Lake Anna Shoreline
Packet for Land Disturbance - 10,000 Square Feet
Home Construction – Updated August 30, 2017

This packet is used for:
Activities on properties adjacent to the Lake Anna Shoreline:
- Construction of a single-family home
- Land disturbance of 10,000 square feet or more

The Shoreline Packet for Land Disturbance has the following items:
- Lake Anna Shoreline Checklist for Land Disturbance
- Requirements for Site Plan Approval
- Copy of Lake Anna Shoreline Use and Design Standards, as amended 06/15/2015
- Agreement to Maintain Permanent Shoreline Measure (maintenance agreement)
- Agreement In Lieu of an Erosion and Sediment Control Plan
- Infiltration Trench Memorandum
- Virginia Erosion and Sediment Control Minimum Standards

The applicant must submit the following items for approval:
- Signed and completed Development Permit: Zoning and Building
- Signed and completed Lake Anna Shoreline Checklist for Land Disturbance
- Site plan that follows all the requirements listed in this packet
- Agreement in Lieu form signed by owner and by Responsible Land Disturber
- Signed, completed and notarized Agreement to Maintain Permanent Shoreline Measure
  - Dominion Virginia Power’s signature is required on site plan and Agreement to Maintain ONLY when the measure is located on their shoreline easement
- A receipt from the Clerk’s Office showing that the Agreement to Maintain Permanent Shoreline Measure and site plan were recorded with the deed

After submission:
- Planning staff will review the site plan, checklist and forms for zoning approval
- The Thomas Jefferson Soil and Water Conservation District (TJSWCD) will review any alternative shoreline protection measures or shoreline stabilization plans
- For home or building construction
  - The building code staff will review the construction plan and forms for building approval
  - The applicant will be issued a building permit to begin work
- The applicant should receive an extra copy of the Agreement in Lieu form and should refer to this information when installing the required shoreline protection measures
- Inspection and Code Enforcement staff will confirm code compliance once work begins
- The last step is final inspection of any building construction and the permanent shoreline protection measures

The timeframe for completing the shoreline review for land disturbance may be at least two weeks.
Lake Anna Shoreline Checklist:  
For Land Disturbance – 10,000 Square Feet  
Home Construction – Updated 06/19/2015

I. Project and Review Information

Type of Project: ____________________________________________________________

Current Zoning: ___________________________ Tax Map Number: _________________________

Name and Address of Owner: _______________________________________________________

Name and Address of Developer (if different): ____________________________________________

Date Submitted: __________ Subdivision (if applicable): ________________________________

This checklist must be completed, signed and submitted with the application. The information contained in this checklist reflects the contents of the Shoreline Ordinance as of June 15, 2015. The applicant is responsible for insuring that no revisions to the Ordinance have occurred since preparation of this document.

II. Tentative approvals obtained

Step 1: ___ Louisa County Zoning Administrator
Step 2: ___ Thomas Jefferson Soil and Water Conservation District (For Alternative Measures)
Step 3: ___ Louisa County Building Official

III. Checklist

( ✓ = Present & adequate, N/A = Not applicable)

Erosion and Sediment Control

___ Any shoreline that is disturbed shall be permanently stabilized
___ Construction of a single family home along the Lake Anna waterfront shall require a Lake Anna Shoreline Agreement in Lieu of an Erosion & Sediment Control Plan and control methods approved by the Thomas Jefferson Soil & Water Conservation District
___ Applicant must sign and have notarized Agreement to Maintain Shoreline Measure Permanent Control Methods outlined in Agreement in Lieu

- Check one option and all that apply -

Option 1:

___ 100-foot wide natural, forested buffer along the shoreline
___ Indigenous plant life
___ Ground cover, shrub and tree canopy layers with plantings as outlined in Agreement in Lieu
Option 2:
--- **On shoreline slopes of 3 to 15 percent,** one of the following control measures, depending on individual site and/or owner preference:
--- A *vegetated berm and swale.* The berm must be a minimum of 18 inches in height with compacted soil and a minimum base width of 4.5 feet. The swale must be at least 1 foot deep and 2 feet in width. The berm and swale shall be contoured with the property. Swales shall be designed to carry run-off at a minimal slope to a rock outlet(s) located at a defined low point(s)
--- A *mulch bed.*
--- A *dry well/French drain.*
--- A *rain garden.*
--- *Other measure.*

*Note: Mulch bed, dry well, rain garden, or other control measure require approval letter from Thomas Jefferson Soil and Water Conservation District.*

Option 3:
--- **On shoreline slopes greater than 15 percent,** one of the control measures used for 3 to 15 percent slopes along with a 25 foot undisturbed, vegetated area along the shoreline, measured horizontally from water’s edge. Plantings in the vegetated area shall follow the guidelines for a 100-foot buffer listed in the *Agreement in Lieu.*

Exceptions:
--- If the site has an average slope of less than 3%, then no permanent measures are required

IV. Location of Permanent Measures
--- Entirely on private property
--- Entirely or partially on Dominion Virginia Power shoreline easement

*The standards established by Dominion shall govern dredging, excavation, and filling along with other applicable federal, state and local codes, unless otherwise noted*

V. Read and Sign

In representing the above referenced property owner(s), submitting this shoreline development plan for approval, I hereby state that, to the best of my knowledge, the attached plan contains all information required by this checklist.

<table>
<thead>
<tr>
<th>Signature of person completing checklist</th>
<th>Date</th>
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<tr>
<th>Printed Name</th>
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Requirements for Site Plan Approval
For Land Disturbance over 10,000 Square Feet and Home Construction

*The plan must meet all the requirements listed below.*

__ The applicant must submit a plan that has the following information and is legibly drawn on a *single sheet*:
__ There must be 2 copies of the plan, no larger than 11 inches by 17 inches, which shows compliance with the shoreline standards

*The plan must have the following information to be approved*

**Format**
__ Drawn to *scale* with all structures and features depicted proportionately

**Land**
__ Tax map number
__ Lot lines
__ Zoning
__ Setback lines
__ Acreage
__ Area of Dominion Power easement, clearly identified

**Land Disturbance**
__ Original contours (no greater than 5-foot intervals)
__ Proposed contours (no greater than 5-foot intervals)
__ Limits of disturbance and square feet of disturbance
__ Show and label the permanent measures used for the site (methods listed in Agreement in Lieu and attachment)
__ Show and list details of permanent measure(s) — dimensions, outlets, plantings, etc. If measure is a berm and swale, applicant must show that measure(s) will comply with detailed specifications as depicted in the attachment to the Agreement in Lieu.
__ Show drainage areas and the direction of flow (runoff)
__ Include a note on the plan, stating that the erosion and sediment control/shoreline protection measures will conform to the requirements in the Agreement in Lieu and state the applicable requirements
__ For 100-foot or 25-foot natural forested buffer, photographs showing existing vegetation
__ For alternative measures, a letter from Thomas Jefferson Soil and Water Conservation District

**Structures**
__ Existing structures
__ Proposed structures
__ Labels of the length, height and width of all proposed structure

**Other comments**
- If the site plan lacks the above information, a letter of revision will be mailed to the applicant and staff will require an updated plan that meets the above standards
- Free hand drawings are *HIGHLY DISCOURAGED*
- The use of straightedges and rulers is *strongly encouraged*
- The use of computer drawing programs is optimal but not required
AGREEMENT IN LIEU OF AN EROSION AND SEDIMENT CONTROL PLAN FOR A SINGLE FAMILY RESIDENCE WITH SHORELINE PROPERTY ALONG LAKE ANNA

Subdivision: __________________________
Lot Number: ________________ Tax Map Parcel: __________________________
Owner(s): __________________________

In lieu of submission of an Erosion and Sediment Control Plan for development on this subdivision lot, I agree to comply with the requirements of the Virginia Erosion and Sediment Control Handbook, latest edition, and install erosion control measures in accordance with the Handbook standards and specifications in order to protect against transportation of soils from the property. I further agree to comply with any reasonable requirements determined necessary by employees of Louisa County, Virginia representing the Zoning Administrator. Such requirements shall be based on established conservation standards and shall represent the minimum practices necessary to provide adequate control of erosion and sedimentation on or resulting from this development.

As a minimum, all denuded areas on the lot shall be stabilized within seven (7) days of final grading with permanent vegetation or protective ground cover suitable for the time of year. Temporary soil stabilization shall be applied within seven (7) days to denuded areas that may not be at final grade, but will remain dormant (undisturbed) for no longer than 30 days.

As an owner of shoreline property along Lake Anna, I further agree to comply with the following standards to meet the intent of Supplemental Regulations, Lake Anna Shoreline Use and Design Standards (Article VII, Division 5, Sec. 86-544.2).

1. Any Dominion-owned land that is disturbed shall be permanently stabilized. Permanently stabilized vegetation is ground cover that is uniform, mature enough to survive, and will inhibit erosion. Sand beaches shall be permitted if they are properly retained.

2. “Control Methods” for protecting shoreline areas include the maintenance of a 100’ wide natural, forested buffer along the shoreline. If such a buffer does not currently exist, one will be allowed to regenerate naturally. Such regeneration may be enhanced with tree plantings. A natural, forested buffer, for the purposes of this section, is an undisturbed indigenous riparian forest with ground cover, shrub, and tree canopy layers.

3. “Alternative Control Methods” may also be used:

   The following slopes shall be calculated within the Dominion easement boundary as an average slope between a property’s boundary lines:

   0 – 15% slope: a vegetated diversion (18” minimum in height) with compacted soil and a minimum base width of 4.5 feet. This diversion shall consist of a berm and a swale and be contoured with the property. The swale shall be designed to carry run-off at a minimal slope to a rock outlet located at a defined low point. Vegetation on the diversion shall include native shrubs, with other non-invasive ornamental plantings as desired.

   >15%: the above specified diversion with a 25’ wide undisturbed, vegetated area along the shoreline, measured horizontally from the water’s edge.

   Applications of fertilizers and herbicides are prohibited within the berm, swale, and buffer areas. Insecticides are strongly discouraged.
Alternative control methods not listed above may be used pending review and approval by the Thomas Jefferson Soil & Water Conservation District.

All of the above-recommended control methods shall be maintained and repaired as necessary to remain permanently stabilized and remain in compliance with state and local erosion and sediment control regulations.

4. Shoreline erosion is exacerbated by wave action from boats on Lake Anna. Another cause of shoreline erosion, from the sheet flow of water across the land, is adequately addressed in the above section. Shoreline erosion not directly caused by land disturbance is not required to be stabilized, but is encouraged. Shoreline that is disturbed shall be permanently stabilized by one of the below recommended methods.

The use of non-structural, vegetated stabilization methods is strongly encouraged (see attachment for design for details).

These methods may include, but are not limited to —

- Coir Fiber Logs
- Tree Revetments
- Live Stakes
- Live Fascines
- Branch Packing

Structural methods are limited to rip-rap and bulkhead materials, underlain with geotextile fabrics, unless otherwise approved by the Thomas Jefferson Soil & Water Conservation District.

Technical guidance for complying with the Lake Anna Shoreline Use and Design Standards is available through the Thomas Jefferson Soil and Water Conservation District.

I understand that failure to comply with the above requirements within three (3) days following notice by the representatives of Louisa County could result in a citation of violation, and will require the submission and approval of an Erosion and Sediment Control Plan and posting of a performance bond as provided in Section 38-28 and 38-33 of the Louisa County Erosion and Sediment Control Ordinance.

I HEREBY GRANT THE COUNTY OF LOUISA THE RIGHT TO ENTER UPON THE SUBJECT PROPERTY PERIODICALLY TO ENSURE COMPLIANCE. THE CURRENT PROPERTY OWNER MUST SIGN THIS APPLICATION.

Signature of Landowner: 

Mailing Address: 

Date: 

Responsible Land Sturber (Print Name) 

Signature 

Date: 

Certificate Number/Expiration Date: 

COMMENTS 

_________________________________________ 

_________________________________________ 

_________________________________________ 

_________________________________________ 

_________________________________________ 

_________________________________________ 

_________________________________________
Berm and Swale (Minimum dimensions)
(See document “Berm and Level Spreader Construction,” available in the Louisa County Community Development Department office, for more on this measure)
Dry Well/French Drain
A dry well or French Drain is an excavated pit filled with clean stone typically at least 2 feet deep that is usually designed to collect and store runoff from rooftops or other relatively "clean" runoff. Runoff enters the dry well through an inflow pipe (such as a roof gutter downspout) and from surface infiltration. The water then infiltrates down through the subsoil rather than running over land. Usually a 4-inch diameter perforated drain pipe allows some runoff to exit to daylight at grade. The total contributing surface area for a dry well system should not be more than one acre.
Rain Garden (See Virginia Department of Forestry document “Rain Gardens Technical Guide,” available in the Community Development office, for more on this measure)

What a rain garden might look like when it's complete:
Mulch bed
A mulch bed, a common gardening and landscaping technique, can be useful as a shoreline protection measure if it is designed properly. Depending on the slope of a home site, it may be preferable to distribute mulch on a raised bed, with soil underneath. On sites with a minimal slope, a raised bed may not be necessary. A raised bed is typically at least 6 inches in height and has plantings on top, assuming there is sufficient soil underneath. Because the mulch and soil will settle over time, it's important to replenish these materials to ensure the mulch bed's function is not impaired. A silt fence should be installed and maintained until the cover on the mulch bed has been established.
Agreement to Maintain Permanent Shoreline Protection Measure

This agreement is made and entered into by and among the County of Louisa, Virginia and the subject property owner(s) _____________________________. This document is intended to set forth a framework for maintaining the permanent shoreline protection measure on the subject property, Tax Map ______________, illustrated on the attached site plan. The purpose of maintaining this permanent shoreline protection measure is to conform to the Louisa County Lake Anna Shoreline Use and Design Standards, Division 5, Article 7, §86-455.1(a)(1) of the Louisa County Code.

***Please note this form must be signed by all property owners, and should have original signatures.***

Louisa County shall not approve any clearing or disturbance to the permanent shoreline protection measure on the subject property, Tax Map ______________, pursuant to the Lake Anna Shoreline Use and Design Standards, Division 5 Article 7, §86-455.1(a)(1) of the Louisa County Code.

Louisa County Representative: ____________________________ County Representative
City/County of ____________________________
Commonwealth/State of ____________________________

Sworn to and subscribed before me this ______ day of ____________________________, 20___, by ____________________________

Witness my hand and official seal.

My Commission Expires ____________________________  Notary Public

Property Owner, Tax Map ______________ - shall not clear or disturb the permanent shoreline protection measure on the subject property, unless the County of Louisa deems these activities appropriate or necessary. The subject property owner is solely responsible for maintaining the permanent shoreline protection measure. The property owner shall replace or repair the permanent shoreline protection measure, in cases of natural erosion, flooding, or permanent changes in the normal lake level. This agreement shall be recorded in the Office of the Clerk of the Louisa County Circuit Court. The County of Louisa must approve any amendments or replacements to the permanent shoreline protection measure.

Property Owner(s): ____________________________
Current Owner
City/County of ____________________________
Commonwealth/State of ____________________________

Sworn to and subscribed before me this ______ day of ____________________________, 20___, by ____________________________

Witness my hand and official seal.

My Commission Expires ____________________________  Notary Public
If the permanent shoreline protection measure is located within the Dominion shoreline, adjacent to the subject property, Tax Map ___________, then Virginia Electric and Power Company (Dominion Virginia Power) enters into this agreement. Under no circumstances shall this agreement be interpreted or applied to hinder or interfere with the interests of Dominion Virginia Power or with the safe and reliable ownership, operation and maintenance of its North Anna Power Station. Dominion Virginia Power shall not be held accountable for maintaining the permanent shoreline protection measure.

**Dominion Virginia Power** shall use reasonable efforts to limit the clearing of or significant disturbance to the permanent shoreline protection measure, adjacent to Tax Map ___________, unless Dominion Virginia Power, in its sole discretion, determines that such limitations upon clearance or significant disturbance hinder or interfere with its interests or with the safe and reliable ownership, operation and maintenance of the North Anna Power Station.

Dominion Representative: ____________________________ Reservoir Coordinator

City/County of ____________________________
Commonwealth/State of ____________________________

Sworn to and subscribed before me this _____ day of ________________, 20__, by

______________________________

Witness my hand and official seal.

______________________________ Notary Public

______________________________ My Commission Expires
DIVISION 5. - LAKE ANNA SHORELINE USE AND DESIGN STANDARDS

Sec. 86-455. - Statement of intent; policy guidance.

The intent of this division is to encourage the public's health, safety, and welfare with equitable and enforceable conditions for development along the Lake Anna shoreline, including the w-Waste Heat Treatment facility (WHTF). These use and design standards are intended to protect the shoreland, enhance public safety, and advance the public's general welfare and quality of life. The Lake Anna shoreline use and design standards are adopted under the general provisions of the zoning ordinance.

Unless specifically stated otherwise, the provisions set forth in this division do not apply to structures built, or otherwise approve by the County or Dominion, prior to the adoption of these standards. Non-conforming structures shall be exempt from these standards unless the structure is expanded or if the structure is replaced more than two years after being removed. A structure for the purposes of this division includes, but is not limited to, fixed or floating docks, piers, boardwalks, slips, accessory buildings, or other types of development on, or attached to, Dominion's property.

The standards set forth in this division are mandatory unless a waiver is granted. Applications that meet all of the ordinance standards will be reviewed administratively by staff. Applications should include site plans that meet the criteria included in the "Lake Anna Shoreline Site Plan Requirements Checklist", to include an approval statement by Dominion for proposed development on Dominion's shoreland or shoreline. Where criteria are not clearly illustrated on a site plan, a survey shall be required to demonstrate compliance with the ordinance, or in order to process special exception requests. If a waiver is requested, then the application will be reviewed by staff (per section 86-22 of this ordinance). If a waiver is denied, applicants may resubmit a revised waiver at any time or appeal staff's decision to the board of supervisors.

(Res. of 12-5-05(05.162); Res. of 4-2-07(07.058); Res. of 6-7-10(10.134); Res. of 6-6-12(2012-138))
(Res. of 12-5-05(05.162); Res. of 4-2-07(07.058))

Sec. 86-455.1. - Use and design standards.

(a) Shoreland Protection / Erosion and Sediment Control. This section is intended to mitigate the impacts to the shoreland of residential and commercial development (including common areas) along the Lake Anna shoreland due to construction activities.

These standards address two main types of erosion, upland erosion and shoreline erosion. These measures are intended to mitigate the impacts of land disturbance above and beyond the scope of the Louisa County Erosion and Sediment Control Ordinance (Code of Louisa County, VA, chapter 38, article II). The measures also recommend approved methods of shoreline stabilization.

For the purposes of this ordinance, land disturbance is defined consistent with the definition provided in the Erosion and Sediment Control Ordinance: any land change which may result in soil erosion from water or wind and the movement of sediments into state waters or onto lands in the commonwealth, including, but not limited to, clearing, grading, excavating, transporting and filling of land.

(1) Upland erosion. Land disturbances over 10,000 square feet (SF) along the Lake Anna waterfront shall require a Lake Anna shoreline agreement in lieu of an erosion and sediment control plan or an erosion and sediment control plan that implements one of the recommended methods, or equivalent measures, as approved by the Thomas Jefferson Soil and Water Conservation District (TJSWCD). The agreement in lieu requires the implementation of one of several recommended methods of shoreline protection measures depending on the individual site or owner preference (where it would be more environmentally beneficial).

Any shoreland that is disturbed shall be permanently stabilized. Permanently stabilized vegetation is ground cover that is uniform, mature enough to survive, and will inhibit erosion. Sand beaches shall be permitted if they are properly retained.
Shoreland protection measures may include a 100-foot wide natural, forested buffer along the shoreline. A natural, forested buffer for the purposes of this section is an indigenous, undisturbed, riparian forest with ground cover, shrub, and tree canopy layers.

Alternative protection measures may also be used. The following slopes shall be calculated within the Dominion property boundary as an average slope between a property's boundary lines. The specifications outlined below are a summary of those outlined in the Lake Anna shoreline agreement in lieu.

3—15 percent = a vegetated diversion (18 inches minimum in height) with compacted soil and a minimum base width of 4.5 feet. This diversion shall consist of a berm and a swale and be contoured with the property. The swale shall be designed to carry flows at a minimal slope to a rock outlet located at a defined low point. Vegetation on the diversion should include native grasses or shrubs, with other non-invasive ornamental plantings as desired;

>15 percent = the above specified diversion with a 25-foot wide undisturbed, vegetated area along the shoreline, measured horizontally from the water's edge (not to include pathway to lake structures).

Alternate control methods not listed above may be used pending review and approval by the Thomas Jefferson Soil and Water Conservation District.

Applications of fertilizers and herbicides are prohibited within the berm, swale, and buffer areas, and within 25 feet of the shoreline. Insecticides are strongly discouraged.

All of the above recommended control methods shall be maintained and repaired as necessary to remain permanently stabilized and in compliance with state and local erosion and sediment control regulations.

(2) Shoreline stabilization. Shoreline erosion is exacerbated by wave action from boats on Lake Anna. Another cause of shoreline erosion, from the sheet flow of water across the land, is adequately addressed in the above section. Shoreline erosion not directly caused by land disturbance is not required to be stabilized, but is encouraged. Shoreline that is disturbed shall be permanently stabilized by one of the below recommended methods.

The use of non-structural, vegetated stabilization methods is strongly encouraged per the Lake Anna shoreline agreement in lieu. Structural methods are limited to rip-rap and bulkhead materials with geotextile fabrics unless otherwise approved by the Thomas Jefferson Soil and Water Conservation District.

Technical guidance for complying with the Lake Anna Shoreline Use and Design Standards is available through the Thomas Jefferson Soil and Water Conservation District.

A violation of this section shall be subject to the penalties set forth in the Code of Louisa County, VA, section 38-37, including, but not limited to, a $1,000.00 fine per violation (each day of violation).

(b) Safe navigation.

(1) Water access entrances and travel-ways into coves shall be at least 30 feet in width at navigable depth until the cove reaches a width of 90 feet or less. The one-third rule shall be the determining factor in any cove less than 90 feet in width. This standard applies to all choke points leading to, and within, the cove. A choke point is a narrowing of the cove that boats navigate through. Staff may grant a waiver (per section 86-22 of this ordinance) to this standard in extenuating circumstances due to water depth, topography, irregular shoreline, narrowness of cove, existing structures, and other existing conditions.

(2) The navigable channel shall be clearly identified during site plan review.
(3) Structures shall not protrude into the water from the shoreline further than the following maximum lengths unless otherwise approved by a waiver or special exception.
   a. **Agricultural/residential district uses.** Structures shall not protrude more than one-third of the distance across the water from the shoreline, to a maximum of 150 feet. Structures proposed to exceed this limit require approval of a waiver or special exception. The travel-way must be a minimum of 30 feet consistent with the standards of subsection 86-455.2(b)(1) above.
   b. **Commercial district and common area uses.** Structures shall not protrude more than one-third of the distance across the water from the shoreline, to a maximum of 150 feet. Structures proposed to exceed this limit require approval of a waiver or special exception. The travel-way must be a minimum of 50 feet whenever serving common area launch facilities or commercial properties.
   c. **Resort development and planned unit development uses.** The length of lake structures shall be included as part of the master plan submitted during the rezoning process. The standards set forth in this section should be used in the development of the master plan requirements regulating lake structures.

   For the purposes of this section, the term shoreline shall refer to the boundary line, at normal pool, between land and the water.

(4) In order to identify the protruding outline of all lake structures, existing and new, two-inch minimum diameter reflectors shall be affixed along the sides of the structure at intervals of ten feet. Reflectors shall be within one foot of both sides of each lakeside corner. Reflectors shall be placed no more than two feet above normal pool level (250 feet above mean sea level for the lake, 251 feet above mean sea level for the WHTF).

   All lake structures shall be in full compliance with this safety standard by November 1, 2007.

(5) If lake structures utilize light fixtures the following standards are recommended:
   a. Lights should have initial output less than 2,000 lumens (equivalent to 120 watt incandescent bulbs), or should be fitted with opaque shields to prevent direct visibility of the lamp to persons more than 50 feet beyond the structure.
   b. Light specifications should meet International Dark-Sky Association (IDA) standards for either landscape or wall-mount style fixtures, or equivalent. Landscape fixtures should be under 2,000 lumens and partially shielded. Wall-mount fixtures should be fully shielded.
   c. Solar lighting is encouraged.

(6) The minimum travel-way between groups of dock slips shall be two times the length of the adjacent slip; if two slips are different sizes, the larger length shall be used. A fairway is an unobstructed access channel for entry to or exit from a moorage area.

(7) **Common areas.**
   a. Common area ramps shall be constructed of reinforced concrete with a minimum thickness of six inches, and shall be a minimum distance of 75 feet from designated swimming areas.
   b. Common areas are required to have a dry hydrant in a location to be determined on the site plan.
   c. Common area boat ramps shall be placed or positioned to minimize wave interference from boats passing nearby through high concentration navigation choke points as determined by the county during site plan review (i.e., cove entrances, narrow channels, sharp bends, bridges, etc.).

(c) **Neighborhoods.**

(1) A sign shall be posted at common area and commercial pier entrances summarizing alcohol and boating regulations in the state.
(2) All site plans for new development must show shoreline building zones and extension lines to 150 feet into the water or one third of the cove, whichever is less.

(3) Structures.
   a. District uses.
      1. Agricultural/residential. The following is the maximum square footage (SF) permitted, excluding the area from land to the structure:*  
         (i) 0—54 linear feet of waterfront = no slip or piers**  
         (ii) 55—99 linear feet of waterfront = 10 SF per linear foot of waterfront  
         (iii) 100—300 linear feet of waterfront = 2,000 SF  
         (iv) Over 300 linear feet of waterfront = 3,000 SF  
         * Walkways shall not exceed 5 feet in width  
         ** Parcels in existence prior to April 2, 2007 shall be limited to no more than 550 SF.

   2. Commercial and common areas. The following is the maximum square footage (SF) permitted over water:
      (i) 0—99 linear feet of waterfront = 90 SF per linear foot of shoreline  
      (ii) 100—500 linear feet of waterfront = 75 SF per linear foot of shoreline  
      (iii) > 500 linear feet of waterfront = 55 SF per linear foot of shoreline

   3. Resort development and planned. If lake structures are included as part of the proffered conditions during the rezoning process, the maximum square footage shall be included. The standards set forth in this section should be used in the development of the proffered conditions regulating lake structures.

   b. The maximum height of structures on land within the Dominion easement in all zoning districts shall be 20 feet for flat roofs and 28 feet for pitched roofs as measured from the lowest finished grade. Weathervanes and telecommunication antennas do not count against the structure's height.

      The maximum height of structures over the water within the Dominion easement in all zoning districts shall be 20 feet for flat roofs and 28 feet for pitched roofs as measured from normal lake level (250 feet above mean sea level for the lake, 251 feet above mean sea level for the WHTF). Weathervanes and telecommunication antennas do not count against the structure's height.

   c. Waterfront construction may have a second story but it may not be enclosed. Screened areas are not considered to be enclosed. Maximum height limits shall apply.

      Structures that will exceed these standards shall require a waiver from staff. (per section 86-22 of this ordinance).

(4) Common areas.
   a. Restroom facilities are required in areas with structures for persons or watercraft for common areas with 25 or more lots. Restrooms are not allowed within the Dominion easement without their approval.

   b. All structures in a common area shall maintain a 100-foot side setback from residential and agricultural zoning districts (not part of the subdivision), and a 50-foot side setback from resort development, commercial, and industrial zoning districts.

   c. A 25-foot vegetative buffer between the common area and adjoining property owners (not part of the subdivision) shall be required. Buffers shall consist of evergreen vegetation, but may also
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include deciduous species. County staff may grant a special exception to this requirement on a case-by-case basis.

(5) Commercial areas.

a. A pump out station shall be required for commercial waterside operations if they introduce traffic to the lake.

b. Commercial slips are allowed one enclosed storage structure per slip that is a maximum of 50 square feet.

c. Any business engaged in fuel sales shall use United States Coast Guard (USCG) approved spill recovery systems.

(d) Dredging, excavation, and filling. The standards established by Dominion shall govern these activities along with other applicable federal, state, and local codes, unless otherwise noted in this section.

(Res. of 12-5-05(05.162); Res. of 4-2-07(07.058); Res. of 3-7-11(2011-69); Res. of 8-6-12(2012-138))
INfiltration Trenches:

Trenches must be positioned to intercept the runoff from the major impervious areas of the site (e.g. the house, garage, etc.). Runoff may be conveyed to the trench via overland flow (e.g. an “off-line” design), or may be piped directly into the trench (e.g. an “on-line” design). The trench design depends on the slope of the contributing drainage area. The following flow chart presents allowable trench details, and the specific detail drawings follow further below:

**Diagram:**

- **Slope of Contributing Drainage Area**
  - <15%
  - ≥15%

- **Online vs. Offline**
  - Online
  - Offline

- **Trench Design Options**
  - Gravel/Pea Gravel/etc. (4-6")*
  - Vegetated Topsoil (6" Max.)
  - Gravel/Pea Gravel/etc. (4-6")*
  - Vegetated Topsoil (6" Max.) on top of 4-6" Gravel/Pea Gravel/etc.
  - Gravel/Pea Gravel/etc. (4-6")*
  - Vegetated Topsoil (6" Max)
  - Gravel/Pea Gravel/etc. (4-5")*
  - Vegetated Topsoil (6" Max.) with 18" earthen berm on downhill side of trench

**Legend:**
- Online: Downspouts piped directly into trench
- Offline: Downspouts not piped directly into trench; stormwater is delivered to trench via overland flow
- *Preferred options marked with asterisk above

**Reference Numbers:**
- (A)
- (B)
- (C)
I. **On-Line Design:** For situations where the runoff from the major impervious areas will be piped directly into the proposed infiltration trench. A pre-treatment sump basin or other similar measures must be implemented to prevent debris from clogging the system.

(A) **Recommended Trench Detail (Not To Scale):**

- **Trench Covering Depths:**
  - Pea Gravel/Clean Stone: 4 ft
  - Topsoil: 6" max.

**Natural Ground**

- **Non-Woven Geotextile**
  - 4" (min.) Solid Pipe from Downspouts
  - Sand Filter 6-8" Deep
  - 2' Wide (Min.)
  - 4" (min.) Perforated Pipe Running Length of Trench

*Sand Filter may be replaced with non-woven geotextile fabric. Sand filter is recommended to extend longevity of trench.*

Recommended Overflow & Pre-Treatment Detail (Not To Scale):

Infiltration Trench
II. Off-Line Design: For situations where the runoff from the major impervious areas will naturally flow to the location of the proposed infiltration trench. Options (B) and (C) are presented below. See flow chart above for situations where each option may be used.

(B) Recommended Trench Detail

\[\text{Diagram of Trench Design (B)}\]

*Sand filter may be replaced with non-woven geotextile fabric. Sand filter is recommended to extend longevity of trench.*

(C) Recommended Trench Detail

\[\text{Diagram of Trench Design (C)}\]

*Sand filter may be replaced with non-woven geotextile fabric. Sand filter is recommended to extend longevity of trench.*

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Trench Size:
The trench width and depth shown in the details above are minimums. Trenches may be wider or deeper if needed to create more infiltration capacity. The trench length(s) will depend on the site topography and the capacity needed. Typical trench lengths vary from approximately 60 ft. to 240 ft. depending on topography, amount of proposed impervious area, and the infiltration rate of the soils.

Outlets:
The use of outlet pipes from the trench to daylight is discouraged for both on-line and off-line designs, as it concentrates runoff and also creates unnecessary expense. Most soils around Lake Anna have infiltration rates that are high enough such that structural outlets from the trench itself are not necessary. The minimum infiltration rate for this practice is 1/2 inch per hour.

For on-line designs, if site constraints do not allow for the recommended overflow above (located at the downspout before it goes underground) and an outlet inside the trench itself is needed, the outlet should consist of a 4” perforated pipe running the length of the trench connected to a 4” pipe that runs to daylight. Outlet protection should be provided at the daylight location, consisting of a minimum of 2’ wide by 2’ long x 1’ deep of VDOT #3 stone or larger.

Additional Design Criteria (NOT an inclusive list):
1. Building Setbacks: Trenches must be at least 10 feet down-gradient and 50 feet up-gradient from structures.
2. Well Setback: Trenches must be at least 100 feet from water supply wells.
3. Trench Elevation: Trenches should run along the contour and should be located at an elevation high enough such that the bottom of the trench is a minimum of 2 ft. above the water table (which is assumed to be the mean lake elevation of 250 ft.).

Note that the Thomas Jefferson Soil and Conservation District reviews alternative Lake Anna Shoreline Management Plans is to ensure that the practices provide the required minimum level of infiltration, and does not necessarily mean that trenches are sized or positioned according to civil engineering principles. Infiltration practices should be designed by a qualified professional.

Contact Raleigh Coleman us at 540-967-5940 or Raleigh.cooper@tjswcd.org with any questions or concerns.
Virginia’s 19 Minimum Standards
For Erosion & Sediment Control

Minimum Standard 1 – Permanent or temporary soil stabilization shall be applied to denuded areas within seven days after final grade is reached on any portion of the site. Temporary soil stabilization shall be applied within seven days to denuded areas that may not be at final grade but will remain dormant for longer than 30 days. Permanent stabilization shall be applied to areas that are to be left dormant for more than one year.

Minimum Standard 2 – During construction of the project, soil stockpiles and borrow areas shall be stabilized or protected with sediment trapping measures. The applicant is responsible for the temporary protection and permanent stabilization of all soil stockpiles on site as well as borrow areas and soil intentionally transported from the project site.

Minimum Standard 3 – A permanent vegetative cover shall be established on denuded areas not otherwise permanently stabilized. Permanent vegetation shall not be considered established until a ground cover is achieved that is uniform, mature enough to survive and will inhibit erosion.

Minimum Standard 4 – Sediment basins and traps, perimeter dikes, sediment barriers and other measures intended to trap sediment shall be constructed as a first step in any land-disturbing activity and shall be made functional before upslope land disturbance takes place.

Minimum Standard 5 – Stabilization measures shall be applied to earthen structures such as dams, dikes and diversions immediately after installation.

Minimum Standard 6 – Sediment traps and sediment basins shall be designed and constructed based upon the total drainage area to be served by the trap or basin.

A. The minimum storage capacity of a sediment trap shall be 134 cubic yards per acre of drainage area and the trap shall only control drainage areas less than three acres.

B. Surface runoff from disturbed areas that is comprised of flow from drainage areas greater than or equal to three acres shall be controlled by a sediment basin. The minimum storage capacity of a sediment basin shall be 134 cubic yards per acre of drainage area. The outfall system shall, at a minimum, maintain the structural integrity of the basin during a 25 year storm of 24 hour duration. Runoff coefficients used in runoff calculations shall correspond to a bare earth condition or those conditions expected to exist while the sediment basin is utilized.

Minimum Standard 7 – Cut and fill slopes shall be designed and constructed in a manner that will minimize erosion. Slopes that are found to be eroding excessively within one year of permanent stabilization shall be provided with additional slope stabilizing measures until the problem is corrected.

Minimum Standard 8 – Concentrated runoff shall not flow down cut or fill slopes unless contained within an adequate temporary or permanent channel, flume or slope drain structure.
Minimum Standard 9 – Whenever water seeps from a slope face, adequate drainage or other protection shall be provided.

Minimum Standard 10 – All storm sewer inlets that are made operable during construction shall be protected so that sediment-laden water cannot enter the conveyance system without first being filtered or otherwise treated to remove sediment.

Minimum Standard 11 – Before newly constructed stormwater conveyance channels or pipes are made operational, adequate outlet protection and any required temporary or permanent channel lining shall be installed in both the conveyance channel and receiving channel.

Minimum Standard 12 – When work in a live watercourse is performed, cautions shall be taken to minimize encroachment, control sediment transport and stabilize the work area to the greatest extent possible during construction. Nonerosive material shall be used in the construction of causeways and cofferdams. Barthen fill may be used for these structures if armored by nonerosive cover materials.

Minimum Standard 13 – When a live water course must be crossed by construction vehicles more than twice in any six-month period, a temporary vehicular stream crossing constructed of nonerosive material shall be provided.

Minimum Standard 14 – All applicable federal, state and local regulations pertaining to working in or crossing live watercourses shall be met.

Minimum Standard 15 – The bed and banks of a watercourse shall be stabilized immediately after work in the watercourse is completed.

Minimum Standard 16 – Underground utility lines shall be installed in accordance with the following standards in addition to other applicable criteria.

A. No more than 500 linear feet of trench may be opened at one time.

B. Excavated material shall be placed on the uphill side of trenches.

C. Effluent from dewatering devices shall be filtered or passed through an approved sediment trapping device, or both and discharged in a manner that does not adversely affect flowing streams or offsite property.

D. Material used for backfilling trenches shall be properly compacted in order to minimize erosion and promote stabilization.

E. Restabilization shall be accomplished in accordance with these regulations.

F. Applicable safety regulations shall be complied with.
Minimum Standard 17 – Where construction vehicle access routes intersect paved or public roads, provisions shall be made to minimize the transport of sediment by vehicular tracking onto the paved surface. Where sediment is transported onto a paved or public road surface, the road surface shall be cleaned thoroughly at the end of each day. Sediment shall be moved from the roads by shoveling or sweeping and transported to a sediment control disposal area. Street washing shall be allowed only after sediment has been removed in this manner. This provision shall apply to individual development lots as well as to larger land-disturbing activities.

Minimum Standard 18 – All temporary erosion and sediment control measures shall be removed within 30 days after final site stabilization or after the temporary measures are no longer needed, unless otherwise authorized by the local program authority. Trapped sediment and the disturbed soil areas resulting from the disposition of temporary measures shall be permanently stabilized to prevent further erosion and sedimentation.

Minimum Standard 19 – Properties and waterways downstream from development sites shall be protected from sediment disposition, erosion and damage due to increases in volume, velocity and peak flow rate of stormwater runoff for the stated frequency storm of 24-hour duration in accordance with the following standards and criteria:

A. Concentrated stormwater runoff leaving a development site shall be discharged directly into an adequate natural or man-made receiving channel, pipe or storm sewer system. For those sites where runoff is discharged into a pipe or pipe system, downstream stability analyses at the outfall of the pipe or pipe system shall be performed.

B. Adequacy of all channels and pipes shall be verified in the following manner:

1. The applicant shall demonstrate that the total drainage area to the point of analyses within the channel is one hundred times greater than the contributing drainage area of the project in question; or

2. (a) Natural channels shall be analyzed by the use of a 2-year storm to verify that stormwater will not overtop channel banks nor cause erosion of channel bed or banks

(b) All previously constructed man-made channels shall be analyzed by the use of a 10-year storm to verify that stormwater will not overtop its banks and by the use of a 2-year storm to demonstrate that stormwater will not cause erosion of channel bed or banks; and

(c) Pipes and storm sewer systems shall be analyzed by the use of a 10-year storm to verify that stormwater will be contained within the pipe or system. If existing natural receiving channels or previously constructed man-made channels or pipes are not adequate, the applicant shall:

   (1) Improve the channels to a condition where a 10-year storm will not overtop the banks and a 2-year storm will not cause erosion to the channel bed or banks; or

   (2) Improve the pipe or pipe system to a condition where the 10-year storm is contained within the appurtenances;
(3) Develop a site design that will not cause the pre-development peak runoff rate from a 2-year storm to increase when runoff outfalls into a natural channel or will not cause the pre-development peak runoff rate from a 10-year storm to increase when runoff outfalls into a man-made channel, or

(4) Provide a combination of channel improvement, stormwater detention or other measures which is satisfactory to the plan-approving authority to prevent downstream erosion.

(d) The applicant shall provide evidence of permission to make the improvements.

(e) All hydrologic analyses shall be based on the existing watershed characteristics and the ultimate development of the subject project.

(f) If the applicant chooses an option that includes stormwater detention, he shall obtain approval from the locality of a plan for maintenance of the detention facilities. The plan shall set forth the maintenance requirements of the facility and the person responsible for performing the maintenance.

(g) Outfall from a detention facility shall be discharged to a receiving channel, and energy dissipators shall be placed at the outfall of all detention facilities as necessary to provide a stabilized transition from the facility to the receiving channel.

(h) All on-site channels must be verified to be adequate.

(i) Increased volumes of sheet flows that may cause erosion or sedimentation on adjacent property shall be diverted to a stable outlet, adequate channel, pipe or pipe system or to a detention facility.

(j) In applying these stormwater management criteria, individual lots or parcels in a residential, commercial or industrial development shall not be considered to be separate development projects. Instead, the development, as a whole, shall be considered to be a single development project. Hydrologic parameters that reflect the ultimate development condition shall be used in all engineering calculations.

(k) All measures used to protect properties and waterways shall be employed in a manner which minimizes impacts on the physical, chemical and biological integrity of rivers, streams and other waters of the state.