetland cells must not reach any domestic water supply.

d. The wetland cells must be constructed parallel to the ground contour.

e. The wetland cells must be constructed to facilitate gravity flow through the system.

f. Wetland cells must have a minimum of three four-inch (4”), perforated inspection tubes available for the taking of effluent samples. Inspection tubes must be capped and placed in the beginning, middle and end of the wetland cell system.

g. Wetland cells must be able to be emptied by submersible pump, gravity drains or other approved method.

h. The total volume of the wetland cells must provide at least 0.75 cubic feet for each gallon of septic tank capacity. The width and depth of the wetland cell (trench or concrete trough) must be 2 feet or more.

i. The floor and walls of all wetland cells must be impervious. If impervious liners are used, they must be unpunctured and must be inspected prior to and during filling by
j. The bottom layer of material must consist of clean, washed rock or gravel from 1 inch to 3 inches in diameter and must rise no closer than 8 inches from the top of the cell.

k. The rock or gravel must be completely covered by a pervious fabric separator.

l. The effluent in the wetland cells must be maintained at least 1” below the pervious fabric separator.

m. The pervious fabric separator must be woven tightly enough to prevent soil particles from entering the gravel bed.

n. Six inches of soils with a low clay content or a high loam or sand content or washed pea gravel must be carefully placed over the fabric separator.

o. Any plants utilized in this system must have a well-established root system and must be firmly rooted prior to commencing system operation.

p. A Minor CZM Permit and all required Building and Plumbing Permits must be obtained prior to increasing the septic tank capacities and the size or number of wetland cells.

q. The requirements of the Zoning Code must be met prior to increasing the septic tank capacities and the size or number of wetland cells. See Zoning and Subdivision Law V.I. Code Annot. tit. 29 §§ 221 et seq.

(12) Cluster or Community System Maintenance/Ownership Agreement

a. Each permittee on a cluster system must be a party to a legally binding agreement regarding ownership, service, and maintenance of the cluster system. The agreement must:

   (1) Be legally binding on all parties and ensure each owner of a unit that uses the cluster system for either treatment or disposal, or both, is a party to the agreement;
   (2) Allow all permittees free access and use of the system;
   (3) Provide a reliable management structure for performing system service, maintenance, and inspection;
   (4) Provide a plan for apportioning and collecting all costs associated with using and maintaining the system;
   (5) State that all parties to the agreement are jointly and severally responsible for the system's proper maintenance and functioning.

b. The application for a cluster system must include a certified copy of an affidavit that has been duly recorded with the Office of the Recorder of Deeds for the district in which the real property is located. The affidavit must state that the property must not be transferred to a new owner without the new owner being advised that the property is part of a cluster
system and that the new owner must become a party to the Maintenance/Ownership Agreement described in part a, this subsection. This affidavit must be added to the real property deed on which the cluster system is located and must be added to the real property deed of each permittee.
SECTION 3. These amendments to the rules and regulations of the 1978 Virgin Islands Coastal Zone Management Act were reviewed at public hearings on:

04 December 2000
Date
Chairman, St. Thomas CZM Commission

15 March 2001
Date
Chairman, St. John CZM Commission

16 October 2000
Date
Chairman, St. Croix CZM Commission

These amendments to the rules and regulations of the 1978 Virgin Islands Coastal Zone Management Act were approved by the Virgin Islands Coastal Zone Management Commission on:

21 September 2001
Date
Chairman, Virgin Islands CZM Commission

SECTION 4. I approve of these amendments to the rules and regulations of the 1978 Virgin Islands Coastal Zone Management Act and submit them for your approval.

Date
Commissioner
Department of Planning and Natural Resources

SECTION 5. Pursuant to the powers vested in me by Section II of the Revised Organic Act of 1954 and by Title 3, Section 913, V. I. Code, the above Rules and Regulations are approved.

Date
Governor
United States Virgin Islands
CERTIFICATION

By his signature hereon, the Governor of the Virgin Islands certifies, in accordance with the provisions of V.I. Code Annot. tit. 3, section 938, that compelling circumstances and the public interest requires the amendments to the Virgin Islands Rules and Regulations contained in Section I above become effective on this 30th day of November, 2001, without the lengthy delay of prior publication.

Date:________

Charles W. Turnbull, Governor
United States Virgin Islands