

EXHIBIT D. Site Development Plan Template and Exhibits

Mitigation Site – XX-X Site Development Approval

When signed by the IRT Chairs, this Site Development Plan (SDP) provides Interagency Review Team (IRT) approval of the Conservancy's proposed Mitigation Site (Site/Sites).

USACE approval of the SDP constitutes the regulatory approval required for the Site to be used to provide compensatory mitigation for Department of the Army (DA) permits pursuant to 33 C.F.R. § 332.8(a)(1). The SDP is not a contract between the Conservancy and USACE or any other agency of the federal government. Any dispute arising under the SDP will not give rise to any claim by the Conservancy for monetary damages. This provision is controlling notwithstanding any other provision or statement in the SDP to the contrary.

DEQ approval of the SDP constitutes regulatory approval for the Site to be used to provide compensatory mitigation for permits according to § 62.1-44.15:23 and 9VAC25-210-116. The SDP is not a contract between the Conservancy and DEQ, or any other agency of the state government. Any dispute arising under the SDP will not give rise to any claim by the Conservancy for monetary damages. This provision is controlling notwithstanding any other provision or statement in the SDP to the contrary.

Transfer of Responsibility for Compensatory Mitigation

The Conservancy assumes responsibility for a Permittee's required compensatory mitigation **up to the number of credits sold to offset the impacts associated with a given permit** once the Permittee has (1) secured the appropriate number and resource type of credits from the Conservancy; and (2) the IRT has received documentation that confirms that the Conservancy has accepted legal responsibility for providing the required compensatory mitigation for a given permit. As indicated in the Accounting Procedures described in the Program Instrument (Instrument), the Conservancy shall complete the Credit Sale Statement, within five (5) business days of each credit sale. The Credit Sale Statement shall identify the permit number and resource type of Credits that have been secured from the Conservancy.

Site Development Plan

To offset liabilities accumulated through Credit sales, the Conservancy submits this proposal for the Site(s) and funding request in accordance with the Instrument. An Initial Evaluation Letter (IEL) has allowed the Conservancy to proceed with an SDP, and the Conservancy has created and submitted this SDP for IRT review and approval. The required elements of the SDP are described below, and descriptions of each required element are detailed in the SDP Exhibits.

This SDP includes the following information and Exhibits:

Objectives

The Objectives for this Site are outlined and described in the Site proposal and in the Mitigation Work Plan (MWP) for this Site.

Site Selection

By signing the certification included in Exhibit B to the SDP, the Conservancy and Property Owner certify that the Conservancy possesses the requisite property interest to undertake the

activities described in this SDP and its Exhibits. In addition, the Conservancy has performed a Property Assessment, in which the Conservancy has located and evaluated, for potential conflicts with the objectives of the Site, all existing encumbrances or property interests recorded over the Property proposed for inclusion in the Site. The Property Assessment is included in Exhibit B of this SDP.

The Conservancy has evaluated this Site using the most current version of the Site Selection Criteria Guidelines and Compensation Planning Framework. The results are included in Exhibit C of this SDP. Provided the Site meets Performance Standards, the IRT Chairs conclude, through signing of this SDP, that the proposed Site is ecologically suitable to provide compensatory mitigation for permitted impacts within the Site's Geographic Service Area (GSA).

Geographic Service Area

This Site's Geographic Service Area (GSA) and its justification are described and depicted in Exhibit D of this SDP. The GSA is depicted based on the most current version of the National Watershed Boundary Data Set.

Baseline Information

Baseline information for this Site is included in the proposal and the Mitigation Work Plan (MWP) for the Site.

Mitigation Work Plan

The Mitigation Work Plan (MWP) includes all technical work methods and descriptions for the Site, and is separated into two submittals, the Conceptual Mitigation Work Plan (CMWP) and Final Mitigation Work Plan (FMWP). The CMWP for the entire Site is submitted as Exhibit E of this SDP. The FMWP is to be submitted and approved prior to the commencement of construction activities and may be submitted according to an approved Phase Plan. The requirements for the MWP are detailed in Exhibit E of this SDP.

Site Protection Instrument

The requirements for Site Protection are outlined in the Instrument. The Site Protection Instrument is included as Exhibit N of this SDP.

Determination of Credits

The Crediting and Debiting procedures the Conservancy will use to determine credits for this Site are described in Exhibit G of this SDP. The Determination of Credits tables for this Site are also included as Exhibit G of this SDP and are based on and supported by the MWP.

Credit Release Schedule

The Credit Release Schedule for this Site is described in Exhibit H of this SDP.

Performance Standards

The Performance Standards for this Site are described in Exhibit F of this SDP.

Monitoring Requirements

General guidelines for monitoring Sites are described in Section 20 of the Instrument. The specific monitoring and reporting requirements for this Site are described in Exhibits J and K, respectively.

Maintenance Plan

The Maintenance Plan for this Site is described in Exhibit L of this SDP. The Conservancy shall maintain the Site in accordance with the Maintenance Plan, the SDP, the MWP, and the

Instrument until Site Closure. The Conservancy shall not deviate from the maintenance activities in this SDP unless the deviation is reviewed and approved in writing by the Chairs in consultation with the IRT.

Long-Term Management

General guidelines for Long-Term Management are described in Section 23 of the Instrument. The Conservancy describes the site-specific long-term management needs, including an itemized estimate of the annual cost of meeting those needs, in the Long-Term Management Plan (LTMP) in Exhibit M of this SDP.

Non-Compliance

If the IRT determines that the Conservancy is in noncompliance with any provision of this SDP or that this Site is otherwise not meeting Performance Standards, the Chairs may take appropriate action, including but not limited to, suspending Credit sales, initiating adaptive management, decreasing Available Credits, requiring alternative compensation, utilizing financial assurances, and/or terminating this SDP.

Adaptive Management Plan

The Adaptive Management Plan for this Site is described in Exhibit N of this SDP.

Adaptive Management may be required as a result of deficiencies detailed in one or more mitigation monitoring reports or Site visits or for other noncompliance issues as deemed necessary by the Chairs, in consultation with the IRT. The IRT may direct the Conservancy to implement Adaptive Management either alone or in combination with other measures, to address failure of this Site to meet Performance Standards and/or noncompliance.

Site Closure

The request for Site Closure shall follow the requirements provided in the Instrument.

Reporting Protocols

General guidelines for Report Protocols are described in the Instrument. The Conservancy shall submit monitoring reports for this Site to the Chairs, for coordination with the IRT, in accordance with the Instrument and the monitoring and reporting requirements in Exhibits J and K of this SDP. Reports shall be uploaded to RIBITS and notification sent to the Chairs by January 31st of each required monitoring year for the previous calendar year's monitoring.

Virginia Aquatic Resources Trust Fund:

Date:

The Conservancy's signature below indicates that the Conservancy accepts and agrees to comply with the terms and conditions of the SDP for Mitigation Site XX-X.

THE NATURE CONSERVANCY, a District of Columbia non-profit corporation

X

Locke W. Ogens, Virginia State Director
The Nature Conservancy, Program Sponsor

This SDP becomes effective when the appropriate officials, designated to act for the USACE and for DEQ, have signed below.

INTERAGENCY REVIEW TEAM

By the IRT Chair(s):

X

William T. Walker, Chief Regulatory Branch
U.S. Army Corps of Engineers, Norfolk District

X

David L. Davis, CPWD, PWS
Director, Office of Wetland & Stream Protection, ...

Members of the IRT may sign the SDP, if they so choose. By signing the SDP, the IRT members indicate their approval of the subject Site.

By the IRT Member(s):

X

I.R.T. Member

X

I.R.T. Member

Exhibit A. Vicinity and Location Maps

Exhibit B. Property Assessment & Warranty Checklist/Conservancy & Property Owner Certification of Property Rights & Agreement to Provide Access

Exhibit C. Site Selection Criteria

Exhibit D. Geographic Service Area (GSA)

Exhibit E. Mitigation Work Plan (MWP)

Exhibit F. Performance Standards

Exhibit G. Crediting and Debiting Procedures

Exhibit H. Credit Release Schedules

Exhibit I. Credit Sale and Credit Availability Statements

Exhibit J. Monitoring and Reporting Requirements

Exhibit K. Site Operations Maintenance Plan

Exhibit L. Long-Term Management Plan (LTMP)

Exhibit M. Adaptive Management Plan (AMP)

Exhibit N. Site Protection Instrument

EXHIBIT A
VICINITY and TOPOGRAPHIC MAPS

Vicinity and/or topographic maps should be at such a scale that the nearest town is easily discernible. The latitude and longitude to the center of the Site and the Site boundaries should be included on the map.

EXHIBIT B
CONSERVANCY & PROPERTY OWNER
CERTIFICATION OF PROPERTY RIGHTS & AGREEMENT TO PROVIDE ACCESS

PROPERTY ASSESSMENT & WARRANTY CHECKLIST

(Check all items applicable to this Site (Site))

This Property Assessment and Warranty must be completed to the satisfaction of the Chairs prior to SDP approval.

The Conservancy and Property Owner have executed the attached certification that the Conservancy has the requisite property rights to carry out the mitigation project described in the SDP and its Exhibits.

The Conservancy has provided a title insurance policy, or multiple title insurance policies, covering the entirety of the property proposed for inclusion in the Site.

The Conservancy has provided a copy of each of the recorded deeds or other instruments referenced in the title policy's exclusions from coverage.

The Conservancy has provided a copy of plat or multiple plats covering the entirety of the property proposed for inclusion in the Site.

The Conservancy has performed and provided documentation of a property assessment, to include locating all existing interests listed in the exclusions from title policy coverage, providing a narrative evaluation of the existing interests' potential to create conflicts with the Site's objectives and/or likelihood of success, and providing an accurate depiction of those existing interests on a drawing of the Site.

The Conservancy has concluded, in the property assessment, that all existing interests either: create a negligible risk of conflict with the Site's objectives and likelihood of success, are located entirely outside of the Site, are located entirely within an area that will not generate any Credits, have been appropriately subordinated to the Site Protection Instrument, or have been terminated. By signing below, the Conservancy certifies that the property assessment is true, accurate, and complete.

By signing below, the Conservancy certifies that, to the best of the Conservancy's knowledge, there are no existing encumbrances that will conflict with the objectives of the Site.

The IRT has reviewed the Conservancy's property assessment and is satisfied that any existing easements, encumbrances, or other property interests (e.g., mineral rights, deeds of trust, etc.) will not create conflicts with the Site's objectives and/or likelihood of success.

The Conservancy has received written IRT approval of the text of a draft Site Protection Instrument. The Conservancy acknowledges that it must record the Site Protection Instrument before any Potential Credits are released.

The Site Protection Instrument includes a legal description of the protected area that has been prepared by a registered surveyor and includes the metes and bounds of the entire Site.

The Site Protection Instrument establishes in the Conservancy or an appropriate third party, if one has been identified, the right to monitor and enforce the Site Protection provisions.

The Conservancy has provided documentation demonstrating that any third party who will monitor and enforce the Site Provisions has accepted such role and is authorized by Virginia law to perform the functions granted to it.

The Conservancy has provided documentation demonstrating that the Conservancy and any third party who will monitor and enforce Site Protection provisions have agreed upon a mechanism to finance Site Protection responsibilities.

The Conservancy has provided the IRT a written statement from the Property Owner certifying that, to the Property Owner's knowledge, there are no easements, encumbrances, or transfers of the property, in whole or in part, not disclosed in the title policy.

The Conservancy and Property Owner have provided the IRT a written statement that identifies and describes any Federal or state funds received, or expected to be received, for natural resources protection, enhancement, or restoration within the proposed Site.

If the Property Owner is a corporation or partnership, the Property Owner shall provide documentation that recordation of the Site Protection Instrument has been approved in accordance with Virginia law.

If the Property Owner is not an individual, the Property Owner shall provide documentation that the person executing the Site Protection Instrument has the authority to sign on behalf of the company.

If the Site land has multiple Property Owners, all Property Owners have signed below and will sign the Site Protection Instrument when executed.

CERTIFICATION: I certify that the information provided herein is true, accurate, and complete.

THE NATURE CONSERVANCY,
a District of Columbia non-profit corporation

By: _____

_____ Date

Title: _____

Property Owner

Date

Notary Seal

**CONSERVANCY & PROPERTY OWNER
CERTIFICATION OF PROPERTY RIGHTS
&
AGREEMENT TO PROVIDE ACCESS**

**CERTIFICATION AS TO PROPERTY RIGHTS OF
CONSERVANCY**

The Conservancy requests Interagency Review Team (IRT) approval of a Site on the Property Owner's property. The Conservancy and the Property Owner acknowledge and understand that the Site Development Plan (SDP) does not grant any property rights to the Conservancy and that the IRT does not review or validate the Conservancy's right to perform the activities described in the SDP.

With their signatures below, the Conservancy and the Property Owner certify that the Conservancy has been given access to the property and sufficient property interests to carry out the activities described in the SDP and its exhibits. The Conservancy and the Property Owner understand that the IRT, if it approves the SDP, will rely on this certification as to the sufficiency of the Conservancy's rights.

PROPERTY OWNER TO PROVIDE ACCESS TO IRT AGENCIES

By executing the SDP and by signing below, the Property Owner agrees to allow the duly authorized representatives of the IRT agencies to enter upon the premises of the Site lands at reasonable times to inspect and photograph Site conditions, evaluate Site conditions, and to determine compliance with the SDP.

THE NATURE CONSERVANCY,
a District of Columbia non-profit corporation

By: _____

_____ Date

Title: _____

Property Owner

Date

Notary Seal

Exhibit C

Site Selection Criteria

USACE Norfolk District and Virginia Department of Environmental Quality
October 2018

Bank/Site Name

ORM Number

Date

1. Principal Criteria
(check all that apply)

- a. Site activities will result in at least 80% of wetland credits obtained through wetland restoration/creation
- b. Site activities will result in at least 50% of stream credits obtained through stream restoration/enhancement
- c. Site is contiguous or connected to other aquatic resources
- d. Site contains minimal or no INU species
- e. Site has not been logged in the past 5 years
- f. Site abuts and/or adjoins an existing preservation/conservation area, etc.
- g. Site has no known encumbrances (ie easements, liens, rights of way, reserved timber, severed surface or subsurface mineral or natural gas rights, etc.) on the site, on adjacent properties or within the watershed of the site that will negatively affect the compensation goals
- h. Immediately adjacent land is less than 10% impervious cover
- i. Site does not contain any impoundments that are not proposed for removal
- j. Site is able to be protected long-term through the recordation of an appropriate site protection instrument or other mechanism that will support the long-term protection of the site
- k. Site is expected to provide in-kind compensation (similar hydrologic regime)

2. Watershed Scale Features
(check all that apply)

- a. Site activities will contribute to habitat diversity **
- b. Site activities will remove pollutants from waters **
- c. Site activities will remediate inputs of substantial amounts of sediment**
- d. Site will contribute to habitat connectivity

**Explanation required.
Provide supplemental
information in an attachment
to this Checklist

3. Development Trends in the Watershed Where Site is Located
(check all that apply)

****Explanation required.**
Provide supplemental information in an attachment to this Checklist

- a. Site will address watershed needs for habitat protection as identified in a wildlife action plan, compensation planning framework, habitat Conservation Plan, etc.**
- b. Site will address watershed needs for water quality improvement/reduction in sediment loads as identified in the 303(d) list**
- c. Less than 50% of land use within the watershed is residential/commercial/industrial
- d. Less than 50% of land use within the watershed is agricultural
- e. Future land use plans (ie local comprehensive plans, conservation plans) show minimal or no change
- f. No water withdrawal permits issued within the vicinity of the site
- g. No point source permits within the vicinity of the site

4. Watershed vs. Site Specific Water Quality Goals
(check all that apply)

****Explanation required.**
Provide supplemental information in an attachment to this Checklist

- a. Site is likely to contribute to improved water quality within the watershed and not solely within the site boundaries**
- b. Site will include preservation/establishment/rehabilitation of the entire watershed upstream of the project to the drainage divide
- c. No downstream impoundments (excluding drinking water) that would limit the watershed benefits derived from site activities
- d. Site will improve water quality conditions of existing wetlands identified by VDEQ (WetCAT) as "Somewhat Severely Stressed" or "Severely Stressed"***

5. Site Compatibility with Adjacent Land Use
(check all that apply)

****Explanation required.**
Provide supplemental information in an attachment to this Checklist

- a. Site is within an area identified as meriting conservation in an approved watershed management plan, wildlife action plan, national forest management plan, or conservation plan**
- b. Site is not likely to be affected by current activities occurring on adjacent properties
- c. Site will not be affected by likely future activities occurring on adjacent properties
- d. Site activities will not affect adjacent properties**
- e. Site is not adjacent to silvicultural operations
- f. Site is not adjacent of agricultural land
- g. Properties adjacent to the site do not have the potential to spread INU species to the site**

6. Positive Effects Site will have on Ecological/Cultural Resources (check all that apply)

****Explanation required. Provide supplemental information in an attachment to this Checklist**

- b. Site activities will conserve/restore natural communities identified by VDCR as imperiled****
- c. Site activities will conserve/restore karst resources identified by VDCR as imperiled****
- d. Site activities are within areas that have been identified by VDGIF as meriting improvement****
- e. Site activities will conserve/restore areas designated by VDGIF as wild trout streams****
- d. Site activities will conserve/restore areas designated by VDGIF as anadromous fish use areas****
- e. Site activities will restores/preserve/enhance areas designated by VDGIF as Threatened and Endangered Species Waters****
- f. Site activities will protect state or federal threatened and/or endangered species****
- g. Site contains historical cultural resources that will be preserved****
- h. Site activities will establish new or expand existing wildlife corridors****
- i. Site activities will result in removal of barriers to fish passage****
- j. Site results in score of 1 or greater for potential wetland, riparian, or upland restoration or preservation as identified by the Watershed Resource Registry (WRR)****
- k. Site will improve habitat conditions of existing wetlands identified by VDEQ (WetCAT) as “Somewhat Severely Stressed” or “Severely Stressed”*****

7. Hydrologic Sources/ Ecological Features (check all that apply)

- a. Site activities do not consist of wetland creation in the uplands unless adjacent to existing streams or wetlands**
- b. Site activities do not consist of stream creation**
- c. Site activities do not entail impounding or diverting water from other areas to the project site**
- d. Site activities do not entail excavation to reach groundwater**

**8. Physical/Chemical
Characteristics
(check all that apply)**

****Explanation required.
Provide supplemental
information in an attachment
to this Checklist**

- a. Sites receiving waters are 303(d) listed**
- b. Site qualifies for preservation only, as 1) the resources provide important physical, chemical, or biological functions to the watershed, 2) the resource contribute significantly to the ecological sustainability of the watershed, 3) the IRT has determined that preservation is appropriate and practicable, 4) the resources are under threat of destruction or adverse modification, and 5) the site will be permanently protected through an appropriate real estate instrument****
- c. Site activities will not result in the construction of artificial or unnatural wetlands that will have limited opportunity to provide the desired functions**
- d. Past land use was PC crop or ditched wetlands**
- e. Past land use was agriculture/silviculture****
- f. Past land use was commercial or industrial****
- g. No impoundments exist upstream of the site that will cause thermal increases in water temperature, decreases in dissolved oxygen, erosion and degradation of the channel downstream from the impoundment, or dam failure from a storm event****
- h. Site activities will result in all onsite impoundments being removed and streams re-established/ rehabilitated**

EXHIBIT D
GEOGRAPHIC SERVICE AREA (GSA)

The Geographic Service Area (GSA) Map should include the location of the Site, the Site limits, and should visually depict the Hydrologic Unit Codes (HUCs) and Counties that are included in the GSA.

This Exhibit should also include the narrative justification for the GSA. This narrative should discuss the consistency with the Code of Virginia and the geographic and ecological criteria used to establish the GSA (e.g., watersheds, ecoregions, physiographic provinces, etc.)

EXHIBIT E MITIGATION WORK PLAN (MWP)

The Conservancy shall submit and obtain approval of the Mitigation Work Plan (MWP) from the IRT for each Phase of the Site (in accordance with the SDP). The MWP includes all technical work methods and descriptions for the Site, and is separated into two submittals, the Conceptual Mitigation Work Plan (CMWP) and Final Mitigation Work Plan (FMWP). The CMWP for the entire Site is required to be submitted and approved as an Exhibit to the SDP. The FMWP is to be submitted and approved prior to the commencement of construction activities and may be submitted according to an approved Phase Plan. This Exhibit outlines the general MWP existing and proposed descriptions (Section I) as well as the sheet set deliverables (Section II) required for the CMWP and FMWP.

I. MWP Description

A. Site Description

This may include but is not limited to:

- Name of Site;
- Address of Site;
- Acreage of Site;
- Geographic coordinates at the center of the Site;
- Description and quantities (i.e., acreage and linear feet) of proposed mitigation type; and
- Site Phasing Plan (if applicable): The initial (first) Phase of each Site must be large enough to stand alone as a viable Site, or must complement existing VARTF Sites in the same Programmatic GSA, as determined by the IRT. Subsequent Phases do not have to be independently viable but should be physically and ecologically viable.

B. Objectives of the Site

This shall include but is not limited to:

- A description of the compensatory mitigation resource type(s) and amount(s) that will be provided;
- The method of compensatory mitigation - i.e., creation, restoration (establishment or rehabilitation), enhancement, and/or preservation;
- A list of the objectives that will be provided by the proposed Site, including an explanation of how these will be achieved and the Performance Standards and methods of assessment to show whether the objectives are achieved;
- How the identified resource objectives of the Site are expected to address the needs of the watershed and the GSA. This description may include:
 - Water quality improvements
 - Erosion control
 - Fisheries/wildlife habitat
 - Flood conveyance/flood storage
 - Restoration of stream channel dimension, pattern, profile
 - Streambank stability
 - Aquatic and riparian habitat
 - Open space/aesthetics
 - Recreation

- Rare or threatened and endangered (T&E) species
- Objectives of upland buffers (e.g., filter sediment, protect Site from adjacent development, stream stability, etc.)
- Other Site-specific objectives

C. Baseline Existing Conditions

Baseline conditions should be provided for the Site. Unless otherwise specified, this information will be included in this Exhibit and the Conceptual Mitigation Work Plan, as appropriate. Baseline information may include, but is not limited to:

- Description of existing onsite streams and wetlands;
- Descriptions of historic and existing plant communities/cover type, and age;
- Current hydrogeomorphic setting;
- Current drainage/ditching that has occurred on Site;
- Current groundwater levels within proposed wetland restoration or creation areas (for one year, if possible), with the FMWP;
- Historic land-use development/alterations in the immediate drainage area (both upgradient and downgradient of the Site);
- Historic and existing soil conditions, including soil profiles described within proposed wetland restoration or creation areas, with identification of any sulfidic materials;
- Historic, archaeological, and cultural resources if known and present onsite;
- Federal and State Rare, threatened, and/or endangered species, including U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) results (<https://ecos.fws.gov/ipac/>) and any baseline or other reporting requirements pursuant to the USACE Endangered Species Act (ESA) guidance, Virginia Department of Game and Inland Fisheries Fish and Wildlife Information Services (<http://vafwis.org/fwis/>), and the Virginia Department of Conservation and Recreation Natural Heritage Data Explorer (<https://vanhde.org>);
- Delineation;
- Description of the nature, extent, and probable causes of degradation of wetlands and streams, including running a Cumulative Assessment report on any existing wetlands onsite from DEQ's Wetland Condition Assessment Tool (WetCAT) (http://cmap.vims.edu/WetlandViewer/Virginia/WetCAT_VA.html);
- Description of the potential wetland, riparian, or upland restoration or preservation scores projected for the Site from the Watershed Resource Registry (WRR) (<https://watershedresourcesregistry.org/>);
- For areas of proposed wetland restoration, creation, or enhancement, a historical characterization of the area, including historic and existing land use, and reasons and methods for conversion from wetlands (i.e. historic ditching, re-contouring, filling, etc. for farming, silvicultural or other land use activities);
- For areas of proposed stream restoration, provide pre-restoration aquatic macroinvertebrate surveys and water quality measurements (as described in Exhibit K of this SDP), with the FMWP;
- For areas of proposed stream preservation downstream of stream restoration or enhancement, provide pre-restoration stream cross sections (as described in Exhibit K of this SDP), with the FMWP;
- For areas of proposed stream restoration or enhancement, a survey of existing typical channel cross section, plan view, and profile indicative of each stream type, classification, and order, and existing geomorphological characteristics data;

- Invasive, Nuisance, and Undesirable (INU) species inventory map depicting the location (acres) and extent (coverage) of all individual species of INU plants over the entire Site;
- Any other Site characteristics appropriate to the type of resource proposed as compensation;
- Site specific water quality or habitat concerns within the immediate watershed [*Example: Does the Site contain DEQ 305(b)/303(d) listed rivers or creeks? Are there VPDES permits immediately upstream of the Site? (Available on WetCAT)*];
- Any stream crossings, roads, or other structures that will be removed, replaced, or left in place should be identified on the plans. Generally, crossings should be removed; if needed to be left in place, they should be stable and not adversely impact the stream;
- An assessment of adjacent/offsite activities that may impact water quality and habitat onsite.

D. Proposed Compensatory Mitigation Activities

Proposed conditions should be provided for the Site. Unless otherwise specified, this information will be included in this Exhibit and the CMWP and FMWP. Proposed activities may include, but are not limited to:

- Identification of targeted wetland hydrogeomorphic type
- Filling or blocking of ditches
- Creation of low berms with outlet controls
- Regrading of high spots
- Removal of fill areas
- Management of INU species
- Soil reconstruction protocols and compaction amelioration
- Soil amendments to include the supporting rationale for the soil amendments, the potential amendments to be utilized, and the recommended rates of application
- Description of how existing topsoil (O+A horizons) will be isolated, salvaged, and stabilized for future return
- Replanting of desired native vegetation
- Fencing along adjacent land uses
- Restoration of stream channels
- Stabilization of eroding banks
- Buffer or stream bank plantings
- Installation of grade controls or other instream structures
- Identification of stream reach, wetland area, and/or riparian buffer area where work is to occur

II. MWP Submittals

A. Conceptual Mitigation Work Plan (CMWP)

The Conservancy shall submit a CMWP for the Site or the Initial Phase of the Site to the IRT and obtain approval of the IRT (in accordance with the SDP), prior to approval of the SDP.

The CMWP shall include, but not be limited to:

- Cover Sheet with Location and Vicinity Maps;

- Master Plan Map of proposed mitigation activities for the entire proposed Site;
- Phase Plan Map, if applicable;
- Existing or Baseline Conditions for the entire proposed Site, with wetlands delineation survey, topography, existing tree line, photo locations, and photos;
- Hydrologic analyses including, at a minimum, consideration of baseflow, bankfull, 2 year, and 100 year discharges;
- Soils Map, soil test pit profiles and/or soil auger borings to the depth of the root limiting layer, and soil testing results (e.g. pH, organic-C, total-N, plant available P, Potential Acidity if sulfides are present);
- Water budget that demonstrates the creation of a hydroperiod similar to the target wetland type(s):
 - Inputs
 - a. Precipitation
 - b. Dispersed overland runoff
 - c. Channelized runoff from swales, ditches, etc.
 - d. Overbank flooding
 - e. Net groundwater inputs
 - Outputs
 - a. Evapotranspiration
 - b. Net groundwater losses
 - c. Spillway Outflow
- General location of known rare, threatened, and/or endangered species onsite;
- Narrative descriptions of wetland and/or stream deficiencies, and how the objectives of the Site will address these deficiencies;
- Identification of an overall seasonal hydroperiod for the targeted wetland type;
- Wetland preliminary grading plan and profile, including proposed buffer limits, types, and preliminary water control structure locations; and acres of wetland creation, restoration, enhancement, and preservation areas;
- Stream preliminary detailed cross-sections (riffle and pool only) showing existing grade, proposed grades, example stabilization measures, bankfull stage, and floodprone stage for representative sections within each restoration or enhancement reach. Existing and proposed typical design morphological characteristics for each type of activity and stream type, preliminary structure locations, proposed riparian buffer communities, linear feet of stream restoration, enhancement, preservation and acreages of riparian buffers;
- Reference data from existing wetland, stream, and riparian buffer communities that are utilized for proposed mitigation activities. This may include but is not limited to: reference location, watershed and land use composition, proximity to Site, field data and analysis, monitoring well data existing hydrology, vegetation, soils, stream type, morphological characteristics, wildlife and aquatic communities, and tidal elevation data in the same datum used for the grading plans;
- Preliminary proposed planting plan with general locations of planting, plant species, and methods. Any seeds used for plant establishment should conform to the Virginia Seed Law (Section 3.2-40 of the Code of Virginia) and Virginia Seed Regulations (2VAC5-390 et seq.) and shall be free of INU plant species (as defined in this SDP);
- Proposed Invasive, Nuisance, and Undesirable Species (INU) Management Plan – including an inventory map (depicting the location (acres) and extent (coverage) of individual INU plant species over the entire proposed Site), a species-specific or

vegetative guild-specific Management Plan, proposed monitoring requirements, and Performance Standards. The Conservancy should manage all INU species onsite, to the greatest extent practicable. Exceptions to management or treatment must be outlined in this Management Plan and approved by the IRT.

- TIDAL WETLANDS: Grading plans at a scale of 1" = 100' or at a more detailed scale. Plans shall use the correct vertical datum. North American Vertical Datum (NAVD) 88 elevations on the construction plans shall correspond to the appropriate tidal elevations in accordance with the tidal datum conversion.

B. Final Mitigation Work Plan (FMWP)

The Conservancy shall submit the FMWP to the IRT for each Phase of the Site and obtain approval of the IRT, prior to commencement of construction activities.

The general components of the FMWP shall include, but are not limited to:

- Narrative describing the final mitigation work;
- Grading plans at a scale of 1"=50' and providing 0.5 ft. contour intervals in Restoration areas (or metric equivalent), or at a more detailed scale. Plans shall use the correct vertical datum, National Ocean Service (NOS) in tidal mitigation areas and NGVD 88 in non-tidal areas;
- Erosion and Sediment Control (ESC) Plans, designed in accordance with General ESC Specifications approved by the Virginia Soil and Water Conservation Board, or in accordance with the locality's ESC Program;
- A detailed location map, including the latitude and longitude and the Hydrologic Unit Code (HUC) at the center of the Site;
- Construction Methods and Details;
- Scheduled timing and sequence for construction;
- Updated Invasive, Nuisance, and Undesirable Species (INU) Management Plan;
- Credit analysis based on the FMWP for the subject Phase, utilizing the methodology described in Exhibit G of this SDP to estimate the expected number of Credits that will be generated by the FMWP;
- Soil amendments to include the supporting rationale for the soil amendments, the potential amendments to be utilized, and the recommended rates of application;
- A Geographic Information System (GIS) shapefile or similar exhibit depicting the location and extent of the Site.

The Wetland FMWP shall also include, but is not limited to:

- Vegetation schedule with plants and seeds selected based on habitat value, projected water elevation and duration, and ecoregion. Deviations from the approved plant list must meet the targeted wetland indicator status of the approved list. Schedule shall include, but not be limited to:
 - Expected zonation (i.e. Palustrine Open Water (POW), Palustrine Emergent (PEM), Palustrine Scrub-shrub (PSS), and Palustrine Forested (PFO))
 - Species names of herbaceous and woody species
 - Herbaceous seed mix that includes at least ten (10) native species (as shown for the locality in the Digital Flora of Virginia)
 - Woody species list that includes a minimum of four (4) native species (as shown for the locality in the Flora of Virginia)
 - Wetland indicator status as specified in the current version of the U.S. Army

Corps of Engineers National Wetlands Plant List

- Plant size and spacing
 - Wildlife value assessment (such as those found in DCR's native plant brochures (<http://www.dcr.virginia.gov/natural-heritage/nativeplants>)).
- Soil mapping, planned soil handling, soil testing, and soil amendments to include the supporting rationale for the soil amendments, the potential amendments to be utilized, and the recommended rates of application.
 - A surveyed delineation, in accordance with the Corps' 1987 Wetland Delineation Manual (Manual) and the appropriate Regional Supplement to the Manual of the existing wetland areas of each Phase. A Global Positioning System (GPS) survey is sufficient.
 - Reference wetland data, where applicable, from existing wetland communities that are utilized for proposed wetland creation, restoration, and enhancement activities. Reference wetlands may, on a case by case basis, include but are not limited to: reference location, watershed and land use composition, proximity to the Site, monitoring well data, and other field data and analysis of those data including hydrology and associated hydroperiod, vegetation, soils, wildlife, etc.

The Stream FMWP shall also include, but is not limited to:

- Narrative descriptions of the existing stream within the project limits and within the watershed, including existing watershed size, existing land uses, valley types, history, channel classification, and the estimated proposed land use for the watershed (percent residential, forested, commercial, agricultural, etc.). The stream deficiencies to be addressed, including a description of the causes of existing lateral and vertical instability, and the methods used to make determinations. A description of the existing riparian buffer (age of forested, shrub, and herbaceous strata present, utility easements, existing management (silviculture or other), if applicable, etc.);
- The proposed stream restoration design approach;
- Proposed detailed plan views and longitudinal profiles, overlaid on the existing grade, of the proposed stream segment restoration and/or enhancement locations;
- Proposed detailed cross-sections, overlaid on existing channel grade, located a minimum of every 500 feet within restoration/enhancement stream channels. Proposed typical cross-sections for each reach;
- Proposed structures and locations on plan views and longitudinal profiles. Plans should include a structure table for each reach, listing structure type, design methods, invert elevation, bank angle, computed scour depth, footer depth, and justification or reason for the structure in the design. Construction specifications should be included for each type of structure.
- Hydraulic assessment, including but not limited to, a quantification of discharge, stream stage, depth-averaged velocity, average boundary shear stress, unit stream power, and largest mobile particle size in a representative riffle cross section for each restoration reach, at the 2-year, bankfull, 10-year, and 100-year recurrence

intervals. Please list computational tools and techniques used to model stream hydrodynamics and sediment transport.

- Data table comparison of existing, reference, and proposed design morphological characteristics, and phase of channel evolution;
- Reference stream data, if applicable, from existing stream and riparian buffer communities that were utilized for proposed stream restoration and enhancement activities. This may include but is not limited to: Reference location, watershed and land use composition, proximity to Site, stream classification, geomorphology, hydrology, vegetative and aquatic communities, etc.
- Anticipated project constraints;
- Plan-view location of proposed riparian buffer restoration, reestablishment, enhancement, and preservation areas;
- Vegetation schedule with plants and seeds selected based on habitat, water quality, and stream stability value. Schedule may include but should not be limited to:
 - Species name
 - Indicator status as specified in the current version of the U.S. Army Corps of Engineers National Wetlands Plant List
 - Plant size and spacing
 - Wildlife value assessment
 - Statement that all proposed species are shown for the locality in the Flora of Virginia
- Any stream crossings, roads, or other structures that will be removed, replaced, or left in place should be identified on the plans. Generally, crossings should be removed; if needed to be left in place, they should be stable and not adversely impact the stream
- For areas of proposed stream restoration, provide pre-restoration aquatic macroinvertebrate surveys and water quality measurements (as described in Exhibit K of this SDP) with the FMWP;
- For areas of proposed stream preservation downstream of stream restoration or enhancement, provide pre-restoration stream cross sections (as described in Exhibit K of this SDP) with the FMWP.

EXHIBIT F PERFORMANCE STANDARDS

The wetland Performance Standards should demonstrate that the wetlands that were preserved, enhanced, restored, and created meet the intended objectives and functions of the Site. The stream Performance Standards should demonstrate that the stream channels that were preserved, enhanced, and restored meet the intended objectives and functions of the Site and attain dynamic equilibrium.

The Conservancy and IRT will use monitoring reports, visual observations, and best professional judgment to evaluate attainment of Performance Standards and in determining whether the Site/Phase has met its goals and objectives, or whether corrective action or Adaptive Management is warranted.

All final and approved Performance Standards, and any deviation in Performance Standards, must be approved by the Chairs in consultation with the IRT prior to implementing the Performance Standards. Any decision whether or not a project meets the Performance Standards is within the sole discretion of the IRT, Chairs, applicable Board, official, or court, and shall not be subject to appeal.

All Performance Standards marked **(Required)** are required if those preservation, enhancement, restoration, or creation activities apply to the Site/Phase.

Important Note: If there is no appropriate Performance Standard listed below the Conservancy may propose a suitable Performance Standard, subject to IRT review and approval.

The following standards will be used to assess project performance:

FINANCIAL AND OTHER REPORTS

Submittal of required documentation, including monitoring and financial reports, as-built drawings, proof of escrow deposits and withdrawals in accordance with SDP Sections 18 and 25.

WETLAND, RIPARIAN BUFFER, UPLAND BUFFER PRESERVATION PERFORMANCE STANDARDS

- 1) Document compliance with the INU Management Plan as approved in the MWP.
- 2) Any preservation areas that were cleared to provide access for construction of restoration or enhancement activities must meet the Performance Standards described in Buffer areas below.

RIPARIAN OR UPLAND BUFFER PERFORMANCE STANDARDS

In all restored or enhanced Riparian and Upland Buffer areas:

FORESTED BUFFER VEGETATION

*(Choose either Number 2 or Number 3 below **OR** choose Number 4)*

- 1) **(Required)** A minimum of 400 woody stems of native tree species per acre (including volunteers) shall be achieved by the end of the first growing season following planting and maintained each monitoring year until shrub and/or canopy/crown coverage is at least 30%. Canopy coverage shall be at least 30% each monitoring year thereafter. The number of woody stems of native tree species per acre may vary under certain circumstances. Such deviations must be approved by the Chairs in consultation with the IRT.
- 2) The Year 5 and Year 10 reports shall contain documentation of a 10% increase per year in tree height of all established and surviving trees. This standard applies until shrub and/or canopy/crown coverage is at least 30%. Canopy coverage shall be at least 30% each monitoring year thereafter.
- 3) The Year 5 and Year 10 reports shall contain documentation that the average tree height of all established and surviving trees is at least five (5) feet. This standard applies until shrub and/or canopy/crown coverage is at least 30%. Canopy coverage shall be at least 30% each monitoring year thereafter.
- 4) In the Coastal Plain or Piedmont physiographic regions, the total stem area at groundline (SAG) for all woody vegetation must be greater than or equal to:

(a) 1 st growing season	0.6 ft ² /acre
(b) 2 nd growing season	1.0 ft ² /acre
(c) 3 rd growing season	1.5 ft ² /acre
(d) 5 th growing season	3.8 ft ² /acre
(e) 7 th growing season	8.9 ft ² /acre
(f) 10 th growing season	29.1 ft ² /acre
- 5) **(Required)** Document compliance with the INU Management Plan as approved in the MWP.

SCRUB/SHRUB BUFFER VEGETATION
(All Required)

- 1) A minimum of 400 woody stems of native tree or shrub species per acre (including volunteers) shall be achieved by the end of the first Growing Season following planting and maintained each monitoring year until shrub and/or canopy/crown coverage is at least 30%. Canopy coverage shall be at least 30% each monitoring year thereafter. The number of woody stems of native tree species per acre may vary under certain circumstances. Such deviations must be approved by the Chairs in consultation with the IRT.
- 2) Native or non-invasive herbaceous plant coverage shall be at least 60% by the end of the first growing season, and at least 80% each monitoring year thereafter, until shrub and/or canopy/crown coverage is at least 30%. Canopy coverage shall be at least 30% each monitoring year thereafter.
- 3) Document compliance with the INU Management Plan as approved in the MWP.

FIELD OR GRASS BUFFER VEGETATION

(All Required)

- 1) Native or non-invasive herbaceous plant coverage shall be at least 60% by the end of the first growing season, and at least 80% each monitoring year thereafter, until shrub and/or canopy/crown coverage is at least 30%. Canopy coverage shall be at least 30% each monitoring year thereafter.
- 2) Document compliance with the INU Management Plan as approved in the MWP.

VEGETATED NONTIDAL WETLAND PERFORMANCE STANDARDS

WETLAND ENHANCEMENT

- 1) Wetland Enhancement Performance Standards are required for all wetland Enhancement areas and should be chosen from the Performance Standards for wetland Restoration/Creation areas. The Performance Standards should be based on the wetland functions that are being enhanced. *(Example: If an existing wetland lacks vegetative layers and wetland vegetation is being enhanced, choose from among the vegetation Performance Standards for wetland Restoration/Creation.)*

WETLAND RESTORATION/CREATION

1) WETLAND HYDROLOGY

- (a) The site is inundated (flooded or ponded) or the water table is ≤ 12 inches below the soil surface for ≥ 14 consecutive days during the growing season.
- (b) The overall seasonal hydroperiod (depth, degree, duration, and periodicity) is similar to that of the reference wetland or targeted wetland type.

2) WETLAND SOILS (Applies to all areas where soils have been cut or filled) *(Choose at least two (2) of the following standards specific to the soil type)*

- (a) **(Required)** For coarse textured (sandy) surface soils, positive indicators of hydric soil formation must be demonstrated within 6 inches of the soil surface.
- (b) **(Required)** For fine textured soils (silts, clays, loams), positive indicators of hydric soil formation must be demonstrated within 12 inches of the soil surface.
- (c) **(Required)** The subsoil shall have a bulk-density of less than 90 lbs/cubic foot (1.45 g/cc) for clay textures, grading to less than 112 lbs/cubic foot (1.80 g/cc) for sands (prior to adding organic matter or topsoil to the Site). Replaced topsoil layers should also be remediated to a similar bulk density range.
- (d) For all monitoring years after reaching the final grade piezometers or shallow wells demonstrate free water within 12 inches of the surface for fourteen (14) consecutive days during the growing season.

- (e) Redoximorphic features including, but not limited to redox concentrations, redox depletions, and reduced matrices are present.
- (f) Positive tests with reagent occur within 60 percent or more of a specific layer in at least two or three soil samples. A reaction to alpha-alpha-Diperydyl reagent must occur within a 2 inch layer of the upper 4 inches in soil that is inundated but not saturated, a 2.5 inch layer of the upper 5 inches in sandy textured soils, and a 4 inch layer of the upper 12 inches in clayey soils.
- (g) A minimum of three of five Indicator of Reduction in Soil (IRIS) tubes must have 30 percent iron removed from a zone 6 inches or more thick. The zone of removal must begin within 6 inches of the soil surface for all soil textures.

3) FORESTED WETLAND VEGETATION

*(Choose either Letter (c) or Letter (d) **OR** choose Letter (e))*

- (a) **(Required)** Wetland Vegetation Dominance: More than 50% of all dominant tree, shrub, and herbaceous plant species shall be facultative (FAC) or wetter (facultative wet (FACW) or o b l i g a t e (OBL)). Wetland vegetation dominance, defined as a vegetation community where more than 50% of all dominant species are facultative (FAC) or wetter using "routine delineation methods" as described in the 1987 Corps of Engineers Wetland Delineation Manual and the most current version of the appropriate Regional Supplement to the Manual must be achieved.
- (b) **(Required)** Native stem density of at least 400 living woody stems of native tree species per acre with an indicator of FAC or wetter shall be maintained through the end of the monitoring period or until canopy coverage of tree species is at least 30%, whichever comes first. Canopy coverage shall be at least 30% each monitoring year thereafter.
- (c) The Year 5 and Year 10 reports shall contain documentation that the average tree height of all established and surviving trees has increased by not less than an average of 10% per year. This standard applies until shrub and/or canopy/crown coverage is at least 30%. Canopy coverage shall be at least 30% each monitoring year thereafter.
- (d) Year 5 and Year 10 reports shall contain documentation that the average tree height of all established and surviving trees is at least 5 feet in each plot. This standard applies until shrub and/or canopy/crown coverage is at least 30%. Canopy coverage shall be at least 30% each monitoring year thereafter.
- (e) In the Coastal Plain or Piedmont physiographic regions, the total stem area at groundline (SAG) for all woody vegetation must be greater than or equal to:

(a) 1 st growing season	0.6 ft ² /acre
(b) 2 nd growing season	1.0 ft ² /acre
(c) 3 rd growing season	1.5 ft ² /acre
(d) 5 th growing season	3.8 ft ² /acre
(e) 7 th growing season	8.9 ft ² /acre
(f) 10 th growing season	29.1 ft ² /acre

(f) **(Required)** Document compliance with INU Management Plan as approved in the MWP.

4) SCRUB/SHRUB WETLAND VEGETATION (All Required)

(a) Wetland Vegetation Dominance: More than 50% of all dominant tree, shrub, and herbaceous plant species shall be facultative (FAC) or wetter (FACW or OBL). Wetland vegetation dominance, defined as a vegetation community where more than 50% of all dominant species are facultative (FAC) or wetter using "routine delineation methods" as described in the 1987 Manual and appropriate Regional Supplement to the Manual (*or insert reference to any approved Regional Supplements as they become available prior to SDP approval*) must be achieved.

(b) Native stem density of at least 400 living woody stems of native tree or shrub species per acre with an indicator of FAC or wetter shall be maintained through the end of the monitoring period

(c) Native or non-invasive herbaceous plant coverage shall be at least 60% by the end of the first growing season, and at least 80% each monitoring year thereafter, until shrub and/or canopy/crown coverage is at least 30%. Canopy coverage shall be at least 30% each monitoring year thereafter.

(d) Document compliance with INU Management Plan as approved in the MWP.

5) EMERGENT WETLAND VEGETATION (All Required)

(a) Wetland Vegetation Dominance: More than 50% of all dominant herbaceous plant species shall be facultative (FAC) or wetter (FACW or OBL). Wetland vegetation dominance, defined as a vegetation community where more than 50% of all dominant species are facultative (FAC) or wetter using "routine delineation methods" as described in the 1987 Manual and appropriate Regional Supplement to the Manual (*or insert reference to any approved Regional Supplements as they become available prior to SDP approval*) must be achieved.

(b) Native or non-invasive herbaceous plant coverage shall be at least 60% by the end of the first growing season, and at least 80% each monitoring year thereafter. until shrub and/or canopy/crown coverage is at least 30%. Canopy coverage shall be at least 30% each monitoring year thereafter.

(c) Document compliance with INU Management Plan as approved in the MWP.

VEGETATED TIDAL SALTWATER WETLAND PERFORMANCE STANDARDS

(Performance standards for Tidal Freshwater wetland Sites may differ from the items below and will be proposed at the time of the SDP submittal).

WETLAND RESTORATION/CREATION

1) WETLAND HYDROLOGY (All Required)

- (a) Submission of an as-built survey which documents that the elevations provided in the construction plans have been achieved.
- (b) Daily inundation and drainage of the Site with tidal water is required to provide the necessary tidal hydrology to promote the growth and success of the planted wetland vegetation.
- (c) Any constructed tidal channels within the tidal wetland areas shall maintain a relatively stable cross-sectional area, sufficient to provide the necessary tidal hydrology to the Site. There will likely be short-term variability, with areas of accretion and erosion, until equilibrium with the tidal currents is established.

2) WETLAND SOILS
(All Required)

- (a) Presence of soil under hydric conditions.
- (b) Soil organic matter increase to be documented by:
 - (1) Surface algal mats.
 - (2) Root growth from increasing vegetation growth.

3) WETLAND VEGETATION
(All Required)

- (a) Wetland Vegetation Dominance: More than 50% of all dominant herbaceous plant species shall be facultative (FAC) or wetter (FACW or OBL). Wetland vegetation dominance, defined as a vegetation community where more than 50% of all dominant species are facultative (FAC) or wetter using "routine delineation methods" as described in the 1987 Manual and appropriate Regional Supplement to the Manual (*or insert reference to any approved Regional Supplements as they become available prior to SDP approval*) must be achieved.
- (b) Planted vegetation survival after the first full growing season shall be at least 90%.
- (c) Vegetative Cover shall be at least the following for each monitoring year: (1)

Year 1	10 – 20%
(2) Year 2	30 – 50%
(3) Year 3	50 – 70%
(4) Year 5,7,10	70 – 80%
- (d) Invasive Species
 - (1) Aerial coverage of *Phragmites australis*, shall not exceed 5% per plot.
 - (2) Document compliance with INU Management Plan as approved in the MWP.
- (e) Natural recruitment of plant species: Colonizing species documented in sampling quadrats.

4) PRIMARY PRODUCTION
(All Required)

- (a) Increasing vegetation cover.

(b) Increased stem height.

5) PRIMARY AND SECONDARY CONSUMER UTILIZATION
(All Required)

(a) Faunal observations from sampled quadrats.

(b) Document observations of additional consumers during sampling events.

6) HIGHER CONSUMER UTILIZATION (birds, mammals, fish, etc.)
(All Required)

(a) Seining of channels for fish and shellfish.

(b) Document observations of birds using the Site.

(c) Document observed mammals and mammal tracks and scat.

STREAM PERFORMANCE STANDARDS

STREAM PRESERVATION AREAS (Applies to all linear footage of preserved stream channel where stream restoration/enhancement is occurring upstream and within the Site/Phase)
(Choose at least two (2))

- 1) The Width / Depth Ratio Stability Rating (measured Width / Depth Ratio divided by the Year 1 Width / Depth Ratio) shall not be greater than 1.3. If the channel is incising, then the Width / Depth Ratio Stability Rating shall not be less than 0.7.
- 2) The Bank Height Ratio shall not increase by an amount greater than 0.2 of the Year 1 Bank Height Ratio.
- 3) The Entrenchment Ratio (ER) shall be appropriate for the channel type. (Example: For restored C, DA, or E stream types, the ER shall be greater than 2.2. For restored B stream types, the ER shall be greater than 1.4. The ER may not be an appropriate measure for A stream types).
- 4) The Bankfull stream Cross-Sectional Area shall not increase or decrease by an amount greater than 25% of the as-built stream cross-sectional area.

STREAM ENHANCEMENT OR STREAM ENHANCEMENT WITH STRUCTURES

- 1) Stream Enhancement Performance Standards are required all stream Enhancement or Enhancement with Structures areas and should be chosen from the Performance Standards for stream Restoration areas. The Performance Standards and should be based on the stream functions that are being enhanced. (Example: If an existing stream lacks stable stream banks and stream bank enhancement is undertaken, choose from among the appropriate Performance Standards for lateral stability of stream Restoration).

STREAM RESTORATION

- 1) FLOODPLAIN CONNECTIVITY
(Choose one (1))

- (a) The reach-averaged Bank Height Ratio (average of the calculated Bank Height Ratios for all riffle cross-sections within a given reach) shall not increase by an amount greater than 0.2 of the as-built Bank Height Ratio.
- (b) The reach-averaged Entrenchment Ratio (average of the calculated Entrenchment Ratios for all riffle cross-sections within a given reach) shall not decrease by an amount greater than 0.5 from the as-built Entrenchment Ratio, or the Entrenchment Ratio (ER) shall be appropriate for the channel type and/or design approach. *(Examples: For restored C, DA, or E stream types, the ER shall be greater than 2.2. For restored B stream types, the ER shall be greater than 1.4. The ER may not be an appropriate measure for A stream types.)*

2) LATERAL STABILITY/BANK MIGRATION
(Choose four (4))

- (a) **(Required)** The Total Score of Bank Erodibility Hazard Index (BEHI) for a reach shall be equal to or less than the previous year's Total Score, and shall have a Total Score of "Moderate" by monitoring Year 3. For C or E stream types, a Total Score of "Low" or better shall be achieved by monitoring Year 5, and maintained at "Low" or better throughout the remainder of the monitoring period. For B stream type channels, a Total Score of "Moderate" or better shall be maintained throughout the remainder of the monitoring period.
- (b) The reach-averaged Width / Depth Ratio Stability Rating (average of the calculated Width / Depth Ratio Stability Ratings for all riffle cross-sections within a given reach = Width / Depth Ratio divided by the as-built Width / Depth Ratio) shall not be less than 0.7 or greater than 1.3, or each measured Width / Depth Ratio shall remain within the design conditions.
- (c) The Bankfull stream Cross-Sectional Area shall not increase or decrease by an amount greater than 25% of the as-built stream cross-sectional area.
- (d) The reach-averaged Meander Width Ratio (Meander or Belt Width divided by the Bankfull Width) for a perennial stream in an alluvial valley (C or E stream types) shall be equal to or greater than 3.5, or each measured Meander Width shall remain within the range represented in the design conditions.
- (e) The sinuosity of the stream shall not increase or decrease by an amount greater than 0.1 of the approved as-built sinuosity, or the sinuosity of the stream shall remain within the range represented in the design conditions.
- (f) The reach-averaged Radius of Curvature / Bankfull Width Ratio (average of the calculated Radius of Curvature Width Ratios for the reach) does not increase or decrease by an amount greater than 0.2 of the as-built condition, or each measured Radius of Curvature shall remain within the range represented in the design conditions.
- (g) **(Required)** The numbers of live stakes and woody stems of native tree and shrub species providing bank stabilization from the top of bank to the toe of slope shall be at least 1 living stem per 50 square feet per stream edge along the bank by the end of the first growing season following planting and maintained each monitoring year until

canopy coverage is 30% for any identified reach. Canopy coverage shall be at least 30% each monitoring year thereafter.

- (h) Native or non-invasive herbaceous plant coverage shall be at least 60% by the end of the first growing season, 80% by the end of the second growing season, and maintained each monitoring year thereafter until canopy coverage is at least 30%. Canopy coverage shall be at least 30% each monitoring year thereafter.
- (i) Bare ground coverage shall be no more than 40% by the end of the first growing season, 20% by the end of the second growing season, and maintained each monitoring year thereafter, until canopy coverage is at least 30%. Canopy coverage shall be at least 30% each monitoring year thereafter.

3) VERTICAL STABILITY/BED FORM DIVERSITY
(Choose two (2))

- (a) (For perennial streams only) The reach-averaged Pool-to-pool Spacing Ratio is appropriate for the stream and valley type [*Example: The Pool-to-pool Spacing Ratio shall be 4 - 5 in C and E stream types or 2 - 4 in B stream types*], or each measured Pool-to-pool Spacing shall remain within the range represented in the design conditions.
- (b) The reach-averaged Max Pool Depth Ratio (Bankfull Max Pool Depth divided by the Bankfull Mean Riffle Depth) shall remain within the typical values for the stream type [*Example: The Max Pool Depth Ratio shall be greater than 1.5 in gravel bed C and E stream types, and all B stream types. The Max Pool Depth Ratio shall be greater than 1.2 in sand bed C and E stream types*], or each measured Max Pool Depth shall remain within the range represented in the design conditions.
- (c) The average riffle slope of the reach shall not increase or decrease by an amount greater than 0.1 of the approved as-built slope, or the slope of the reach shall remain within the range represented in the design conditions.
- (d) The average bankfull slope of the reach shall not increase or decrease by an amount greater than 0.1 of the approved as-built slope, or the slope of the reach shall remain within the range represented in the design conditions.
- (e) (Constructed riffles only) The D50 size particle remains within its approved as-built size class (silt, sand, gravel, cobble, or boulder), or the D50 size particle remains within its design size class (silt, sand, gravel, cobble, or boulder).

4) STRUCTURE STABILITY
(All Required)

- (a) Absence of collapsed structure or repositioned header rocks.
- (b) Absence of under cutting, washing around, or erosion of the bank or streambed associated with any instream structure that could lead to a collapsed structure or repositioned head rock.
- (c) Maintenance of pool depth immediately downstream of the structure (where appropriate), including absence of excessive scour or deposition in pool immediately downstream of the structure.
- (d) All structures are exposed, unless they are specified as buried rock or log sill structures.

5) AQUATIC HABITAT
(All Required)

- (a) (For perennial streams only) Habitat Assessment – The Total Score of the Habitat Assessment for each reach shall be 100 or greater at Year 1, and each monitoring year thereafter the Total Score shall be equal to or greater than the previous Year's Total Score.

REFERENCES for Performance Standards, Monitoring, and Reporting:

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DeBerry, Douglas A. (2018). *Vegetation Sampling on Compensatory Mitigation Sites, Literature Review*. Unpublished manuscript, College of William & Mary, Williamsburg, VA.

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National Technical Committee for Hydric Soils (NTCHS). 2015. *Hydric Soils Technical Note 11: Hydric Soils Technical Standard and Data Submission Requirements for Field Indicators of Hydric Soils.* Washington, DC: United States Department of Agriculture (USDA), NRCS.

Rosgen, Dave. 1996. Applied River Morphology. Pagosa Springs, CO: Wildland Hydrology.

U.S. Army Corps of Engineers. 2005. *Technical Standard for Water-Table Monitoring of Potential Wetland Sites.* WRAP Technical Notes Collections (ERDC TN-WRAP-05-2). U.S. Army Engineer Research and Development Center, Vicksburg. MS.

Wolman, Gordon M. 1954. *A Method for Sampling Coarse Riverbed Material.* Transactions, American Geophysical Union, Volume 35-6. U.S. Geological Survey, Washington, D.C.

**EXHIBIT G
CREDITING AND DEBITING PROCEDURES**

I. IRT Approved Assessment Methodology

A. Stream Credits

The number of Potential Credits for stream compensatory mitigation will be determined by the IRT, using the Unified Stream Methodology (USM) or the current methodology in use by the USACE and DEQ.

B. Wetland Credits

The number of Potential Credits for wetland compensatory mitigation will be determined using the IRT-approved credit ratios in the table below or the current methodology in use by the USACE and DEQ. Each acre of land area within the Site or Phase shall be designated as to which types of land forms, as classified by the Cowardin System, shall be restored, created, enhanced, or preserved. Approved credit ratios will then be applied to each wetland acreage or wetland mitigation type to derive the amount of wetland mitigation credits for the Site or Phase.

C. Conservation Easement Credits

The number of Potential Credits for wetland and stream compensatory mitigation will be considered to have an increased value of up to 5% if a Conservation Easement is recorded over the Site property with an IRT approved Conservation Easement Holder.

II. Timing of Determination of Potential Credits

A. Conceptual Mitigation Work Plan (CMWP)

The IRT will initially determine the total number of compensatory mitigation Credits generated by this Site, by applying the methodologies described in Section I above to the Conservancy's proposed establishment, restoration, or preservation work described in the CMWP for each Site or Phase. Nothing in the SDP or this exhibit entitles the Conservancy to an increase in the number of Potential Credits generated by the Site after the SDP is approved.

B. Final Mitigation Work Plan (FMWP)

If IRT finds that application of the IRT-Approved Assessment Methodology to the FMWP yields fewer Credits than determined based on the CMWP, the IRT may decrease the Site's number of Potential Credits.

The Conservancy may request that the IRT reevaluate the number of Potential Credits based on the Conservancy's FMWP. If the IRT concludes that application of the assessment methodology or methodologies described in Section I above demonstrate a greater difference between pre- and post- Site conditions than was indicated at the time of SDP approval, the IRT may increase the number of Potential Credits in accordance with the findings of the updated assessment.

C. As-Built Reports

If IRT finds that application of the IRT-Approved Assessment Methodology to the as-built report yields fewer Credits than determined based on the FMWP, the IRT may decrease the Site's number of Potential Credits.

The Conservancy may request that the IRT reevaluate the number of Potential Credits based on the Conservancy's as-built report. If the IRT concludes that application of the assessment methodology or methodologies described in Section I above demonstrate a greater difference between pre- and post- Site conditions than was indicated at the time of FMWP approval, the IRT may increase the number of Potential Credits in accordance with the findings of the updated assessment.

If the IRT finds that a reevaluation of the number of Potential Credits results in an increase/decrease of that number of Credits, the 5% Conservation Easement Credits will be adjusted accordingly.

WETLAND RATIOS & CREDITS*****

Proposed mitigation activity	Acres	Ratio	Proposed Credit
Wetland Restoration (Reestablishment)		1:1	
Wetland Creation (Establishment) *		1:1 to 2:1	
Wetland Enhancement (Rehabilitation) **		3:1 to 7:1	
Wetland Preservation		10:1	
Upland Buffer Restoration/Enhancement***		12:1 to 15:1	
Upland Buffer Preservation****		20:1	
Other - add intermediate values here			
Conservation Easement (5%)			
Sum			
*****Percent of credits involving restoration or creation			

* Ranges for the Wetland Creation (Establishment) are based upon the connectivity of created (established) wetlands to existing aquatic resources.

** Ranges for Wetland Enhancement (Rehabilitation) are based upon what is proposed and how it is related to improving wetland function.

*** Ranges for the Upland Buffer Restoration/Enhancement are based upon what is proposed and how it is related to improving or protecting wetland function.

**** Buffer width must be a minimum of 100 feet. Credit for any buffer beyond the 100 feet is determined on a case by case basis.

***** This excludes all preservation, enhancement and any upland buffer credits.

***** Acreage and credits are subject to change based on the results of the as-built report, boundary surveys, delineations, and monitoring reports.

STREAM CREDITS *

Proposed mitigation activity	Linear Feet/Acres	Improvement Credit	Preservation Credit
Stream Restoration (LF)			
Stream Enhancement with Instream Structures (LF)			
Stream Enhancement (LF)			
Riparian Areas – Preservation (LF and/or Ac)			
Riparian Areas – Enhancement/Restoration (Ac)			
Livestock exclusion AF (LF)			
Watershed AF			
T&E AF – Restoration/Enhancement			
T&E AF – Preservation			
Conservation Easement (5%)			
Sum			
** Percent of credits involving restoration or enhancement and/or livestock exclusion			

*Linear feet and credits are subject to change based on the results of the as-built report, Boundary surveys, delineations, and monitoring reports.

**This excludes all preservation credits.

EXHIBIT H CREDIT RELEASE SCHEDULES

Credit releases are dependent upon construction and performance of the Site. Upon submittal of all appropriate documentation by the Conservancy and subsequent approval by the IRT, the Chairs will provide in writing any release of Credits to the Conservancy in accordance with the following schedules.

INITIAL CREDIT RELEASE SCHEDULE

Preservation Credits (up to 50%) may be available for Debiting for each Phase of the Site for which Initial Release is requested upon implementation of the following:

- a. Approval of this SDP;
- b. Approval of the CMWP for each Phase or Site for which Initial Release is requested as described in Exhibit E of this SDP;
- c. Approval of Site Final Budget and Maintenance and Monitoring funding;
- d. Payment into VARTF Endowment for Long-Term Management;
- e. Securing the Property interests necessary for the entire Site limits (e.g. fee simple acquisition, acquisition of a mitigation easement, or otherwise securing appropriate property interest);
- f. Submittal of a copy of the approved and recorded Site Protection Instrument that protects the Site in perpetuity, including the plat graphic;
- g. Approval of the LTMP;
- h. All of the above documents and all associated exhibits submitted electronically to the Chairs and uploaded to RIBITS; and
- i. Submittal of Shape files, KML/KMZ files of the Site limits and the Geographic Service Area.

Credits may be released by the Chairs, in consultation with the IRT, as noted in the schedules below on the following schedule. One Credit release may occur per monitoring and reporting season (Credit releases may not be combined).

The IRT may withhold Credits based on field conditions.

Wetland Credit Release Schedule

- a. Construction Release (as-built):
25% upon completion and approval of all initial physical and biological improvements made pursuant to the FMWP and IRT approval of the as-built report.

- b. Second Release:
60% (up to 85% cumulative) upon meeting all Performance Standards in Exhibit F of this SDP applicable for the year in which monitoring is occurring.
- c. Third Release:
15% (up to 100% cumulative) upon meeting all Year 5 Performance Standards in Exhibit F of this SDP.

Wetland and Stream Preservation, Buffer Preservation, Watershed and T&E Preservation Adjustment Factor (AF) Credit Release Schedule

- a. Initial Release:
50% upon completion of the initial release requirements listed above.
- b. Second Release:
50% (100% cumulative) upon meeting all Performance Standards in Exhibit F of this SDP.

Livestock Exclusion AF Credit Release Schedule

- a. Initial Release:
100% upon completion of the initial release requirements listed above and evidence has been provided that livestock have been excluded from the site (i.e. livestock removed and/or fences installed).

Threatened and Endangered Species AF Credit Release Schedule

- a. Associated with Stream Preservation – See Stream Buffer Preservation Release Schedule above.
- b. Associated with Stream Restoration/Enhancement – See Stream Restoration/Enhancement Release Schedule below.

Stream Buffer Enhancement/Restoration/Re-establishment Credit Release Schedule

- a. Construction Release (as-built):
25% upon completion and approval of all initial physical and biological improvements made pursuant to the FMWP and IRT approval of the as-built report. IRT may withhold credit based on field conditions.
- b. Second Release:
60% of total credits (up to 85% cumulative) upon meeting all Performance Standards applicable for the year in which monitoring is occurring in Exhibit F of this SDP.
- c. Third Release:
15% of total credits (up to 100% cumulative) upon meeting all Year 5 Performance Standards in Exhibit F of this SDP.

Stream Restoration/Enhancement/T&E AF Associated with R/E Credit Release Schedule

- a. Construction Release (as-built):

25% upon completion and approval of all initial physical and biological improvements made pursuant to the FMWP and IRT approval of the as-built report.

- b. Second Release:
10-20% of total Credits (up to 45% cumulative) upon the occurrence of a bankfull event, and all Performance Standards in Exhibit F of this SDP are met.
- c. Third Release:
10-20% of total Credits (up to 65% cumulative) upon the occurrence of a bankfull event, and all Performance Standards in Exhibit F of this SDP are met.
- d. Fourth Release:
10-20% of total Credits (up to 85% cumulative) upon the occurrence of a bankfull event, and all Performance Standards in Exhibit F of this SDP are met.
- e. Fifth Release:
Up to 15% of total Credits (100% cumulative) upon the occurrence of a bankfull event, and all Performance Standards in Exhibit F of this SDP are met.
- f. No additional credits will be released after Year 4 until a bankfull event occurs. For each additional monitoring year, no more than 20% of total Credits will be released not to exceed the remaining available Credits if a bankfull event occurs that year, the channel is stable, and all Performance Standards in Exhibit F of this SDP are met.

If at any time, the number of Credits Debited exceeds the number meeting all Performance Standards, then the Conservancy shall voluntarily cease Credit sales and notify the IRT. This may occur at any time during the year.

CREDIT RELEASE SCHEDULES

Typical Wetland Credit Release Schedule

Release Activity	Percentage of Credits to be Released	Requirements
Construction	25%	<ul style="list-style-type: none"> Approval of as-built by IRT
2 nd Release	60%	<ul style="list-style-type: none"> Meeting Performance Standards for year monitored
3 rd Release	15%	<ul style="list-style-type: none"> Meeting Year 5 Performance Standards

Typical Wetland and Stream Preservation, Buffer Preservation, Watershed, and T&E Preservation AF Credit Release Schedule

Release Activity	Percentage of Credits to be Released	Requirements
Initial Release	50%	<ul style="list-style-type: none"> Completion of initial release requirements
2 nd Release	50%	<ul style="list-style-type: none"> Meeting Performance Standards

Typical Livestock Exclusion AF Credit Release Schedule

Release Activity	Percentage of Credits to be Released	Requirements
Initial Release	100%	<ul style="list-style-type: none"> Completion of initial release requirements Livestock excluded

**Typical Stream Buffer Enhancement/Restoration/Re-establishment
Credit Release Schedule**

Release Activity	Percentage of Potential Credits Released	Requirements
Construction	25%	<ul style="list-style-type: none"> • Approval of as-built by IRT
2nd release	60%	<ul style="list-style-type: none"> • Meeting Performance Standards
3rd Release	15%	<ul style="list-style-type: none"> • Meeting Year 5 Performance Standards

**Typical Stream Credit Release Schedule
Stream Restoration/Enhancement and T&E AF Associated with R/E**

Release Activity	Percentage of Credits Meeting all PS Eligible for Release	Requirements
Construction	25%	<ul style="list-style-type: none"> • Approval of as-built by IRT
2nd Release	10-20%**	<ul style="list-style-type: none"> • Meeting Performance Standards • Upon the occurrence of a bankfull event
3rd Release	10-20%**	<ul style="list-style-type: none"> • Meeting Performance Standards • Upon the occurrence of a bankfull event
4th Release	10-20%**	<ul style="list-style-type: none"> • Meeting Performance Standards • Upon the occurrence of a bankfull event
5th Release	minimum 15%	<ul style="list-style-type: none"> • Meeting Performance Standards • Upon the occurrence of a bankfull event

** 10% if no bankfull event, 20% if bankfull & channel is stable

EXHIBIT I
CREDIT SALE STATEMENT
(All information in italics must be completed by the Conservancy)

Site Name (Site)
Address, City, State, Zip Code
Mitigation Site Contact Phone Number

Date

US Army Corps of Engineers (USACE),
Norfolk District OR appropriate Field
Office Regulatory Branch
 Attention: **USACE Project Manager**
803 Front Street
Norfolk, VA 23510 OR appropriate Field Office Address

Department of Environmental Quality (DEQ)
 Office of Wetlands and Stream Protection
 Attention: **DEQ Project Manager**
 PO Box 1105
 Richmond, VA 23218

In accordance with USACE and DEQ instructions for reporting credit sales, we are providing the following to document a stream/wetland credit sale:

Date of Sale	
Dept. of the Army Permit Number	
DEQ or VMRC Permit Number	
Permittee	
County of impact	
Watershed of impact (8 digit HUC)	
Latitude/Longitude of Impact (centroid)	
Type(s) of impact(s) (NTW/TW/ST)	
Amount of impact(s) (acreage/linear feet)	
Type of Credits (NTW/TW/ST)	
Number of Credits Sold	
Type of Credits Sold (advanced /released)	
Project within Geographic Service Area of Site (Yes or No)	

I verify that the required number and type of Credits identified above are available at my ILF Program Site and that they have been released by the IRT or made available through and ILF Program Instrument. Once this form is signed, I shall update the appropriate ledger and provide a copy of the signed form to the Permittee and to the USACE Site /In-Lieu Fee Program Manager. This form does not relieve me of the requirement to comply with all reporting requirements established in the Site or ILF Program Instrument.

I certify that the information provided in this form is true, accurate, and complete to the best of my ability based on the information provided to me by the Permittee/Permittee's Agent. I acknowledge that the USACE and DEQ are entitled to rely on the information I have provided. I further acknowledge that, if the information I have provided proves to be false, incomplete, or inaccurate, the USACE may reevaluate its approval of this Site, and I may be subject to legal penalties. If USACE withdraws or terminates its approval, I acknowledge that I would remain responsible for any compensatory mitigation requirements associated with Credits I have previously debited.

By signing below, I acknowledge that I have accepted full responsibility for the identified mitigation. Please contact me with any questions.

Sincerely,

Site Point of Contact

EXHIBIT I
CREDIT AVAILABILITY STATEMENT
(All information in italics must be completed by the Conservancy)

Site Name (Site)
Address, City, State, Zip Code
Mitigation Site Contact Phone Number

Date

US Army Corps of Engineers (USACE),
Norfolk District OR appropriate Field Office
 Regulatory Branch
 Attention: **USACE Project Manager**
803 Front Street
Norfolk, VA 23510 OR appropriate Field Office Address

Department of Environmental Quality (DEQ)
 Office of Wetlands and Stream Protection
 Attention: **DEQ Project Manager**
 PO Box 1105
 Richmond, VA 23218

In accordance with USACE and DEQ instructions for reporting credit availability, we are providing the following to document the availability of stream/wetland credits:

<i>Date of Sale</i>	
<i>Dept. of the Army Permit Number</i>	
<i>DEQ or VMRC Permit Number</i>	
<i>Permittee</i>	
<i>County of impact</i>	
<i>Watershed of impact (8 digit HUC)</i>	
<i>Latitude/Longitude of Impact (centroid)</i>	
<i>Type(s) of impact(s) (NTW/TW/ST)</i>	
<i>Amount of impact(s)</i>	
<i>Type of Credits (NTW/TW/ST)</i>	
<i>Number of Credits Sold</i>	
<i>Type of Credits Sold (advanced /released)</i>	
<i>Project within Geographic Service Area of Site (Yes or No)</i>	

I verify that the required number and type of Credits identified above are available at my ILF Program Site and that they have been released by the IRT or made available through an ILF Program Instrument. Once the form is signed, I shall provide a copy of the signed form to the Permittee and to the USACE and DEQ Project Manager. This form does not relieve me of the requirement to comply with all reporting requirements established in the Site or ILF Program Instrument.

I certify that the information provided in this form is true, accurate, and complete to the best of my ability, based on the information that was provided to me by the Permittee/Permittee's Agent. Please contact me with any questions.

Sincerely,

Site Point of Contact

EXHIBIT J MONITORING AND REPORTING REQUIREMENTS

AS-BUILT MONITORING AND REPORTING

An as-built report shall be submitted to the IRT within ninety (90) days of completion of mitigation activities for the Site/Phase depicted in the FMWP. The as-built report shall include comparisons of the design plan to the as-built plan, using the following components:

- 1) Plan view maps of the constructed wetlands, streams, and adjacent buffers that depict the Site/Phase Boundaries, as-built topography, all mitigation activities (including buffer activities), and the locations of all monitoring stations (photo stations, anticipated vegetation sampling plots, wetland monitoring wells or iris tubes, soil boring locations, stream gages, precipitation gauges, cross-sections, longitudinal profiles, pattern and bank vegetation monitoring stations, chemical and biological monitoring stations, etc.).
- 2) As-built longitudinal profiles of stream reaches taken from permanent locations, and overlaid with and compared to design longitudinal profiles.
- 3) As-built cross-sections of stream reaches taken at locations, and overlaid with and compared to design cross-sections.
- 4) Photographs of the completed construction taken at permanent photo stations.
- 5) Summary stream geomorphologic data presented in a side by side comparison of the design, reference, and as-built channels.
- 6) Planting composition, locations, and densities.
- 7) Revised credit totals for the entire Site, the Phase for which the as-built is submitted, and individual mitigation activities, in the same format as in the Credit and Debit Procedures (Exhibit G of this SDP). Explain any differences in credits totals from design to as-built plans.

GENERAL MITIGATION MONITORING GUIDELINES

Monitoring activities will follow the timing and guidelines set forth in the Monitoring Requirements section of the Program Instrument, and according to the following monitoring schedules, requirements, and reporting requirements. General conditions on monitoring and reporting include the following:

- All monitoring shall be completed according to the requirements outlined in Section 20 of the Instrument.
- For any year in which planting was conducted, monitoring of vegetation shall take place at least 6 months following planting.
- Monitoring of all vegetation shall be conducted during the growing season.
- After Year 2, physical monitoring of stream condition (e.g. Longitudinal profiles, cross-sections, pattern monitoring) may be conducted outside of the growing season.
- If all Performance Standards have not been met in the 10th monitoring year, then a monitoring report may be required for each consecutive year until two sequential annual reports indicate that all criteria have been successfully satisfied.
- For stream chemical and biological monitoring, the monitoring event shall occur consistently in either spring or fall of each monitoring year. Spring sampling shall be conducted between March 1 and May 31. Fall sampling shall be conducted between September 1 and November 30.

MITIGATION MONITORING AND REPORTING

All monitoring reports, other than the as-built report, will include the following general items, in addition to all monitoring and reporting requirements in this Exhibit that are relevant to the Site/Phase being monitored:

- Title page, including, where applicable, the Site name, Phase, monitoring year(s), requested actions (credit release, adaptive management, etc.), Conservancy identification (name, address, phone number, and email address), Report preparer identification (name, address, phone number, and email address).
- Vicinity Map of the Site, including latitude and longitude at the entrance of the Site.
- A Section with all Performance Standards and monitoring requirements for the Site/Phase.
- Complete maintenance summary for the Site/Phase since construction, including any adaptive management or corrective action (e.g. supplemental planting, structure repair, invasive treatment, etc.).
- A map or drawing, based on the as-built drawings of the Site/Phase, that depicts topography, all mitigation activities, and the locations of all monitoring stations (permanent photo stations, vegetation sampling plots, wetland monitoring wells or iris tubes, soil boring locations, stream gauges, precipitation gauges, cross-sections, longitudinal profiles, pattern monitoring stations, etc.).
- Overall Performance Standards table for the Site/Phase, showing each plot, cell, or area and whether that area met Performance Standards during the current monitoring year and each previous monitoring year.
- Beginning at Year 3, a detailed narrative discussing the objectives of the Site/Phase as described in the Mitigation Work Plan (Exhibit E of this SDP), and the degree to which the Site/Phase meets those objectives.
- A revised summary map and table depicting the total mitigation credits within the Site/Phase and the areas where Credits have been released.
- Corrective action plan, if necessary, including the current deficiencies or issues within the Site/Phase, proposed adaptive management, corrective actions, or maintenance activities, and an estimated schedule for completion.
- The following certification statement: "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

CREDIT RELEASE TABLE (EXCEL spreadsheet available)

In the columns for Year and Type of Release(s), please specify initial, construction, Year 1, etc. for all activities for which the Conservancy is requesting credit. The percentage of released mitigation credit for each activity is tracked in the right hand column. Each monitoring year, the release will be based off the amount of successful credits that are eligible to be released, not a multiplier of the two numbers as in previous credit release schedules.

Table 1. Credit Release Table

<u>Mitigation Activity (Example)</u>	<u>Credit Total (for Site)</u>	<u>(Year): (Type of Release(s) from Credit Release Schedule)</u>	<u>(Year): (Type of Release(s) from Credit Release Schedule)</u>	<u>(Year): (Type of Release(s) from Credit Release Schedule)</u>	<u>Percentage of Released Mitigation Credits by Activity</u>
PHASE I					
Restoration					
Enhancement					
Preservation					
Buffer Rest					
Buffer Enh					
Buffer Pres					
Adjustment Factors					
PHASE II					
Restoration					
Enhancement					
Preservation					
Buffer Rest					
Buffer Enh					
Buffer Pres					
Adjustment Factors					
<u>Total</u>		<i>(Should match RIBITS)</i>	<i>(Should match RIBITS)</i>	<i>(Should match RIBITS)</i>	

LEDGER AND FINANCIAL REPORTING

Please see Section 27 of the Instrument for information on submitting ledger and Financial Assurance and Long-Term Management Funding Reports.

PRESERVATION MONITORING AND REPORTING

In Wetland Preservation Areas, Riparian Buffer Preservation Areas, and Upland Buffer Preservation areas, monitoring and reporting will be driven by the Performance Standards, and shall include the following:

1) VEGETATION

- a) Monitoring: Methodology necessary to demonstrate compliance with the approved INU treatment plan.
- b) Reporting: Reporting necessary to demonstrate compliance with the approved INU treatment plan. At a minimum, preservation areas should be included on an updated INU species Inventory Map for the Site/Phase that shows the current location

and extent of INU species onsite, and takes into account any changes in INU species populations, such as treatment that was performed in the past year.

2) VISUAL OBSERVATIONS

- a) Monitoring: Visual observations of the preservation areas shall include any changes in the buffer condition and photographic documentation of the preservation areas, if they have changed.
- b) Reporting: Visual observations shall be provided with each monitoring report through written discussion of the condition of preservation areas, any changes to the buffer, and photographic documentation, as necessary to further describe the buffer condition.

RIPARIAN OR UPLAND BUFFER MONITORING AND REPORTING

In all Restored or Enhanced Riparian and Upland Buffer areas, monitoring and reporting will be driven by the Performance Standards and INU Management Plan, and will include the following:

1) VEGETATION

a) Monitoring

- (1) Forested or scrub/shrub (i.e. woody) monitoring plots – Riparian and/or upland buffers shall be stratified into relatively homogeneous sample areas. These sample areas may correspond to planting zones, Phases, proposed habitat, cover/community type, or other characterizations. These sample areas do not have to be contiguous. Appropriate methods shall be used to randomly locate woody plots within sample areas (transects with random number generators, GIS randomization methods, etc.). Plots shall be re-established in new random locations each year.

Woody plots shall be circular in dimension and measure 1076 ft² (100 m²), which is equivalent to a circle with a radius of 18.5 ft (5.6 m). This plot size equates to 0.025 or 1/40th of an acre, which provides a multiplier of 40x for stem density conversion to per acre values.

At a minimum, the total area covered by woody plots shall be at least 2% of the sample area (*see Table 2 below*). However, additional plots will be required if the number of plots is determined to not be adequate. Sampling adequacy can be determined using a variety of methods (e.g. Species-area curves leveling off, variance stabilization, etc.) and shall be included in all monitoring reports. Conversely, after three years of sampling, if sampling adequacy analysis indicates oversampling, the number of plots may be reduced.

Table 2. Minimum Number of Woody Sampling Plots (based on 2% of total sample area)

Sample Area (ac.)	Number of Plots	Sample Area (ac.)	Number of Plots
1-5	4*	28	23
6	5	29	23
7	6	30	24
8	6	31	25
9	7	32	26
10	8	33	27
11	9	34	28
12	10	35	28
13	11	36	29
14	11	37	30
15	12	38	31
16	13	39	32
17	14	40	32
18	15	41	33
19	15	42	34
20	16	43	35
21	17	44	36
22	18	45	36
23	19	46	37
24	19	47	38
25	20	48	39
26	21	49	40
27	22	50+	add 1 plot per 2ac.

* Note: For sample areas 1-5 acres in size four (4) plots are recommended to ensure the number of plots is adequate.

The woody vegetation data collected shall include identification of all live woody stems found in the sampling plot by scientific and common name with corresponding wetland indicator status, native status, stem count, dominant species, stem diameter at groundline (see below), stem height, overall canopy coverage, or others, as required by the Performance Standards.

The stem diameter at groundline (SDG) of all individual woody vegetation (any height or diameter) including trees and shrubs should be measured to the nearest 0.1 inch. If significant swelling or malformation is present, the SDG should be measured directly above where the stem returns to normal taper. For multi-stemmed vegetation, the SDG for each individual stem should be measured and combined following conversion to stem area at groundline (SAG). This effectively forms a single stem for each individual. Total SAG shall be presented as ft²/acre for each plot and average SAG with measures of variance (e.g. standard deviation) shall be presented for each sample area.

- (2) Herbaceous monitoring plots - Plots shall be located on a stratified random basis within Riparian and Upland Buffers (as described above). Herbaceous vegetation sampling plots shall be square sampling frames with inside dimensions of 3.3x3.3 ft (1x1 m), which are equivalent to an area of 10.8 ft² (1 m²) (or equivalent sized circles).

A minimum of five (5) herbaceous plots per acre is required. However, additional plots will be required if the number of plots is determined to not be adequate. Sampling adequacy can be determined using a variety of methods (e.g. Species-area curves leveling off, variance stabilization, etc.) and shall be included in all monitoring reports. Conversely, after three years of sampling, if sampling adequacy analysis indicates oversampling, the number of plots may be reduced.

The vegetation data collected shall include identification of all herbaceous species found in the sampling plot by scientific and common name with corresponding estimate of absolute percent cover (including bare ground and/or open water), indicator status, native status, or others, as required by the Performance Standards. For estimating herbaceous species cover, it is recommended that cover classes be used, taking the midpoints of the classes for data analysis. The following cover classes are recommended (midpoints in parentheses, rounded to nearest whole integer):

Class 1:	0-1% (1%)
Class 2:	1-5% (3%)
Class 3:	5-25% (15%)
Class 4:	25-50% (38%)
Class 5:	50-75% (63%)
Class 6:	75-95% (85%)
Class 7:	95-100% (98%)

b) Reporting

The monitoring report shall include raw and summary vegetation data. The raw data can be submitted as a supplementary Excel file and should include all vegetation data from all plots. The summary data shall present the vegetation data summarized (e.g. averages, variance, totals, etc.) for each stratum (homogenous sample area described above), preferably in table form. These summary tables shall include comparisons of summarized data to all applicable Performance Standards. For Riparian and Upland Buffer areas these summary tables may include the following data (depending on the approved SDP Performance Standards and INU Management Plan): woody stem density (stems/acre), canopy coverage (percentage), woody vegetation height (feet), change in tree height (percentage/year), SAG (ft²/acre), herbaceous plant cover (absolute percentage), and location and cover of INU species.

2) PHOTOGRAPHS

Visual observations shall be documented and provided with each monitoring report with the following:

a) Monitoring

Either ground level photographs will be taken facing north, south, east, and west, from stations located adjacent to each vegetation plot or one color aerial photograph (8" x 10" or larger) depicting the entire Site will be taken. An aerial photograph should be taken after Site construction (including planting) and again in the 5th and 10th monitoring years. Existing aerial images (if current) may be substituted (i.e. Google Earth images or state aerial images). One aerial photograph may be used for the whole Site/Phase, including any riparian, upland, or wetland mitigation areas.

b) Reporting

For the current monitoring year, either the ground level photographs or the color aerial photograph (if applicable) will be provided with the report.

NON-TIDAL WETLAND RESTORATION/CREATION/ENHANCEMENT AREAS MONITORING AND REPORTING

In non-tidal Restored, Created, or Enhanced wetland areas, monitoring and reporting will be driven by the Performance Standards, INU Management Plan, and may include the following:

1) GROWING SEASON DOCUMENTATION

This documentation is necessary ONLY if you wish to extend the growing season beyond that which is an approximation using air temperature data from Wetland Tables (WETs) (Natural Research Conservation Service (N R C S) National Water and Climate Center).

a) Monitoring

- (1) Growing Season – The methods of determining the beginning of the growing season of a Site/Phase will follow the definition found in the applicable Regional Supplement to the Delineation Manual. However, dated photographs of two or more different non-evergreen vascular plants growing within the Site/Phase AND from an adjacent forested site are required.
- (2) Soil Temperature – Soil temperatures are to be measured from within the Site/Phase limits. Daily soil temperature data collected by data loggers are preferred but information from soil thermometers may be acceptable (the thermometer used must be calibrated with proof of calibration provided). Soil temperature data should be collected at least two times a week starting in January to provide information in support of the establishment of the start of the growing season.
- (3) Soil temperature and plant data must be collected at locations approved by the IRT. For Site/Phases proposed as forested wetlands, soil temperature and plant growth data must be collected in a similarly situated (hydrogeomorphically) adjacent reference wetland area, as well as on the Site/Phase.

- (4) The Site/Phase must be monitored each year to determine the growing season. Prior year's data expires after it is submitted to the IRT and cannot be used for future years.

b) Reporting

- (1) The location (shown on map), species, and indicators of biological activity will be provided.
- (2) The raw soil temperature data, collection location (shown on map), equipment used, calibration information, and dates collected will be provided.

2) HYDROLOGY

a) Monitoring

- (1) The number and location of monitoring wells or other soil saturation measurement devices shall be sufficient to demonstrate that the Performance Standards for wetland hydrology are met for the proposed wetland type. Proposed monitoring well number and location shall be included on the overall proposed monitoring map in the as-built report. A minimum of 3 monitoring wells will be required for each Site/Phase. For a Site/Phase less than 20 acres, a minimum of 1 monitoring well per 2 acres will be required. For a Site/Phase greater than 20 acres, a minimum of 1 monitoring well per 5 acres will be required.
- (2) Specific details on the soil saturation measurement device and location or groundwater monitoring wells shall be provided in the FMWP for IRT approval, acting through the Chair(s) as described in Exhibit E of this SDP.
- (3) The depth of water and the hydroperiod will be measured to demonstrate that the appropriate hydrogeomorphic standards have been met and they are similar to the target wetland type or reference wetland.
- (4) During the first two years, at least six months of water level data will be obtained, with timing sufficient to confirm (a) the length and depth of near –surface saturation and/or ponding and (b) the overall depth of the dry season water level draw-down.

b) Reporting

Water level data will be submitted in each monitoring report in tabular and graph format for the current monitoring year. A hydrograph for the current monitoring year will be created and submitted. The Conservancy will provide a comparison of the current monitoring year's hydrograph with a hydrograph for the wetland type that is being restored or created. Daily precipitation data for the monitoring period with a comparison to historical average precipitation data will be provided in tabular and graphic form.

3) SOILS

(For Created or Restored wetlands)

a) Monitoring

A complete soil morphologic profile and description shall be documented immediately post- construction and at the 3rd, 7th, and 10th year following construction to document changes in overall soil morphology, particularly the development of redoximorphic features over time (such as a reduction in matrix chroma or development of redox depletions and/or concentrations), to demonstrate that soils at the Site are progressing towards hydric soil conditions. Soil profiles shall be described at a distance of 10 feet from each monitoring well.

b) Reporting

Describe the soil profile, including a table with the following for each soil profile: horizon, depth, color, texture, horizon, matrix color, redoximorphic feature type, abundance, location, and colors, and any documented field indicators per current NRCS guidance.

4) VEGETATION

a) Monitoring

(1) Forested or scrub/shrub (i.e. woody) monitoring plots – Created, restored or enhanced wetlands shall be stratified into relatively homogeneous sample areas. These sample areas may correspond to planting zones, Phases, proposed habitat, cover/community type, or other characterizations. These sample areas do not have to be contiguous. Appropriate methods shall be used to randomly locate woody plots within sample areas (transects with random number generators, GIS randomization methods, etc.). Plots shall be re-established in new random locations each year.

Woody plots shall be circular in dimension and measure 1076 ft² (100 m²), which is equivalent to a circle with a radius of 18.5 ft (5.6 m). This plot size equates to 0.025 or 1/40th of an acre, which provides a multiplier of 40x for stem density conversion to per acre values.

At a minimum, the total area covered by woody plots shall be at least 2% of the sample area (*see Table 2 above*). However, additional plots will be required if the number of plots is determined to not be adequate. Sampling adequacy can be determined using a variety of methods (e.g. Species-area curves leveling off, variance stabilization, etc.) and shall be included in all monitoring reports. Conversely, after three years of sampling, if sampling adequacy analysis indicates oversampling, the number of plots may be reduced.

The woody vegetation data collected shall include identification of all live woody stems found in the sampling plot by scientific and common name with corresponding wetland indicator status, native status, stem count, stem diameter at groundline (see below), stem height, overall canopy coverage, aerial coverage by each species (using cover classes below), or others, as required by the Performance Standards.

The stem diameter at groundline (SDG) of all individual woody vegetation (any height or diameter) including trees and shrubs should be measured to the nearest 0.1 inch. If significant swelling or malformation is present, the SDG should be measured directly above where the stem returns to normal taper. For multi-stemmed vegetation, the SDG for each individual stem should be measured and combined following conversion to stem area at groundline (SAG). This effectively forms a single stem for each individual. Total SAG shall be presented as ft²/acre for each plot and average SAG with measures of variance (e.g. standard deviation) shall be presented for each sample area.

- (2) Herbaceous monitoring plots - Plots shall be located on a stratified random basis within Riparian and Upland Buffer areas (as described above). Herbaceous vegetation sampling plots shall be square sampling frames with inside dimensions of 3.3x3.3 ft (1x1 m), which are equivalent to an area of 10.8 ft² (1 m²) (or equivalent sized circles).

A minimum of five (5) herbaceous plots per acre is required. However, additional plots will be required if the number of plots is determined to not be adequate. Sampling adequacy can be determined using a variety of methods (e.g. Species-area curves leveling off, variance stabilization, etc.) and shall be all included in monitoring reports. Conversely, after three years of sampling, if sampling adequacy analysis indicates oversampling, the number of plots may be reduced.

The vegetation data collected shall include identification of all herbaceous species found in the sampling plot by scientific and common name with corresponding estimate of absolute percent cover (including bare ground and/or open water), indicator status, native status, or others, as required by the Performance Standards. For estimating herbaceous species cover, it is recommended that cover classes be used, taking the midpoints of the classes for data analysis. The following cover classes are recommended (midpoints in parentheses, rounded to nearest whole integer):

Class 1:	0-1% (1%)
Class 2:	1-5% (3%)
Class 3:	5-25% (15%)
Class 4:	25-50% (38%)
Class 5:	50-75% (63%)
Class 6:	75-95% (85%)
Class 7:	95-100% (98%)

b) Reporting

The monitoring report shall include raw and summary vegetation data. The raw data can be submitted as a supplementary Excel file and should include all vegetation data from all plots. The summary data shall present the vegetation data summarized (e.g. averages, variance, totals, etc.) for each stratum (homogenous sample area described above) preferably in table form. These summary tables shall include comparisons of summarized data to all applicable Performance Standards. For Created, Restored or Enhanced wetland areas these summary tables may include the following data (depending on the approved SDP Performance Standards and INU Management

Plan): hydrophytic vegetation dominance test (as defined in the Corps' 1987 Wetland Delineation Manual and subsequent Regional Supplements), prevalence index (as

defined in the Corps' 1987 Wetland Delineation Manual and subsequent Regional Supplements), stem density (stems/acre), canopy cover by all woody species (percentage), woody vegetation height (feet), change in tree height (percentage/year), SAG (ft²/acre), herbaceous plant cover (absolute percentage), and location and cover of INU species.

5) PHOTOGRAPHS

Visual observations shall be documented and provided with each monitoring report with the following:

a) Monitoring

Either ground level photographs will be taken facing north, south, east, and west, from stations located adjacent to each vegetation plot or one color aerial photograph (8" x 10" or larger) depicting the entire Site will be taken. An aerial photograph should be taken after Site construction (including planting) and again in the 5th and 10th monitoring years. Existing aerial images (if current) may be substituted (i.e. Google Earth images or state aerial images). One aerial photograph may be used for the whole Site or Phase, including any riparian, upland, or wetland mitigation areas.

b) Reporting

For the current monitoring year, either the ground level photographs or the color aerial photograph (if applicable) will be provided with the report.

TIDAL WETLAND CREATION AND RESTORATION

- 1) Monitoring activities will occur during late summer or early fall (August-September).
- 2) Narrative description of visual observations
- 3) Permanent photo stations established around the perimeter of the site that depict a reasonable representation of conditions on the Site.
- 4) One color aerial photograph (8" X 10" or larger) depicting the entire site.
- 5) An aerial photograph should be taken after construction (including planting) and again in the 3rd and 7th year following final grading.
- 6) Photos of the tide staffs taken at high tide at the inlet and the upper reaches of any tidal channels.
- 7) The as-built survey will indicate whether the appropriate grades have been established to ensure adequate tidal hydrology. A comparison of the as-built grades to the tidal datum that demonstrates the grades are within the intertidal zone shall be provided.
- 8) Transects shall be established across the entire Site that will allow for random sampling of the entire Site. Random one meter square quadrats will be sampled along these transects for percent cover of vegetation, including plant species naturally colonizing the Site, stem height and number of flowering shoots.
- 9) During Year 1 sampling, data on the percent survivorship of the planted plugs will be collected.
- 10) During each annual sampling the entire Site will be surveyed and mapped for the presence of *Phragmites australis* or other INU species
- 11) Sampling for use of the area by fish and shellfish will occur in years 1, 5, and 10 following construction. Sampling will be completed using seines and/or block net with enumeration and identification of species collected.
- 12) If a tidal channel is constructed the following will be provided:
 - a) A comparison of the as-built drawing of the tidal channel to the tidal channel

configuration during monitoring events, noting any changes that may affect the hydrology of the tidal wetlands.

b) Ground level photographs that document channel stability/instability. The photos will be taken at a minimum of five (5) representative locations along the tidal channel including the inlet area, each channel split, and the upper channel area.

c) Tidal Staffs will be installed at the head and the mouth of the inlet channel and will be surveyed to reflect the project datum, NAVD 88.

STREAM MONITORING AND REPORTING

1) BANKFULL EVENT DOCUMENTATION

For stream Enhancement or Restoration activities, stream gauge data and documentation of any bankfull events on the Site/Phase will be provided, as recorded by onsite stream gauge(s) and/or onsite or nearby precipitation data.

2) CROSS-SECTIONS

Where Performance Standards indicate that channel dimension will be measured and analyzed (Width/Depth Ratio, Bank Height Ratio, Entrenchment Ratio, Cross-Sectional Area, or others), the following shall occur:

a) Monitoring

Permanent cross-sections shall be established to ensure that the same locations are used each monitoring year. A minimum of one cross-section in appropriate stream preservation reaches (see Performance Standards), and one cross-section per 1000 linear feet in enhancement and restoration reaches will be required. In enhancement or restoration reaches, cross-sections should include at least one riffle and onepool cross-section on each reach, and a proportionate amount of riffle and pool cross-sections on each reach. Total number required will vary depending on project length and complexity. Additional cross-sections may be required to show areas where aggradation, degradation, erosion, and mid-channel bars have developed. Cross-sectional measurements shall include streambanks, streambed, water surface, bankfull, and adjacent floodplain. The bankfull elevation in the channel shall be measured at the as-built monitoring, and the as-built bankfull shall be used as the bankfull elevation in each subsequent monitoring event. When calculating the Entrenchment Ratio, the floodplain may be measured separate from the cross-section during field data collection. Ground level photographs will be taken annually during November or December of the current monitoring year at all cross-sections. These photographs will be taken facing upstream at the cross-section, downstream at the cross-section, and left bank and right bank, showing the riparian buffer area and stream bank.

b) Reporting

Cross-section reporting shall include a graph of the current monitoring year's cross-section, with the cross sections for all previous monitoring years overlain. Callouts on the graph shall be appropriate for the Performance Standards, and may include bankfull elevation, bankfull width, bankfull depth, floodprone elevation, floodprone depth, top of bank location and elevation, or others, as appropriate. A table of the appropriate Performance Standard parameters will be provided, showing all individual cross-section calculations and a reach-averaged calculation, and comparing the as-built to the current year's monitoring data. Ground level photographs shall be provided with each monitoring report, according to the monitoring requirements.

3) LONGITUDINAL PROFILE

Where Performance Standards indicate that channel bed form or vertical stability parameters will be measured and analyzed (Pool-to-pool spacing, max pool depth, slope, riffle slope, or others), the following shall occur:

a) Monitoring

A surveyed longitudinal profile will be conducted of the reach in the thalweg of the channel, from 20 feet upstream of the start of the reach to 20 feet downstream of the end of the reach (unless property boundaries, stream confluences, or other constraints are present). Longitudinal profile measurements should include the locations, depths, and slopes of riffles, runs, pools, and glides, and representative water surface elevation and bankfull surface elevation lines.

b) Reporting

Longitudinal profile reporting shall include a graph of the current monitoring year's profile, with the profiles for all previous monitoring years overlain. Callouts on the graph shall be appropriate for the Performance Standards, and may include bankfull elevation, water surface elevation, locations of facets, or others, as appropriate. Pool-to-pool spacing is measured from the top of pool to top of pool. Max pool depth is the pool depth measured from the reach bankfull elevation to the thalweg in the deepest part of the pool. Channel bed slope shall be measured from the top of a riffle to the top of another riffle over a channel length of at least ten (10) bankfull widths. Riffle slope is measured from the top of riffle to the bottom of the same riffle (top of run). A table of the appropriate Performance Standard parameters will be provided in each monitoring report, showing all individual profile calculations and a reach-averaged calculation, and comparing the as-built to the current year's monitoring data for each parameter.

4) PATTERN

Where Performance Standards indicate that lateral stability or bank migration parameters will be measured and analyzed (Meander Width Ratio, Sinuosity, Radius of Curvature, Bank Erodibility Hazard Index (BEHI), or others), the following shall occur:

a) Monitoring

Permanent pattern monitoring stations shall be established to ensure that the same locations are used each monitoring year. A minimum of three (3) pattern monitoring stations shall be established to measure Meander Width Ratio, Radius of Curvature, or BEHI. A minimum of one pattern monitoring station shall be established to measure sinuosity. Total number of monitoring stations required will vary depending on project length and complexity. Sinuosity shall be assessed along a stream reach that is a minimum of ten (10) bankfull widths in length. When BEHI is conducted, all individual BEHI metrics shall be measured at each permanent station in the field during each monitoring event.

b) Reporting

Pattern reporting shall include a table of the appropriate Performance Standard parameters, showing all individual pattern measurements and a reach-averaged calculation or ratio (if applicable), and comparing the as-built to the current year's monitoring data for each parameter. BEHI reporting shall include providing the current

monitoring year's BEHI worksheet, and a table of the total BEHI score for each monitoring year from as-built to the current year.

5) STREAM BANK VEGETATION

Where Performance Standards indicate that stream bank vegetation will be measured and analyzed (Livestakes, Herbaceous Coverage, Bare Ground Coverage, or others), the following shall occur:

a) Monitoring

Stream bank vegetation plots (50 square feet in size or larger) shall be located on each bank representative permanent cross-section or pattern monitoring stations.

b) Reporting

Stream vegetation reporting may include a table of the results of the vegetation surveys, including per plot reporting of the species and number of livestakes or woody stems, extrapolated number livestakes per 50 square feet, estimated herbaceous coverage, and/or estimated bare ground coverage.

6) MATERIALS

Where Performance Standards indicate that stream bed materials will be measured and analyzed (D50 particle size, or others), the following shall occur:

a) Monitoring

Conduct the Wolman pebble count technique within a representative amount of constructed riffles within a reach. Pebble counts may be associated with representative permanent cross-section or pattern monitoring stations, or set up within the longitudinal profile at independent monitoring stations.

b) Reporting

Materials reporting shall include a table of the representative D50 of the constructed riffle pebble count for each reach during each monitoring year, and the size class represented by the as-built and current monitoring year D50.

7) STRUCTURES

Where Performance Standards indicate that structure stability will be evaluated and analyzed, the following shall occur:

a) Monitoring

Ground level photographs, documenting the structural integrity and function of each instream structure, will be taken looking upstream at the structure, showing at a minimum the instream structure at the thalweg (or location of buried sill), the upstream and downstream channel, and the immediately adjacent stream banks to bankfull elevation, where possible.

b) Reporting

Ground level photographs shall be provided with each monitoring report, documenting

structure conditions during the current monitoring year. The report shall note any structural failures or issues, as listed in the Performance Standards.

8) AQUATIC HABITAT

Where Performance Standards indicate that aquatic habitat will be evaluated and analyzed, the following shall occur:

a) Monitoring

A habitat assessment shall be conducted at either each benthic macroinvertebrate monitoring station (as outlined below), or at a minimum one representative monitoring station per reach. Procedures and forms for habitat assessment can be located in DEQ's *Biological Monitoring Program Quality Assurance Project Plan for Wadeable Streams and Rivers* (DEQ, 2008) Appendix B (iii) or EPA's *Rapid Bioassessment Protocol for Use in Streams and Wadeable Rivers* (Barbour et. al, 1999) Chapter 5.

b) Reporting

Habitat reporting shall include providing the current monitoring year's Habitat Assessment worksheet for each reach. A table shall be provided in the monitoring report that shows the habitat assessment total score for all monitoring years for each reach.

9) CHEMICAL AND BIOLOGICAL MONITORING

The objective of benthic macroinvertebrate sampling is to allow for comparison between sites involving stream channel restoration activities; to identify issues that may need to be addressed in restoration design; to determine realistic expectations for the post-restoration aquatic community; and to inform future stream restoration designs and efforts. The following monitoring and reporting shall occur during every monitoring year within stream restoration reaches onsite:

a) Monitoring

- (1) Monitoring events shall occur consistently in either spring or fall of each monitoring year. Spring sampling shall be conducted between March 1 and May 31. Fall sampling shall be conducted between September 1 and November 30. Water chemistry and benthic samples shall be collected simultaneously at each of the monitoring locations. The number and location of monitoring stations shall be determined and approved by the IRT on a Site-specific basis, and shall remain consistent throughout the monitoring period. Surveys of other biota (e.g. fish, waterfowl, amphibians, etc.) may occur on a case-by-case basis, especially in the case of potential or confirmed presence of rare, threatened, or endangered species.
- (2) Scientific Collection permits for conducting benthic sampling shall be obtained from Virginia Department of Game and Inland Fisheries (VDGIF) (information available at <http://www.dgif.virginia.gov/permits/guide.asp>). All field sampling as well as laboratory sample processing shall be performed by or under supervision of an aquatic biologist. As required by the collection permit, all sampling data shall be submitted to VDGIF using their annual reporting protocol, in addition to the reporting requirements within this SDP.
- (3) Chemistry – Temperature, total dissolved oxygen, pH, and conductivity shall be collected at each designated monitoring location site using a multi-probe meter. Detailed information on testing, inspection, and maintenance requirements of all multi-

probe meters for measurement of stream physicochemical parameters can be found in Section IV of the *Standard Operating Procedures Manual for the Department of Environmental Quality Office of Water Quality Monitoring and Assessment Program* (DEQ, 2010).

(4) Biological – A quantitative survey for benthic macroinvertebrates shall be conducted at permanent monitoring locations. Benthic macroinvertebrates shall be identified at least to the genus level. Detailed procedures and methods for biological monitoring, field methods, laboratory methods, and quality assurance can be found in *Biological Monitoring Program Quality Assurance Project Plan for Wadeable Streams and Rivers* (DEQ, 2008). This document shall serve as the basis for the field monitoring and laboratory data collection methods. Two sampling procedures are presented:

(a) Single Habitat is used for streams in which riffles or riffle/pool complexes with appropriate substrate (cobble) are available for sampling and are large enough so that at least 1m² of the substrate can be sampled.

(b) Multiple Habitat is used in cases where no or few riffles are present, the riffles in the reach are too small and/or too few to sample 1m² of substrate. Multi-habitat sampling is most commonly performed in, but not limited to, low gradient or coastal plain streams.

b) Reporting

(1) Benthic Macroinvertebrate reporting shall include a table showing the Virginia Stream Condition Index (VSCI) or Coastal Plain Macroinvertebrate Index (CPMI) total score for all monitoring years for each reach.

(a) For non-coastal streams, use the resulting benthic macroinvertebrate data to calculate the Stream Condition Index for Virginia Non-Coastal Streams (VSCI). This Stream Condition Index for Virginia Non-Coastal Streams (September 2003) is found at <http://www.deq.virginia.gov/Portals/0/DEQ/Water/WaterQualityMonitoring/BiologicalMonitoring/vsci.pdf>. An Access database used to calculate VSCI and CPMI can be provided upon request.

(b) For coastal streams, use the resulting data to generate a Coastal Plain Macroinvertebrate Index (December 2013) found at <http://www.deq.virginia.gov/Portals/0/DEQ/Water/WaterQualityMonitoring/ProbabilisticMonitoring/vcpmi.pdf>. An Access database used to calculate VSCI and CPMI can be provided upon request.

EXHIBIT K SITE OPERATIONS MAINTENANCE PLAN

The Conservancy shall maintain the Site consistent with the SDP during operation of the Site, including this Maintenance Plan, in addition to construction, monitoring, and adaptive management. The Maintenance Plan is a description and schedule of maintenance requirements to ensure the continued viability of the mitigation resources from SDP approval to Site closure and Long-Term Management. The Conservancy shall continue with such maintenance activities until the Site is closed in accordance with the Site closure procedures and the Long-Term Steward assumes their responsibilities. Deviation from the maintenance provisions in the approved SDP requires review and written approval from the Chairs in consultation with the IRT.

Upon the conclusion of the ten year monitoring period, the Conservancy will revisit this Maintenance Plan, and submit an updated Maintenance Plan, for coordination with the IRT. The updated Maintenance Plan will cover any changes or revisions anticipated in maintenance activities from the time of the conclusion of monitoring until Site Closure. An updated Maintenance Plan may be uploaded to RIBITS and notification sent to the Chairs, either concurrent with Year 10 monitoring or by January 31st on the year after completion of monitoring.

The following regular maintenance and bookkeeping will be conducted for the Site, at a minimum:

- Maintain a Site activities ledger, which describes the date, purpose, description of activities performed, and outcome of each maintenance visit. This ledger is not required to be submitted on a regular basis, but may be requested by the IRT at any time;
- Conduct regular inspections of all mitigation areas, including preservation areas, particularly during non-reporting years of Site operation (annual inspections recommended, at a minimum);
- Maintain and repair all mitigation areas to meet or exceed the objectives and functions of the Site, including all mitigation-related berms and structures;
- Proactively manage INU species on the Site property;
- Ensure that no trespass, illegal dumping, or trash accumulation occurs on the Site property;
- Post and repair Site/property limit and conservation easement signs;
- Maintain, repair, and/or replace gates and fences, as necessary;
- Maintain and repair direct access roads, as necessary;
- Other maintenance responsibilities to Site operation and adaptive management.

Exhibit L
Long-Term Management Plan (LTMP)

For
The _____ Phase/Site of the
The _____ Site (Site)

I	Introduction	3
A	Purpose of Site /Phase Establishment	3
B	Purpose of this Long-Term Management Plan (LTMP).....	3
C	Long-Term Steward Responsibilities	3
D	Eminent Domain	3
II	Property Description	4
A	Setting and Location	4
B	Cultural Resources	4
C	Existing Easements	4
D	Existing Man-Made Structures	4
III	Habitat and Species Descriptions	4
A	Baseline Description of Biological Resources.....	4
B	Summary of Mitigation Work Plan	5
C	Rare/Threatened/Endangered Species	5
IV	Management and Monitoring	5
A	Biological Resources	5
Element A.1	Streams and Wetlands and Their Associated Buffers.....	5
Element A.2	Rare/Threatened/Endangered Plant Species Monitoring	6
Element A.3	Rare/Threatened/Endangered Animal Species Monitoring	6
Element A.4	Invasive, Nuisance, and Undesirable (INU) Species	7
B	Security, Safety, and Public Access	7
Element B.1	Trash and Trespass.....	7
Element B.2	Fire Hazard Reduction.....	8
C	Infrastructure and Facilities	8
Element C.1	Fences, Gates, Signage, and Property Boundaries.....	8
Element C.2	Crossings, Trails, and Roads.....	8
Element C.3	Berms, Water Control Structures, and Grade Control Structures.....	9
Element C.4	Impoundments	9
D	Reporting and Administration.....	9
Element D.1	Annual Report	9
Element D.2	Administrative and Contingency Fees.....	10
Element D.3	Defense of Easement and Other Real Estate Issues	10
V	Transfer, Replacement, Amendments, and Notices	10
A	Transfer	10
B	Replacement	11

C	Amendments	11
D	Notices	11
VI	Funding and Task Prioritization.....	12
A	Funding	12
	Table 1. Management/Monitoring Activities, Level of Effort, Frequency and Cost.....	13
B	Task Prioritization	14
C	Enforcement	14

I Introduction

A Purpose of Site/Phase Establishment

The _____ (“Site”) was established by the Site Development Plan (SDP) for the Site to compensate for unavoidable impacts to streams and wetlands, and to conserve and to protect streams and wetlands and their associated buffers. The Site/Phase includes acres of streams and wetlands and their associated buffers including acres (*insert as applicable: of/all of which are*) preserved wetlands, acres of established or restored wetlands, linear feet of restored stream channel, linear feet of enhanced stream channel, acres of preserved riparian buffer, acres of restored or enhanced riparian buffer.

The IRT Agencies include the Norfolk District of the U.S. Army USACE of Engineers, Region 3 of the U.S. Environmental Protection Agency, the Virginia Field Office of the U.S. Fish and Wildlife Service, the Virginia Department of Environmental Quality, the Virginia Department of Game and Inland Fisheries, the Virginia Department of Conservation and Recreation, and the Virginia Department of Forestry. Terms used in this LTMP have the same meaning as defined in the SDP.

B Purpose of Long-Term Management Plan (LTMP)

The purpose of this LTMP is to ensure the Site /Phase is managed, monitored, and maintained in perpetuity. This management plan establishes objectives, priorities and tasks to monitor, manage, maintain and report on the waters of the U.S. and/or State Waters and their associated protected buffers, covered species, and covered habitat on the Site /Phase. This LTMP is implemented in accordance with the SDP and the Site Protection Instrument (conservation easement or declaration of restrictions) covering the Site/Phase, and the period of LTM will begin upon closure of the Site.

C Long Term Steward and Responsibilities

The Long-Term Steward is _____. The Long-Term Steward, and subsequent Long-Term Stewards upon transfer, shall implement this LTMP, managing and monitoring the Site/Phase in perpetuity to preserve its habitat and conservation values in accordance with the SDP, conservation easement and/or declaration of restrictions, and the LTMP. Long-term management tasks shall be funded through the Long-Term Management Fund. The Long-Term Steward must maintain a copy of the SDP and all addendums associated with the Site/Phase, including all deed restrictions and easements. The Long-Term Steward shall be responsible for providing an annual report to the IRT detailing the time period covered, an itemized account of the management tasks, and total amount expended. Any subsequent grading, or alteration of the hydrology and/or topography by the Long-Term Steward or its representatives, must be approved by the IRT, and the necessary permits, such as a Section 404 permit and/or Virginia Water Protection Permit, must be obtained if required.

D Eminent Domain

If the Site/Phase is taken in whole or in part through eminent domain, the Long-Term Steward shall use all monies it receives as compensation for lands and all associated services and values taken to provide replacement compensation within the same Geographic Service Area subject to IRT approval. The IRT will have the right to participate in any proceeding associated with the determination of the amount of such compensation. Replacement compensation may be determined in consultation with the IRT.

II Property Description

A Setting and Location

The Site/Phase is located at _____ (*include address and county*), in the

Commonwealth of Virginia, designated as Parcel No. _____. The Site/Phase is shown on the general vicinity map (Figure 1) and the Site/Phase location map (Figure 2). The general vicinity map shows the Site/Phase location in relation to cities, towns, or major roads, and other distinguishable landmarks. The Site/Phase location map shows the property boundaries on a topographic map (1:24,000 scale).

B Cultural Resources

(Describe all existing architectural features including but not limited to battlefields, historic districts, roads, levees, fencing, and buildings, and their intended future use on the area. Note whether such structures are likely to be considered "historic properties" pursuant to state or federal historic resource preservation laws.)

(Describe any known archeological sites without providing their specific locations on the property, and include a summary of the results of any site surveys/inventories, including who conducted them. An assessment of the impacts of management should be given for such sites.)

C Existing Easements

(Include descriptions/locations of existing easements, their nature (buried pipeline, overhead power, ingress/egress, mineral or timber rights etc.), authorized users (if known), access procedures, etc. Depict easements, rights of way, ingress, and egress routes on an attached map.)

D Existing Man-Made Structures

(Describe and depict on a map or aerial image all manmade features associated with establishment and operation of the Site/Phase including roads, berms, fences, gates, dams, weirs, outfall structures, and water control structures.)

III Habitat and Species Descriptions

A Baseline Description of Biological Resources

(Include a general description of geographic location and features, vegetation (assessment of native vs. INU and non-native species), a quality assessment of all wetland and streams on the Site/Phase. An overview of native plant species present (if applicable), their habitat, and management requirements should be presented here. This section may need to be modified at Site closure if conditions are different than those described here.)

B Summary of Mitigation Work Plan (MWP)

Provide final Site/Phase map showing the mitigation resources, including the location of streams and wetlands and their associated buffers and the location, percent of coverage, and name of all Invasive, Nuisance, and Undesirable (INU) species.

C Rare/Threatened/Endangered Species

Describe all federal and state rare /threatened/endangered species that occur or may occur on the Site/Phase. If applicable, provide a map of their location.

IV Management and Monitoring

The overall objective of long-term management is to foster the long-term viability of the Site/Phase streams and wetlands and their associated buffers, and any listed species/habitat. Routine monitoring and minor maintenance tasks are intended to assure the viability of the Site/Phase in perpetuity.

A. Biological Resources

The approach to the long-term management of the Site/Phase biological resources is to conduct annual Site/Phase examinations and monitoring of selected characteristics to determine stability and ongoing trends of the preserved, restored, and enhanced streams and wetlands and their associated buffers. Annual monitoring will assess the Site/Phase condition, establishment of INU or non-native species, water quality, fire hazard, and/or other aspects that may warrant management actions. While it is not anticipated that major management actions will be needed, an objective of this LTMP is to conduct monitoring to identify any issues that arise, and using adaptive management to determine what actions might be appropriate. Those chosen to accomplish monitoring responsibilities will have the knowledge, training, and experience to accomplish monitoring responsibilities.

Adaptive management means an approach to natural resource management which incorporates changes to management practices, including corrective actions as determined to be appropriate by the IRT in discussion with the Long-Term Steward. Adaptive management includes those activities necessary to address the effects of climate change, fire, flood, or other natural events. Before considering any adaptive management changes to the LTMP, the IRT will consider whether such actions will help ensure the continued viability of Site/Phase biological resources.

The Long-Term Steward for the Site shall implement the following as appropriate:

Element A.1 - Streams and wetlands and their associated buffers

Objective: Monitor, conserve and maintain the Site/Phase streams and wetlands and their associated buffers. Limit any impacts to streams and wetlands and their associated buffers from vehicular travel or other adverse impacts.

Task: At least one annual walk-through survey will be conducted to qualitatively monitor the general condition of these habitats. General topographic conditions, hydrology, general vegetation cover and composition, INU species, and erosion will be noted, evaluated and mapped during a Site examination. Notes to be made will include observations of species encountered, water quality, general extent of

wetlands and streams, and any occurrences of erosion, structure failure, or INU species establishment.

Task: Establish reference sites for photographs and prepare a Site map showing the reference sites for the Site/Phase file. Alternatively, utilize photographic reference sites, if any, developed during the interim Site/Phase management period. Reference photographs will be taken of the overall Site/Phase at least every five years from the beginning of long-term management, with selected reference photos taken on the ground more frequently, _____times per year (*if applicable*).

Special attention should be paid to any area adjacent to or draining property outside of the Site/Phase limits. Streams and wetlands, and their associated buffers, should be observed near Site/Phase boundaries to observe if increased sediment deposition has occurred. The report should provide a discussion of any recent changes in the watershed (i.e., subdivision being developed upstream of stream bank).

Task: Maintain stream restoration/enhancement features like sills and J hooks as necessary.

Element A.2 - Rare/Threatened/Endangered Plant Species Monitoring

(Note: This methodology may vary for different plant species as determined in consultation with the appropriate agencies.)

Objective: Monitor population status and trends.

Objective: Manage to maintain habitat for _____.

Task: Monitor status every year by conducting population assessment surveys. The annual survey dates will be selected during the appropriate period as identified by the applicable member of the IRT and will generally occur from _____through each year. Occupied habitat will be mapped and numbered to allow repeatable data collection over subsequent survey years. Abundance will be assessed semi-quantitatively using broad abundance categories, i.e., 0, 1 - 100, 101 - 500, 501 - 1,000, and >1,000 plants.

Task: Visually observe for changes to occupied habitat, such as changed hydrology or vegetation composition. Record any observed changes. Size of population (1 acre, etc.).

Task: Implement other tasks that enhance or monitor habitat characteristics for _____.

Element A.3 - Rare/Threatened/Endangered Animal Species Monitoring *(Note: Species-specific objectives and tasks will need to be developed in consultation with the appropriate IRT agencies.)*

Objective: Monitor population status and trends.

Objective: Manage to maintain habitat for _____.

Task: Monitor status every year by conducting population assessment surveys. (The annual survey dates will be selected during the appropriate period each year.)

Task: Implement other tasks that enhance or monitor habitat characteristics for _____.

Element A.4 - Invasive, Nuisance, and Undesirable (INU) Species

(Note: Species-specific objectives and tasks will need to be developed in consultation with the appropriate IRT agencies.)

Objective: Monitor and maintain control over INU species that diminish Site/Phase quality for which the Site/Phase was established. The Long-Term Steward shall consult the *Virginia Department of Conservation and Recreation's Invasive Alien Plant list* at http://www.dcr.virginia.gov/natural_heritage/documents/invlist.pdf as well as the definition of INU species in the SDP for the Site/Phase for guidance on what species may threaten the Site/Phase and on management of those species.

Task: Monitor any new introduction or expansion of INU species compared to the baseline map provided at Site Closure.

Task: Each year's annual walk-through survey (or a supplemental survey) will include a qualitative assessment (e.g. visual estimate of cover) of INU species and an inventory map. Additional actions to control INU species will be evaluated and prioritized in coordination with the IRT.

Attached to this plan are fact sheets (including identification aid) for all INU species known to be present on the Site/Phase.

Task: Develop and implement a management plan to control/manage INU species on the Site/Phase.

B Security, Safety, and Public Access

The Site/Phase will be fenced or appropriately marked and shall have no general public access, nor any regular public use, unless otherwise specified. Research and/or other educational programs or efforts, hunting, fishing, and passive recreational activities may be allowed on the Site/Phase as deemed appropriate by the IRT in consultation with the landowner and as provided for in the Site Protection Instrument, but are not specifically funded or a part of this LTMP.

Potential wildfire fuels will be reduced as needed where approved by the IRT.

Element B.1 – Trash and trespass

Objective: Monitor sources of trash and trespass.

Objective: Collect and remove trash, repair vandalized structures, and rectify trespass impacts.

Task: During each Site visit, record occurrences of trash and/or trespass. Record type, location, and management mitigation recommendations to avoid, minimize, or rectify a trash and/or trespass impact.

Task: At least once yearly collect and remove as much trash as possible and repair and rectify vandalism and trespass impacts.

Element B.2 – Fire Hazard Reduction

Objective: Maintain the Site/Phase as required for fire control while limiting impacts to biological values.

Task: Reduce vegetation in any areas recommended by authorities, and as approved by the IRT, for fire control. Potential wildfire fuels will be reduced as needed where approved by the IRT.

Task: Manage, maintain, or re-establish fire breaks as necessary on the Site/Phase.

C Infrastructure and Facilities

Element C.1 - Fences, Gates, Signage, and Property Boundaries

Objective: Monitor condition of fences, gates, signage, and property boundaries.

Objective: Maintain fences, gates, signage, and property boundaries to prevent casual trespass, allow necessary access, and facilitate management (if applicable).

Task: During each Site visit, record condition of fences, gates, signs, and property boundaries. Record location, type, and recommendations to implement repair or replacement to fence, gate, signage, or property boundary markers, if applicable.

Task: Maintain fences, gates, signs, and property boundary markers as necessary by replacing posts, wire, gates, and signs. Replace fences and/or gates, as necessary, and as funding allows. Note any trespass by livestock as well as any negative effects attributed to authorized livestock activities.

Element C.2 - Crossings, Trails, and Roads

Objective: Monitor condition of trails, crossings, and roads, etc.

Objective: Maintain trails, crossings, and roads, to facilitate management (if applicable) and maintain conditions of wetlands and streams.

Task: During each Site visit, record condition of trails, crossings, and roads. Record location, type, and recommendations to implement repair or replacement to trails, crossings, and roads, if applicable.

Task: Maintain trails, crossings, and roads as necessary. Replace trails, crossings, and roads as necessary, and as funding allows.

Element C.3 - Berms, Water Control Structures, and Grade Control Structures

Objective: Monitor condition of wetland berms and/or water control structures for wetland mitigation, and grade control and other structures for stream mitigation, and any other mitigation practices, as appropriate.

Objective: Maintain berms and structures, etc. to facilitate management (if applicable) and maintain conditions of wetlands and streams.

Task: During each Site visit, record condition of berms and structures. Record location, type, and recommendations to implement repair or replacement to berms and structures, if applicable.

Task: Maintain berms and structures, as necessary. Replace berms and structures, as necessary, and as funding allows.

Element C.4 - Impoundments

Objective: Ensure that impoundments have minimal to no adverse effects on downstream compensatory wetland and stream mitigation practices.

Task: During each Site visit, if the impoundments are onsite, record the condition of the impoundments, including inspecting for breaches, cracks, or other signs of instability or damage. Record the condition of downstream aquatic resources within the Site. If it appears that the channel may have been impacted by sediment from the impoundment, record the condition of other stream resources in the area, as a reference condition.

Task: Maintain and repair the onsite impoundments, as necessary to ensure stable downstream wetland and stream conditions.

Task: Remediate sediment or other impacts from the impoundment in any downstream wetlands or streams onsite, if such impacts are determined to be affecting the goals and objectives of the Site.

D Reporting and Administration

Element D.1 – Annual Report

Objective: Provide annual report on all management tasks conducted and general Site/Phase conditions to IRT and any other appropriate parties. Each report shall include a cover page with the following information: the Site/Phase name, Long-Term Steward (name, address, phone number, and email address), monitoring year, and any requested action (e.g. funding release, maintenance recommendations requiring IRT approval).

Task: Prepare annual report and any other additional documentation. Include a summary. Complete and circulate to the IRT and other parties by December 31 of each year. Reports should be distributed electronically.

Task: Make recommendations with regard to (1) any enhancement measures deemed to be warranted, (2) any problems that need near-, short-, and long-term

attention (e.g., weed removal, fence repair, erosion control), (3) any changes in the monitoring or management program that appear to be warranted based on monitoring results to date, and (4) provide documentation that the Long-Term Steward (if not an individual) is considered active and in good standing with the State Corporation Commission (SCC). Provide documentation of the cost of any recommended maintenance and repairs.

Task: Provide a copy of the LTM Fund end of year statement that indicates the balance in the fund, interest accrued, withdrawals made, etc.

Element D.2 – Administrative & Contingency Fees

Objective: Provide funds for regular administrative costs incurred as a result of administrative tasks, maintenance of escrow, endowment, or other funding accounts, etc. These funds shall be paid from the earnings of the account and not the principal funds.

Task: Pay all regular administrative or other fees through this task.

Element D.3 – Defense of Easement or Other Real Estate Issues

Objective: Ensure the perpetual protection of and address any encroachments on the property on which the wetland and stream mitigation activities occurred.

Task: Maintain conservation easements, declarations of restriction, or other protective instruments intended to protect mitigation site.

Task: If the property is owned by the Conservancy or stewardship organization, assist in resolving real estate issues, such as property taxes, title considerations, Virginia Land Conservation Incentives Act, relevant county initiatives, mineral rights, easements and maintenance, and conservation, water or other district assessments.

Task: If the LTS is not the easement holder, then coordination/cooperation with the easement holder.

Task: Hire attorney or other legal representation for defense of easement or other proceedings, where necessary.

V Transfer, Replacement, Amendments, and Notices

A Transfer

Any subsequent transfer of responsibilities under this LTMP to a different Long-Term Steward shall be requested by the Long-Term Steward in writing to the IRT, will require written approval by the IRT, and will be incorporated into this LTMP by amendment.

The long-term steward shall be required to ensure that any subsequent property owners (if not identified as the long-term steward) are notified of the deed restriction, conservation easement, purpose and location of the Site/Phase lands, and requirements for long-term stewardship.

B Replacement

If the Long-Term Steward fails to implement the tasks described in this LTMP and is notified of such failure in writing by any member of the IRT, the Long-Term Steward shall have 90 days to correct such failure. If failure is not corrected within 90 days, the Long-Term Steward may request a meeting with the IRT to resolve the failure. Such meeting will occur within 30 days or a longer period if approved by the IRT.

Based on the outcome of the meeting, or if no meeting is requested, the IRT may designate a replacement Long-Term Steward in writing by amendment of this LTMP. If the Long-Term Steward fails to designate a replacement Long-Term Steward, then such public or private land or resource management organization acceptable to and as directed by the IRT may enter onto the Site/Phase property in order to fulfill the purposes of this LTMP.

C Amendments

The Long-Term Steward, property owner, and the IRT may meet and confer from time to time, upon the request of any one of them, or at a minimum every five years, to revise the LTMP to better meet management objectives and preserve the conservation values of the Site/Phase. Any proposed changes to the LTMP will be discussed with the IRT and the Long-Term Steward. Any proposed changes will be designed with input from all parties. Amendments to the LTMP will be approved by the IRT in writing, will be required management components and will be implemented by the Long-Term Steward.

D Notices

Any notices regarding this LTMP will be directed as follows:

Long-Term Steward (name, address, telephone)

Property Owner (name, address, telephone)

IRT Chair, US Army Corps of Engineers (name, address, telephone)

IRT Chair, Virginia Department of Environmental Quality (name, address, telephone)

VI Funding and Task Prioritization

A Funding

(The list of tasks in Table 1 is not meant to be exhaustive. Some Sites may have more elements to consider and some may have fewer depending on the attributes of the Site/Phase.)

Table 1 summarizes the anticipated costs of long- term management for the Site. These costs include estimates of time and funding needed to conduct the basic monitoring Site visits and reporting, trash removal, fence repair, etc. a prorated calculation of funding needed to fully repair and/or replace fences and other structures every years, and funding for catastrophic event assessment and repair every years. The total annual funding anticipated is approximately \$_____, therefore, with the current annual estimated capitalization rate of the total endowment amount (The Long-Term Management Fund) required will be \$_____.

_____ shall hold the endowment principal and earnings (The Long-Term Management Fund) as required in the SDP, which consists of monies that are paid into it in trust, and is appropriated to fulfill the purposes for which payments into it are made. The Long-Term Management Fund (principal and earnings) will fund the long-term management, enhancement, and monitoring activities on Site/Phase lands in a manner consistent with this LTMP.

Table 1. Hypothetical Annual Cost estimate for long-term management of a 20 acre Site

Task	Component/ Specification	Unit	Number	Cost/Unit	Annual Cost	Recurrence interval (years)	Total
Sign	Boundary	Ea.	20	\$6	\$120	10	\$12
Sign	Inspect/replace	Hour	4	\$25	\$100	1	\$100
Trash	Collection & dump	Hour	8	\$25	\$200	1	\$200
Trash	Dump Fee	Ea.	2	\$20	\$40	1	\$40
Adaptive Management Plan	Labor	Hour	80	\$120	\$9,600	50	\$192
Exotic Control	Herbicide	Oz	8	\$50	\$400	1	\$400
Exotic Control	Herbicide application	Hour	10	\$50	\$500	1	\$500
Exotic Control	Monitoring report	Hour	12	\$75	\$900	1	\$900
Annual Report	Narrative summary	Hour	4	\$75	\$300	1	\$300
Field Equipment	Small pickup	Ea.	0.10*	\$30,000	\$3,000	10	\$300
Fence	Labor	Hours	32	\$30	\$960	5	\$211
Fence - Installed	Barbed wire – 4 strand	Lin. Ft.	2,000	\$4	\$8,000	5	\$1600
Gate	Powder River, Classic	Ea.	1.0	\$300	\$300	15	\$20
Sub Total							\$4775
Contingencies	20%					1	\$955
Administration	10%					1	\$478
Easement Defense							
Estimated Annual Expenses							\$6208
Capitalization rate	3.5%						
Total Endowment amount	Est. Annual Expenses/ Capitalization rate						\$177,372

B Task Prioritization

Due to unforeseen circumstances, prioritization of tasks, including tasks resulting from new requirements, may be necessary if insufficient funding is available to accomplish all tasks. The Long-Term Steward and the IRT will discuss task priorities and funding availability to determine which tasks will be implemented. In general, tasks are prioritized in this order: 1) required by a local, state, or federal agency; 2) tasks necessary to maintain or remediate the Mitigation Site/Phase (including unauthorized impacts); and 3) tasks that monitor resources, particularly if past monitoring has not shown downward trends. Equipment and materials necessary to implement priority tasks will also be considered priorities. Final determination of task priorities in any given year of insufficient funding will be determined in consultation with the IRT and as authorized by the IRT in writing.

C Enforcement

The IRT and its authorized agents will have the right to inspect the Property and take actions necessary to verify compliance with this LTMP. The LTMP herein shall be enforceable by any proceeding at law or in equity or administrative proceeding by the IRT, including the USACE or DEQ. Failure by any agency (or owner) to enforce the LTMP contained herein shall in no event be deemed a waiver of the right to do so thereafter.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement on the date herein below last written.

(There should be one signature page for each required signature)

_____	_____
The Nature Conservancy	Date
_____	_____
Long-Term Steward	Date
_____	_____
Chief, US Army Corps of Engineers Norfolk District	Date
_____	_____
Virginia Department of Environmental Quality Director, Office of Wetlands and Stream Protection	Date

EXHIBIT M
ADAPTIVE MANAGEMENT PLAN (AMP)

The Conservancy shall maintain the Site consistent with the SDP during the Site Operation period. The Adaptive Management Plan is a strategy to address changes in Site conditions or other components of the Site, including the party or parties responsible for implementing any necessary adaptive management measures. The Adaptive Management Plan should outline the requirements necessary, including monitoring, to ensure the continued viability of the mitigation resources from SDP approval to Site closure and Long-Term Management. If unexpected adaptive management strategies are necessary during the ten year monitoring period and were not included in the original Adaptive Management Plan, the Conservancy shall submit to the IRT for approval an updated plan that addresses these unforeseen issues at the Site. The Conservancy shall implement the strategies outlined in the AMP until the Site is closed in accordance with the Site closure procedures and the Long-Term Steward assumes their responsibilities. Deviation from the AMP requires review and written approval from the Chairs, in consultation with the IRT.

Items to be discussed in the AMP could include, but are not limited to:

- Changes to Performance Standards
- Changes to Monitoring and Reporting Requirements
- Modifications to the INU Plan
- Changes necessary during construction

EXHIBIT N
SITE PROTECTION INSTRUMENT

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