

Natural Heritage – Locality Liaison/Habitat Restoration

Final Report for FY2009 VCZMP Grant No. NA09NOS4190163 Task #7

November 15, 2010

By Rene' Hypes and Alli Baird

*Virginia Department of Conservation and Recreation –
Division of Natural Heritage*



This project was funded in part by the Virginia Coastal Zone Management Program at the Department of Environmental Quality through Grant #NA09NOS4190163 of the U.S. Department of Commerce, National Oceanic and Atmospheric Administration, under the Coastal Zone Management Act of 1972, as amended.

The views expressed herein are those of the authors and do not necessarily reflect the views of the U.S. Department of Commerce, NOAA, or any of its subagencies.

TABLE OF CONTENTS

Executive Summary	page 1
Introduction	page 3
Staffing	page 3
Environmental Review	page 3
Natural Heritage Data Explorer Internet Website	page 6
Locality Partnerships with DCR-Natural Heritage	page 8
List of Participants in Presentations	page 9
Habitat Restoration and Protection Initiatives	page 10
Recommendations for Future Actions	page 12
Appendix	
Sample License Agreement	A
NHDE User Guide Updated	B
Memorandum for Implementation of 2005 Base Re-alignment & Closure 5 & 132 at Fort Belvoir (BRAC)	C
Letter & Memoranda for NASA Projects at Wallops Island	D
Letter for Assateague Island National Seashore General Management Plan	E
Map of Localities with Natural Heritage Information	F
Virginia's Natural Heritage Program Survey	G
Virginia's Natural Heritage Conservation Tools	H
Pilot for Upgraded Wetland Catalog	I
Virginia Biodiversity Assessment Map	J
Virginia's Priority Conservation Sites Map	K

Executive Summary

For the 2009 grant year, 934 projects were reviewed for impacts to natural Heritage resources in the coastal zone (43% of the projects reviewed statewide). Some of the projects involved activities on NASA's Flight Facilities on Wallops Island including shoreline restoration, plans for installation of alternative energy sources (wind & solar) and development of an unmanned aerial systems airstrip on North Wallops Island. Fort Belvoir had numerous projects as a result of the Base Re-alignment and Closure Act (BRAC) including stream restoration, rehabilitation of existing buildings and new development. Additionally, through right-of-way maintenance recommendations, DCR-DNH and VDOT collaborated to conserve the only known population of Sun-facing coneflower (*Rudbeckia heliopsis*) in the state. Additional projects included an environmental assessment for Back Bay National Wildlife Refuge Comprehensive Conservation Plan and the National Park Service Assateague Island National Seashore General Management Plan.

Many presentations have been given to localities and other conservation partners, including: Virginia Outdoors Foundation; Potomac Conservancy; Capital Region Conservancy; Accomack County; Middle Peninsula Planning District Commission (PDC); Accomack-Northampton PDC; several divisions & regional offices of the Department of Environmental Quality (DEQ); James City County, City of Newport News, York County, Prince William County, City of Hopewell; several Dept. of Conservation & Recreation (DCR) Soil & Water Regional offices; and Dept. of Health (VDH). Presentations included an overview of DCR's Natural Heritage Program, the Locality Assistance Program, the Natural Heritage Data Explorer (NHDE) website, the Virginia Conservation Lands Needs Assessment (VCLNA), the Land Conservation Data Explorer (LCDE), and the Wetland Restoration Catalog as well as other conservation tools. Natural Heritage information is updated quarterly and shapefiles including that information is distributed to all licensed participants.

The Locality Liaison provided language and Conservation Sites maps to Caroline County and to Mathews County that were included in their Comprehensive Plans. Prince William was provided digital data on rare natural communities for screening for natural heritage resources. Chesterfield County has been provided natural heritage information for inclusion in their Comprehensive Plan support material. The City of Hopewell has requested locations of natural heritage resources for use in the city's environmental screening process. NASA requested screening data coverage for their Flight Facility at Wallops Island for planning purposes.

The Locality Liaison also provided a revolving PowerPoint and flyer on Natural Heritage Conservation tools for the Preserving Our Commonwealth Land Conservation Conference. The flyer has been used for informational meetings with conservation partners.

In celebration of "Earth Day", the Locality Liaison provided natural heritage information found on Fort A. P. Hill in Caroline County. In addition, the Locality Liaison and Project

Review Assistants made a display for the Henrico County Earth Day celebration consisting of details about the natural history of selected natural heritage resources in Henrico County including the Elko Conservation Site.

The DCR-DNH Wetland Restoration Catalog is now available on the DEQ Coastal GEMS website, found at: <<http://128.172.160.131/gems2/>> DCR-DNH has developed a revised methodology to identify more opportunities of wetland and stream restoration and was tested in an 11-subwatershed pilot area of the Pamunkey River.

The 2009 Information services order form has been improved and a new form has been developed for localities and non-profits. After final review, it will be posted on the locality liaison web page. The draft may be found at:
<http://dcrintra2.dcr.virginia.gov/dcr/humanresources/leave/NHServiceFormNF.cfm>

Introduction

Through the Locality Liaison program, the Virginia Department of Conservation and Recreation's Division of Natural Heritage (DCR-DNH) works with local and regional planners to assist them in fully utilizing natural heritage resource information as well as the consultative services we provide to ensure protection of natural heritage resources. The Locality Liaison program seeks to establish natural heritage resource information as part of fundamental locality decision-making criteria through tools such as project review, comprehensive planning, project sitings, zoning amendments, and open space planning.

VCZMP and Chesapeake Bay Program initiatives have generated considerable interest in land use issues within the Coastal Zone. Coastal localities are developing conservation objectives, identifying potential areas for protection and looking at innovative approaches in making land use decisions that will lessen the trend toward urban sprawl. The Locality Liaison program is working to have natural heritage resources play a larger role in helping localities find beneficial answers to the problems and opportunities they face.

Staffing

Alli Baird currently serves as the Coastal Zone Locality Liaison (Locality Liaison). Rene' Hypes (Environmental Review Coordinator) served to continue project review and locality outreach within the Coastal Zone until Alli Baird was hired as the Coastal Zone Locality Liaison in November 2009. Numerous other DCR-DNH staff members also support the Locality Liaison program, including Data Manager Megan Rollins, Information Manager Jason Bulluck, several Project Review Assistants, and various Natural Heritage biological inventory personnel.

Environmental Review

The DCR-DNH Environmental Review Section, to which the Locality Liaison is assigned, works with local, state, and federal government agencies as well as private individuals and consultants to assess the potential for proposed activities to impact natural heritage resources and to recommend ways to avoid or minimize these impacts. The Locality Liaison has primary responsibility for reviewing projects in the Coastal Zone. She provides oversight for the Project Review staff and/or conducts the review herself for all Coastal Zone projects, except for Virginia Department of Transportation (VDOT) projects, which are overseen by the Environmental Review Coordinator. During this grant year DCR-DNH has reviewed 934 projects in the Coastal Zone. This represents 43% of the projects reviewed statewide by DCR-DNH.

Through environmental review, the Locality Liaison provides service in connecting clients directly to needed information about natural heritage resources. With the state's most comprehensive database for rare, threatened and endangered species and significant natural communities, environmental review provides an opportunity for cooperating with other organizations. Many private consultants routinely and voluntarily coordinate with DCR-DNH before taking development project applications to regulatory agencies.

Though DCR-DNH does not have regulatory authority, we have agreements with regulatory agencies that rely on our natural heritage resource data.

The United States Army Corps of Engineers (ACOE) and DEQ Virginia Water Protection Permit Program (VWPP) screen all wetland development projects against our database and forward potential conflicts for our comment. The DCR-DNH is currently working on updating a Memorandum of Understanding agreement with the ACOE that would include the Virginia Department of Game and Inland Fisheries (VDGIF) in species coordination.

The DEQ Virginia Pollutant Discharge Elimination System (VPDES) program also screens issuance and re-issuances of permits for point source discharges to surface waters against our database and forwards potential conflicts to Natural Heritage for comments.

The United States Fish and Wildlife Service (USFWS) relies heavily on DCR-DNH data for their own regulatory responses. The newly revised USFWS on-line screening process includes a direct link to the Natural Heritage website for coordination purposes. In addition, DCR-DNH is continuing to work with the USFWS and other agencies on the Nisource Multi-Species Habitat Conservation Plan. The purpose of the plan is to develop a comprehensive multi-state, multi-region Habitat Conservation Plan (HCP) that would extend to federally-protected species affected by Nisource's pipeline including some areas within the coastal zone. The HCP would include a mitigation package that would identify measures Nisource would take to avoid, minimize, and mitigate the potential impact to covered species. DCR-DNH participated in a state meeting to discuss potential mitigation sites in Virginia.

Through a Memorandum of Agreement with the Virginia Department of Agriculture and Consumer Services (VDACS), which regulates state-endangered plants and insects in Virginia, DCR-DNH conducts preliminary project screening on their behalf. During this grant period, discussion has continued with VDACS to modify the current Memorandum of Agreement for clarification of the coordination process between the two agencies and made recommendations in regards to the state insect and plant list.

Specific Projects

A VDOT project along Route 625 is within the Disputanta Conservation Site in Prince George County, site of the only known documented population of sun-facing coneflower (*Rudbeckia heliopsis*, G2/S1/NL/NL) in the state of Virginia. DCR-DNH collaborated with VDOT to conserve the sunflower by developing maintenance recommendations for the right-of-way in which it is located.



Rudbeckia heliopsis, (G2/S1/NL/NL)

Fort Belvoir

Fort Belvoir has had numerous projects resulting from the Base Re-alignment and Closure Act (BRAC). Several have been adjacent to or within the Area T-17 Ravine Conservation Site where the only extant occurrence of the Northern Virginia well amphipod has been documented. For a proposed child care center, recommendations included avoiding development within the conservation site by choosing another location, or if unavoidable, mitigation measures to prevent groundwater contamination, avoidance of habitat and hydrology changes, prevention of runoff from entering the ravine and monitoring for the amphipod and groundwater contamination. (Appendix C) The consultant on this project has contacted this office to collaborate on mitigation measures to protect the groundwater and hydrology of the site within the Area T-17 Ravine Conservation Site.

Wallops Island

Numerous projects on Wallops Island were reviewed for impacts to natural heritage resources, including a pre-Environmental Assessment impact analysis for a new airstrip, a proposal for alternative energy facilities and shoreline restoration.

NASA requested information for preparation of an Environmental Assessment (EA) for impacts to natural heritage resources from the construction and operation of an Unmanned Aerial Systems airstrip at the north end of Wallops Island. DCR-DNH strongly recommended that the proposed airstrip be relocated to avoid impacts to a globally rare community and state rare plants and recommended a study to evaluate the impacts to threatened and endangered as well as migratory and colonial birds documented in the vicinity of the project. (Appendix D) As a result of our, and other agency, comments the environmental staff at NASA Goddard Flight Facility are planning a survey of the area for natural heritage resources to better identify the areas of concern. In addition, they are considering several alternatives including different locations, different configuration and minimization of any impacts, as well as looking at potential mitigation measures to protect the natural heritage resources at the site.

In another project, NASA proposed the installation wind turbines and solar panels for alternative energy at Wallops Island Fight Facility. While DCR-DNH supports the use of alternative energy, the recommendation was for the non-preferred alternative using residential scale wind turbines, rather than the “utility scale” wind turbine that has a greater possibility of bird and bat mortality. The Eastern Shore is part of a significant migratory bird area and Wallops Island supports breeding populations of several federally and state listed bird species. DCR-DNH also recommended post construction monitoring of bird/bat mortality and mitigation of impacts through possible seasonal low wind shut-downs.

DCR-DNH also provided comments to NASA in regards to the draft Environmental Impact Study for shoreline restoration and infrastructure protection program for Wallop’s

Island. DCR-DNH and others expressed concerns of potential impacts to the natural heritage resources on Wallop's Island during nesting season and the consequences of placing groins and other shoreline hardening on shoreline drift. DCR-DNH recommended continued exploration of the feasibility of inland relocation of existing facilities due to anticipated sea level rise and climate change. (Appendix D).

As NASA has had several projects on Wallops Island that have potential to impact natural heritage resources, they have requested the digital data to help them in screening for future projects as well as help in evaluating alternatives for the Unmanned Aerial Systems airstrip EA.

National Park Service – Assateague Island National Seashore

The National Park Service requested information on natural heritage resources for the Assateague Island National Seashore General Management Plan. The NPS is preparing a comprehensive planning tool for NPS managers to use over the next 15-10 years in developing strategies for user experiences and future development. The NPS manages beach recreation at Tom's Cove and manages the Coast Guard Station within the Chincoteague National Wildlife Refuge for the U. S. Fish & Wildlife Service. DCR-DNH provided a table of natural heritage resources within the requested project area as well as a table of those present within a two mile radius of Assateague National Seashore. In addition DCR-DNH recommended that the National Park Service request access to Natural Heritage digital data screening coverage to facilitate their development of their general management plan. (Appendix E)

Natural Heritage Data Explorer Internet Website

The heart of DCR-DNH's service to localities is the set of databases and information tools that indicate what's rare, where the rarities are, and how they can be protected. DCR-DNH databases contain information about approximately 9,145 specific occurrences of natural heritage resources. Over the years, DCR-DNH has continually worked to improve the quality of the data and the utility of the tools used to present the data to researchers, planners, and decision-makers. All DCR-DNH data has been converted to modified polygons within the GIS system. Conservation sites are now the primary mechanism for distributing natural heritage location information for public use. Conservation sites identify areas that potentially warrant conservation action because of the associated natural heritage resources and the habitat they support. They incorporate contextual information about the key areas of the landscape surrounding the actual locations of natural heritage resources that are necessary to ensure protection of those resources. DCR-DNH currently tracks over 2,214 conservation sites and these sites are continuously being updated by DCR-DNH staff. There has also been work in data development to further the concept of conservation sites by forming "building blocks" around natural heritage resource occurrences as well as automating our current conservation site development process.

The Virginia Natural Heritage Data Explorer (NHDE) allows Internet users to conduct basic GIS functions on a remote website, requiring only a Microsoft Internet Explorer web browser and minimal instruction. This informational tool can alert planners to potential areas of opportunity or concern, facilitate proactive planning for county resources, and allow preliminary screening of projects and activities for potential impacts to natural heritage resources. By providing immediate access to our data through the internet, we are empowering our partners to utilize and apply our data more rapidly and effectively by having it easily available at their desktop. This user-friendly tool for accessing natural heritage resource data is available on a subscription basis to local governments, state and federal agencies, land trusts, consultants, private companies and other organizations. A signed data license agreement is required for all data subscriptions. Please see Appendix A for an example of the license agreement normally sent to localities. The natural heritage data on the website is updated quarterly, as is done with the digital screening coverage. The website can be accessed at www.vanaturalheritageexplorer.org.

Hands-on training sessions for the Natural Heritage Data Explorer are generally held on an every-other-month basis. Most are held in Richmond at the DEQ Central office computer lab but regional training sessions are also held around the state. Training is provided by the project review staff, including the Locality Liaison. The general training sessions are open to all organizations, but are divided into three sections according to the user's tier level. During this grant year, six hands-on general training sessions for NHDE were held in Richmond, and two were held in Gloucester at the Virginia Institute for Marine Science

Within the Coastal Zone there are thirty localities and eight Planning District Commissions using NHDE. Also during the grant period, DCR-DNH has trained many conservation partners including other state agencies, land trusts, and Soil & Water Conservation Districts. Twelve land trusts within the Coastal Zone are using NHDE and/or natural heritage data.

Approximately 304 projects have been submitted through NHDE within the FY2009 for the Coastal Zone. Of these 304 projects, 64 projects did not have natural heritage resources within two miles of the project location and a report was automatically sent to the requestor stating this information so no further review was required by DCR-DNH staff. NHDE has made project submittal significantly easier for clients as they receive natural heritage information within minutes and streamlined workflow for DCR-DNH staff by capturing shapefiles of projects submitted through the website.

A user guide for the NHDE continues to be updated (Appendix B). This manual is designed to assist users by providing guidelines for use of the data, explaining the various layers and functions, and offering trouble-shooting tips for common problems.

Updates to the NHDE website within this reporting period include:

- Continued site infrastructure updates and quarterly data updates
- Ongoing routine testing to ensure site and scope of work compliance

Locality Partnerships with DCR-Natural Heritage

The Locality Liaison has worked with various organizations within the Coastal Zone to encourage comprehensive use of natural heritage data and DCR-DNH services for conservation planning. Also, the Liaison has continued working with other conservation partners such as land trusts and other state agencies.

During this grant year, the Locality Liaison has provided specific language about natural heritage resources to several localities including Caroline County, Prince William County, Mathews County, and Chesterfield County for use in their comprehensive plan updates. Caroline County and Mathews incorporated the natural heritage information into their Comprehensive Plans by using language supplied by the Locality Liaison. In addition, tables of the resources that have been documented within their locality and maps showing the locations of conservation sites associated with natural heritage resources were included. Chesterfield is incorporating the natural heritage information into their comprehensive plan support material. Other counties that have expressed interest in incorporating natural heritage information into their upcoming comprehensive plan updates are Northampton and Gloucester Counties.

In April 2010, a Project Review Assistant attended Henrico Earth Day where approximately 150 citizens of Henrico County attended to learn about environmental issues. The Locality Liaison and Project Review Assistants made a display consisting of maps of the relevant area showing basic natural heritage resource information, details about the natural history of selected natural heritage resources in Henrico County including the Elko Conservation Site, and provided handouts about the DCR- DNH program.

The Locality Liaison participated in the Earth Day activities at Fort A.P. Hill, where approximately 150 school children attended. The display consisted of maps and details about the rare natural heritage resources in Caroline County including the Purple pitcher plant, an example of which was on display. Handouts about the natural heritage program and an activity were provided.

At the end of FY2009, there are twenty-three coastal counties and seven coastal cities with access to NHDE, digital shapefile data, a combination of these tools and/or information within their comprehensive plan.. This equates to approximately 68% of Coastal Zone counties or cities having access to these tools. A combination of DCR-DNH project review staff and data management staff work to update annual license agreements and provide updated digital shapefile data quarterly. Please see Appendix F for a map of the Virginia localities with Natural Heritage information. It may also be viewed online at:

http://www.dcr.virginia.gov/natural_heritage/documents/localitiesmap.pdf

Publicity of the NHDE has continued to result in interest in Natural Heritage data and services, beyond just the NHDE. Many land trusts interested in Natural Heritage data have elected to come to the general NHDE training sessions, instead of receiving an individualized presentation from the Locality Liaison.

During this past grant cycle, any one requesting a review of a project for natural heritage resources was given an opportunity to participate in a survey designed to determine how well the Environmental Review section was meeting customer needs. Out of 77 participants, the majority of the respondents were government planners (29.3%) and consultants (22.7%) with land conservation practitioners also well represented (13.3%) Overall the survey results were positive about the DCR-DNH information services.

For those who made use of the Natural Heritage Data Explorer (NHDE) website over 58% of respondents found it useful and 31.9% found it extremely valuable. The most frequent use of NHDE was to identify natural heritage resources, and conservation lands. Watershed HUC codes, NWI wetlands and NHD streams were also frequent reasons for use. Of the respondents 75% found the site user-friendly. A full copy of the survey can be found in Appendix G.

List of Participants in Presentations

Presentations included an overview of DCR's Natural Heritage Program, the Locality Assistance Program, the Natural Heritage Data Explorer (NHDE) website, the Virginia Conservation Lands Needs Assessment (VCLNA), the Land Conservation Data Explorer (LCDE), and the Wetland Restoration Catalog.

The following localities and conservation partners participated in these training sessions:

- Accomack-Northampton PDC
- Middle Peninsula PDC
- DCR – S&W - Tappahannock
- DCR – S&W - Richmond
- Capital Region Land Conservancy
- Potomac Conservancy
- Accomack County
- VOF – Staunton Region
- DEQ – Chesapeake Bay Monitoring Program
- - Water Quality Monitoring & Assessment
- DEQ – Northern Regional Office
- DEQ – Environmental Impact Review Coordinator
- DEQ – Office of Water Permit & Compliance Assistance
- DEQ – Piedmont Regional Office
- James City County
- City of Newport News
- York County – Planning Division
- City of Hopewell
- VA Department of Health

Habitat Restoration and Protection Initiatives

Virginia's Natural Heritage Plan Conservation Tools

As part of the information the Locality Liaison developed for the DCR-DNH display at the Preserving Our Commonwealth Land Conservation Conference, a two-page flyer summarizing the various conservation tools available to land trusts, and others interested in land conservation, was printed for distribution. The flyer has also been used in meetings for discussions with conservation partners such as land trusts. (Appendix H)

Wetland Restoration Catalog

The Wetland Restoration Catalog contains potential wetland restoration sites that are within or adjacent to Natural Heritage Conservation Sites. Natural Heritage Conservation sites larger than 500 acres with a biodiversity rank of B1 (outstanding significance), B2 (very high significance) and B3 (high significance) were selected. Chief Biologist, J. Christopher Ludwig, reviewed each conservation site against Virginia Basemap aerial photography, National Wetland Inventory wetland coverage, and other GIS datasets. This catalog is intended to guide localities and regulatory agencies to appropriate sites for various conservation purposes including wetland mitigation.

Please note, these prior-converted wetland patches occur on a mix of private and public lands and property information has not been referenced. The wetland restoration opportunities have not been field verified. Additional property research, site evaluation and coordination with DCR-DNH will be necessary to determine which areas are suitable candidates for restoration. Nevertheless these sites represent high-probability opportunities to design and implement high-value wetland restoration projects.

The Wetland Restoration Catalog web page

(http://www.dcr.virginia.gov/natural_heritage/wetrestcat.shtml) includes an overview of the catalog, methodology, a discussion of the results, a PDF version of the catalog including an attributes table, interactive state map of the sites with HUC codes and individual site maps. The Wetland Restoration Catalog is being utilized by consultants and localities as a way to focus and target potential conservation easements and wetland restoration projects. DCR-NH worked with the DEQ Coastal Zone Program to post the Wetland Restoration Catalog on Coastal GEMS (<http://128.172.160.131/gems2/>) with an accompanying factsheet.

During this grant cycle the Virginia Natural Heritage Program developed a revised methodology for updating and modifying the Virginia Wetlands Catalog. This methodology identifies more opportunities for wetland and stream mitigation, and guides selection of mitigation opportunities, via a ranking of sites based on multiple datasets. This methodology was developed to apply statewide and was tested in an 11-subwatershed pilot area of the Pamunkey River of Virginia. The methodology first

enables the development of an expanded wetlands/streams base layer that was then prioritized, to assign all areas with a rank of their mitigation value. This rank is based on the likelihood of an identified area being wetland, and an area's contributions to biodiversity conservation and/or water quality

This pilot provides a map-based summary of mitigation opportunities ranked from 1-to-5 to clearly indicate their relative value as mitigation sites. All opportunities are tied to sub-watershed and tax parcel IDs in two separate map outputs. (Appendix I)

Virginia Biodiversity Assessment

The Virginia Biodiversity Assessment (VBA) provides a means by which to identify the most important lands necessary to conserve our most critically rare species and exemplary natural communities. DCR-DNH identified ecologically important lands through its Conservation Sites Layer (CSL), its Priority Conservation Sites (PCS) analysis, and its Virginia Natural Landscape Assessment (VaNLA) and combined primary features with the Department of Game and Inland Fisheries' (VDGIF) Wildlife Action Plan to create a comprehensive synthesis of known and predicted biodiversity information in the form of a GIS layer available for viewing on Landscape (<http://www.landscape.org/virginia/>) and Coastal GEMS (<http://www.deq.virginia.gov/coastalgems.html>). VBA is appropriate for use at local and state levels. (Appendix J)

Virginia's Priority Conservation Sites

The Virginia Priority Conservation Sites (PCS) analysis was initiated to not only summarize known biodiversity but to prioritize it by the degree to which it is protected. Locations data were ordered by global rarity, occurrence quality, state rarity, management intent, legal protection status, and proportion conserved, then assigned ranks based on this order. Collectively, these ranks were used to calculate Biodiversity Conservation Need score ranging from moderate to critical to indicate the urgency with which sites need to be conserved for biodiversity. The product is available to conservation partners and local governments via a license agreement.

The VBA and PCS together represent the best available information on biodiversity in Virginia and are valuable tools for conservation that can steer development away from the most ecologically important sites, to inform proper land management, and to assist development of reserve networks. (Appendix K)

Landscape

Landscape is a collaborative project between NatureServe and the National Geographic Society. This online resource for the land conservation community and the public gathers stories, maps, data and photos in order to inform and inspire the conservation community to conserve our lands and waters. Many partners contribute content to encourage natural heritage protection. Virginia is one of five pilot states participating in this effort.

During the past grant cycle, the site has been updated to include all new conservation lands. Featured areas within the coastal zone include Crow's Nest, and Savage Neck Dunes Natural Area Preserves. Additionally the Priority Conservation Areas and Priority Wildlife Diversity Conservation Areas information has been added to Landscape with user-friendly descriptions of how the information may be used. The site can be accessed at: <http://www.landscape.org/virginia>

Recommendations for Further Actions

The Locality Liaison program has proven most effective when the Locality Liaison can become actively involved in a specific project of concern to the locality. Furthermore, interest in natural heritage information often depends on timing such as whether a comprehensive plan is under review or a major development project is being considered. Thus, the Locality Liaison will strive to stay aware of upcoming locality events. The Liaison has also researched the Coastal Zone localities to determine when their comprehensive plans are due for review and will contact these localities at the appropriate time to offer assistance.

The Locality Liaison will continue to focus on contacting Localities that are not currently using Natural Heritage data. This may also involve an effort to assist Localities in adding ordinances or regulations necessitating the review of Natural Heritage information for certain projects.

In addition, many Coastal Zone localities currently have access to NHDE or digital shapefile data. It is very important to provide follow-up assistance to these localities beyond the initial presentation. The Locality Liaison plans to meet with these localities to determine how the data has been used and discuss local needs for further assistance. It is also important to keep in contact with the localities due to possible staffing changes.

The Locality Liaison web page and Wetland Restoration Catalog will continue to be updated. A new locality information services order form has been developed and will be posted to the website. A draft of the form, which is still under review can be accessed at: <http://dcrintra2.dcr.virginia.gov/dcr/humanresources/leave/NHServiceFormNF.cfm>

The Liaison will work to further the promotion and use of this Wetland Restoration Catalog as an effective tool for planning and environmental review processes.

Appendix

Appendix A

Sample
License Agreement



COMMONWEALTH of VIRGINIA
DEPARTMENT OF CONSERVATION AND RECREATION

Division of Natural Heritage

217 Governor Street

Richmond, Virginia 23219-2010

(804) 786-7951

License for Use of Digital Data
provided by the
Virginia Department of Conservation and Recreation
Natural Heritage Program

The Virginia Department of Conservation and Recreation's Natural Heritage Program (DCR) hereby grants a revocable license to City of Hopewell(Licensee) to use the following data: Natural Heritage Data Explorer access (Tier II) and natural heritage screening coverage (Tier II) for environmental screening purposes and comprehensive planning.

Use of these data is subject to the following conditions:

1. The license is nonexclusive and revocable.
2. The license is nontransferable, and any attempted transfer is void.
3. The license conveys no rights for Licensee to release or distribute these data, or derivative works containing these data, in any electronic/magnetic or machine-readable form.
4. Licensee will identify "Virginia Department of Conservation and Recreation, Natural Heritage Program" as data source on any map or publication using DCR data. If format permits, Licensee will also include the date provided.
5. Licensee will provide DCR with a list of any reports or printed materials prepared using Natural Heritage Program data, and will provide a sample copy of such material if requested by DCR.
6. Although DCR maintains high standards of data quality control, DCR makes no warranty as to the fitness of the data for any purpose, nor that the data are necessarily accurate or complete.
7. Licensee understands and acknowledges that these data are provided for planning and assessment purposes only. Specific projects or activities should be reviewed for potential environmental impacts with appropriate regulatory agencies. If ground-disturbing activities are proposed in the vicinity of indicated natural heritage resources, DCR will be contacted for a site-specific review of the project area.

8. Licensee understands and acknowledges that release of precise species locations may threaten natural heritage resources. Licensee shall take reasonable precautions to ensure the security of species locations.
9. Licensee understands and acknowledges that the accuracy of these data is time-limited. Licensee agrees to use DCR-provided data only for the term specified by DCR, and to incorporate all updates provided by DCR. By the following date 10/2011 (which shall be no later than one year following the issuance of this license), Licensee will either
 - a. certify that all copies of these data have been destroyed or returned to DCR-DNH; or
 - b. complete arrangements with DCR to renew the subscription. These arrangements will include an updated license.
10. This License is the entire agreement between the parties with respect to the subject matter hereof. It shall be construed in accordance with the law of the Commonwealth of Virginia and may be amended only in writing signed by both parties.

By accepting the DCR data, Licensee agrees to abide by all of the above conditions. Licensee shall sign this license and return it to DCR to indicate receipt and acknowledgment of the terms of this license.

signature

date

title

for agency/company

e-mail address

Approved:

Thomas L. Smith, Director
DCR Division of Natural Heritage

date

Appendix B

NHDE User Guide

DCR-DNH Data Explorer Website Training

September 2010

USER MANUAL

<http://www.vanaturalheritageexplorer.org>



Virginia Natural Heritage Data Explorer



Welcome to the Department of Conservation and Recreation's Virginia Natural Heritage Data Explorer. This is a subscriber-only website, available to organizations (agencies, companies, and non-profits only). If you would like your organization to apply to be a subscriber click [here](#).

To visit the public website of DCR's Natural Heritage Program, with its wealth of information on Virginia's natural heritage resources, and to search our databases at the county, watershed, or species/community level, click [here](#).

UserName:

Password:

Log In

Note that this service is designed to work only with Microsoft Internet Explorer version 5.5 or higher. Click [here](#) for a list of IE settings that need to be made to fully enable the functionality.

UserName: _____

Password : _____

Table of Contents

Directions for Required Internet Explorer Settings.....	2
Terms and Conditions.....	5
Guidelines for use.....	6
Map Layers.....	9
Virginia Conservation Lands Needs Assessments (VCLNA).....	10
Reference Layers.....	16
Boundaries Data Group.....	17
Base Layers.....	18
Mapservice Navigation and Use.....	19
Buttons on Toolbar.....	22
Project Submission Template.....	29
Troubleshooting.....	30
Drawing Project Boundaries.....	31
Definitions and Abbreviations on Natural Heritage Resource Lists.....	34
Example reports.....	36

SnagIt/32 Capture Preview

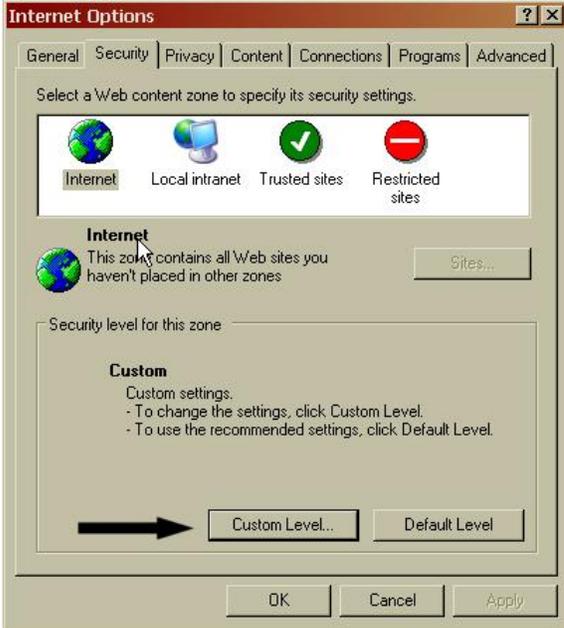
File Edit View Image Colors Help

Required Internet Explorer Settings

As stated, this site requires Microsoft Internet Explorer 5.5 or higher. Some settings to be made in IE in order for all functionality to be enabled. These steps only need to be done once per users client machine and will remain set this way, unless deliberately changed.

In Internet Explorer, go to Tools->Internet Options. Click the Security tab

then click Custom Level tab.



Internet Options

General Security Privacy Content Connections Programs Advanced

Select a Web content zone to specify its security settings.

Internet Local intranet Trusted sites Restricted sites

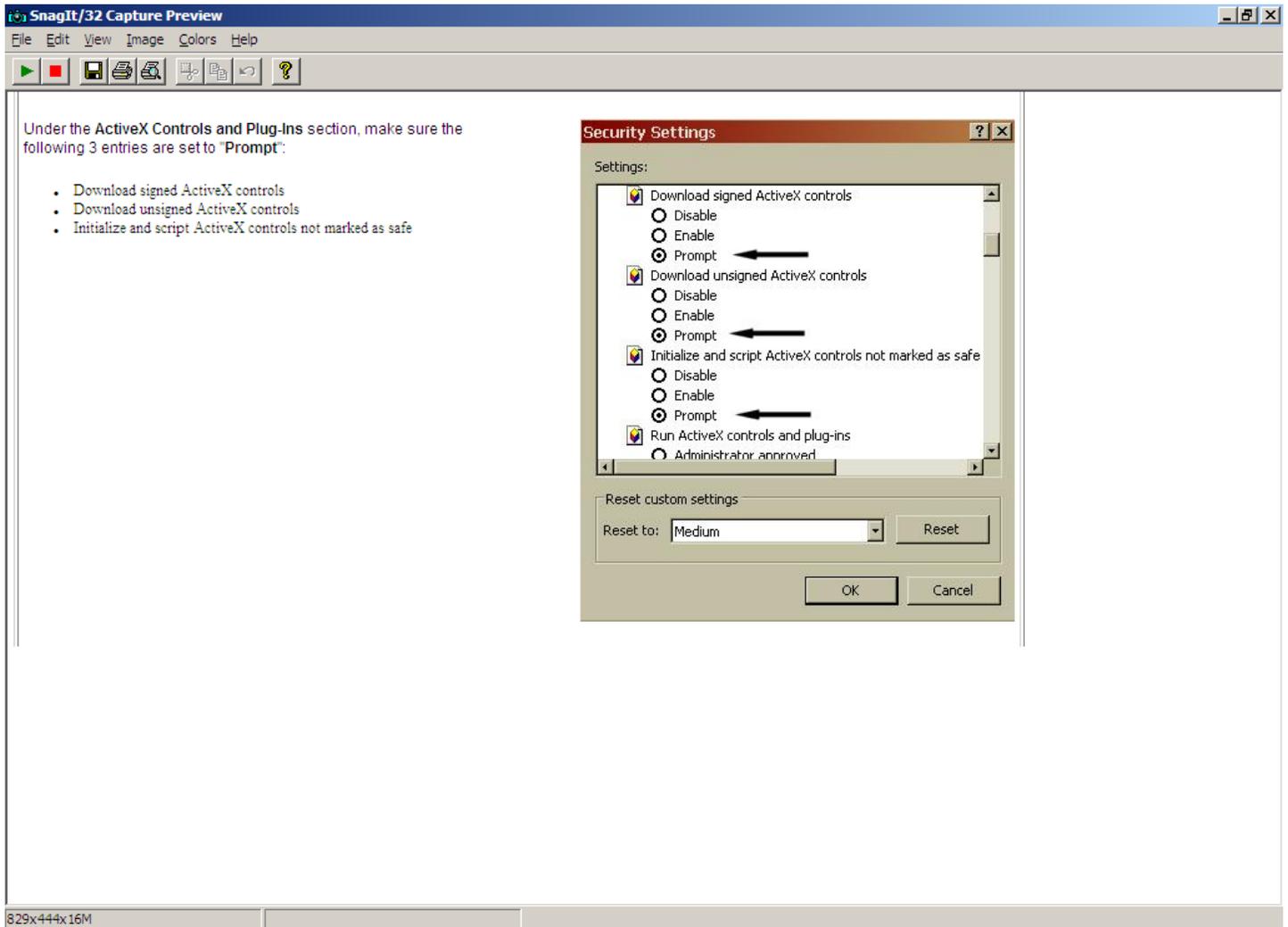
Internet
This zone contains all Web sites you haven't placed in other zones

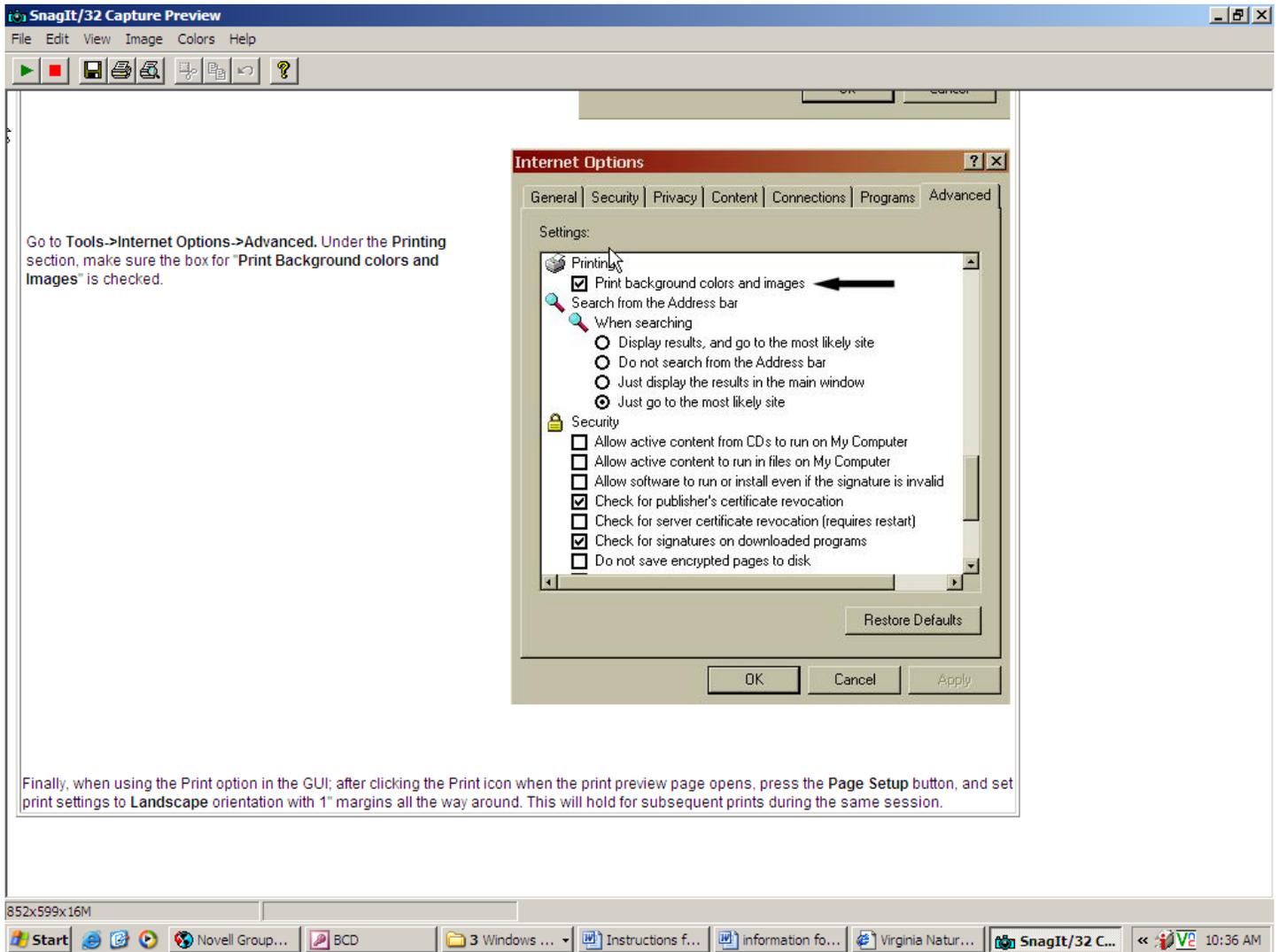
Security level for this zone

Custom
Custom settings.
- To change the settings, click Custom Level.
- To use the recommended settings, click Default Level.

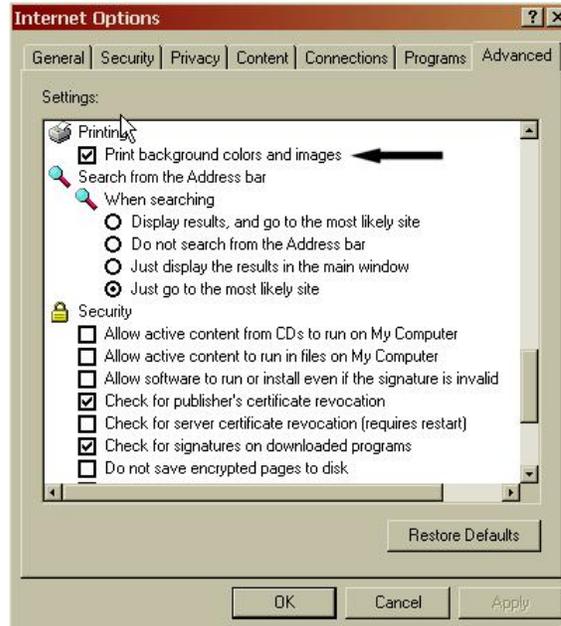
Custom Level... Default Level

OK Cancel Apply





Go to Tools->Internet Options->Advanced. Under the Printing section, make sure the box for "Print Background colors and Images" is checked.



Finally, when using the Print option in the GUI; after clicking the Print icon when the print preview page opens, press the **Page Setup** button, and set print settings to **Landscape** orientation with 1" margins all the way around. This will hold for subsequent prints during the same session.

Terms and Conditions for Use of the Natural Heritage Data Explorer Website and Associated Virginia Natural Heritage Program Services

Access to the Virginia Natural Heritage Data Explorer Website is available by subscription only. All users of this website are required to be either registered subscribers to this website, or authorized representatives of registered subscribers to this website.

As a condition of registration, all subscribers are required to sign a form guaranteeing their adherence, and the adherence of all persons whom they shall authorized to use this website, to these Terms and Conditions. All users of this website, whether direct subscribers or authorized representatives of subscribers, are required to adhere to these Terms and Conditions.

- [Data License](#)
- [Other Guidelines](#)
- [Project Review Services](#)

License for Use of Digital Natural Heritage Resources Information

The Virginia Department of Conservation and Recreation's Natural Heritage Program (DCR) hereby grants authorized users of the Natural Heritage Data Explorer Website a revocable license to use the data displayed on this website. Use of these data is subject to the following conditions:

1. The license is nonexclusive and revocable.
2. The license is nontransferable, and any attempted transfer is void.
3. The license conveys no rights for Licensee to release or distribute these data, or derivative works containing these data, in any electronic/magnetic or machine-readable form.
4. Licensee will identify "Virginia Department of Conservation and Recreation, Natural Heritage Program" as data source on any map or publication using DCR data. If format permits, Licensee will also include the date provided.
5. Licensee will provide DCR with a list of any reports or printed materials prepared using Natural Heritage Program data, and will provide a sample copy of such material if requested by DCR.
6. Although DCR maintains high standards of data quality control, DCR makes no warranty as to the fitness of the data for any purpose, nor that the data are necessarily accurate or complete.
7. Licensee understands and acknowledges that these data are provided for planning and assessment purposes only. Specific projects or activities should be reviewed for potential environmental impacts with appropriate regulatory agencies. If ground-disturbing activities are proposed in the vicinity of indicated natural heritage resources, DCR will be contacted for a site-specific review of the project area.
8. Licensee understands and acknowledges that release of precise species locations may threaten natural heritage resources. Licensee shall take reasonable precautions to ensure the security of species locations.
9. If there are subscription service charges, or any other agreements between DCR and Licensee for sharing costs incurred by DCR in making the data available, Licensee shall pay agreed charges within 30 days of being billed by DCR.
10. Licensee understands and acknowledges that the accuracy of these data is time-limited. Licensee agrees to seek an update to DCR-provided natural heritage information if a significant amount of time passes before it is utilized.

11. Licensee will indemnify and hold DCR and its officers and employees harmless against any claims by third parties arising out of the use by Licensee of the data provided hereunder.
12. This License is the entire agreement between the parties with respect to the subject matter hereof. It shall be construed in accordance with the law of the Commonwealth of Virginia and may be amended only in writing signed by both parties.

Other Guidelines for use of Natural Heritage Resources Data

Further information about DCR's digital data policies is available at the following links:

- [Guidelines Regarding Use of Digital Data](#)
- [Guidelines Regarding Provision of Natural Heritage Resources Data to Clients Who Request Data only for Listed T&E Species](#)
- [Guidelines Regarding Display of Natural Heritage Resources Data At Public Meetings](#)

Natural Heritage Project Review Services

Project Review. This service assesses the potential impacts of a specified project on natural heritage resources. DCR research will identify all documented occurrences of natural heritage resources from the project area (including an appropriate buffer based on the scope of the project), and may also identify potential species occurrences. If potential impacts are identified, the response will list key natural heritage resources with scientific and common names, Natural Heritage Program rarity ranks, federal and state protected status information, with recommendations for resource protection.

Certain Data Explorer clients will be assessed a charge for projects submitted for review. These charges will be assessed as follows:

\$90/site, plus an additional charge of \$35 for 1-5 occurrences and \$60 for 6 or more occurrences.

Data requests are usually filled within 30 working days of receipt. **Priority responses will incur an additional \$500 surcharge, and can generally be completed within 5 working days.**

Most natural areas in Virginia have not been thoroughly surveyed and new occurrences of plant and animal species continue to be discovered. For this reason, DCR's response or data cannot be considered a definitive statement on the presence, absence or condition of biological elements on a particular site. Heritage reports summarize the existing information known to DCR at the time of the request and should not be substituted for on-site surveys required for environmental assessments.

For more information about DCR's Natural Heritage Program, including order forms and certain downloadable data, visit our Internet Homepage http://www.dcr.virginia.gov/natural_heritage/clinfo.shtml

For additional Virginia Natural Heritage information services, visit our website www.dcr.virginia.gov/dnh/infoservices.htm or contact the NH Project Review Unit at 804-371-2708 or nhreview@dcr.virginia.gov.

Guidelines Regarding Use of Digital Data

The mission of the Virginia Department of Conservation and Recreation's Natural Heritage Program (DCR-NH) is to conserve Virginia's biodiversity through inventory, protection, and stewardship. DCR-NH is statutorily responsible for the creation and maintenance of a natural heritage resource database. DCR-NH recognizes that accurate scientific data are critical to sound decision-making that will impact natural heritage resources, and encourages the use of its data, in a variety of formats, for activities that further the conservation of Virginia's biodiversity.

Natural heritage locational data are sensitive because their inappropriate use, even by well-meaning parties, may result in harm to natural heritage resources we seek to protect. For this reason, DCR-NH monitors the use of natural heritage resource data it collects and maintains, in order to ensure that those uses are appropriate for the benefit of natural heritage resources.

The availability of natural heritage resource data digitally presents special concerns. The digital format vastly increases the ability to transfer data and to use the same set of data in a variety of applications. This data mobility can be positive when it multiplies the beneficial uses of the data. But it also represents a risk with regard to issues of inappropriate data use and distribution.

All use of digital data provided by DCR-NH, whether to public agencies or private parties, is governed by the DCR-NH License for Use of Digital Data, which dictates conditions for use, requires periodic update, and proscribes distribution of data to third parties. The DCR-NH License must be signed before any use of natural heritage data in digital form, whether those data were provided directly by DCR-NH or were transformed into digital form from paper reports, tables, or maps provided by DCR-NH.

The Natural Heritage Project Review Coordinator, in consultation with the Natural Heritage Director and the Natural Heritage Data Provision Committee, is responsible for determining who may receive digital data from DCR-NH. Questions and comments may be addressed to the NH Project Review Coordinator, S. Rene Hypes.

Guidelines Regarding Provision of Natural Heritage Resources Data to Clients Who Request Data Only for Listed T&E Species

The mission of DCR's Natural Heritage Program is to conserve Virginia's biodiversity. We focus on natural heritage resources, which are defined as the habitat of rare, threatened, or endangered plant and animal species, rare or state significant natural communities or geologic sites, and similar features of scientific interest. One of our responsibilities, to which we devote regular and substantial resources, is the determination of what natural heritage resource elements are rare or significant enough to require our attention. This process, which results in our published Rare Animals and Rare Plants lists, follows well-established and well-reviewed procedures. We appreciate the importance of the legal protection afforded certain rare species by the U.S. Fish and Wildlife Service and the Virginia Departments of Game and Inland Fisheries and Agriculture and Consumer Services through the federal and state Endangered Species Acts, but we also recognize that political considerations in the assignment of certain species to protected status result in an imperfect and incomplete list of species receiving protection. Species that have been formally listed as Threatened or Endangered are included among our elements of concern, but our interests are broader.

Our Project Review function is an important opportunity for us to provide our various clients with information that can help to protect natural heritage resources. We are not a regulatory agency, and rely on our clients to act voluntarily to enhance natural heritage resources or to mitigate against the potential negative impacts of their activities. We have established agreements with certain regulatory agencies - the U.S. Fish and Wildlife Service, the U.S. Army Corps of Engineers, the Virginia Department of Environmental Quality - to use our data as part of their regulatory processes, and we are appreciative that these agencies incorporate information about all natural heritage resources, not just listed threatened and endangered species.

For various reasons some clients who seek our data to review potential impacts to their projects only request information about listed species. We believe that our mission is best served by providing these

clients with appropriate data for the full range of natural heritage resource elements, not just listed species. Clients are not under any obligation to us to review or use this information, but in some cases they may find this information useful in suggesting ways to enhance project benefits or reduce negative impacts. Therefore our responses for all project review requests will include information about potential impacts to all natural heritage resources, and clients will be charged for this information according to our fee schedule.

Guidelines Regarding Display of Natural Heritage Resources Data at Public Meetings

Points or polygons representing the exact location of natural heritage resource occurrence locations may not be displayed to the public under any circumstances.

Features of the Natural Heritage Resources Screening Coverage (boundaries of conservation sites, stream conservation units, and general location areas associated with natural heritage resources and cave/karst proxy conservation sites) may be displayed to the public only subject to the following conditions:

- Boundaries must be shown with and in the context of other project data, and not as a separate map featuring natural heritage resource features.
- Only Tier I attributes can be displayed, which are limited to site name, site type, biodiversity significance rank, acreage, and whether a federal or state listed species is present.
- No information about specific natural heritage resource locations can be displayed, including names of species associated with specific conservation sites or stream conservation units.
- Natural Heritage Resources Screening Coverage boundaries can be made available only on hard copy or .pdf maps, not in GIS-readable format.
- Any maps showing NHR Screening Coverage boundaries must credit DCR and include the date of the most recent data update.
- A copy of any map products displayed for or distributed to the public should be sent to DCR-NH's Project Review Coordinator; any maps or posters too large to copy for DCR-NH should be sent as an image file or described in detail.

Map Layers

Natural Heritage Resources

NH Element Occurrences - source: VA DCR, Division of Natural Heritage

Visible to Tier 3 users and available through queries to Tier 2 users. Elements are plants, animals and exemplary natural communities, which are tracked by the Virginia Natural Heritage Program due to their rarity. An Element Occurrence is the location of a single extant habitat containing one or more individual elements. Each occurrence is represented by a polygon indicating its known location. The polygons are intended to indicate the full known aerial extent of the occurrence, modified to account for the locational uncertainty of the source data. At this time many records are represented by point locations with circular buffers of size that varies according to the locational precision of the source data, though DCR-NH is actively working to use extensive field records and the expertise of our field staff to convert these circles into more informed, reliable polygons.

NH Screening Layer - source: VA DCR, Division of Natural Heritage

This layer can be seen queried at all Tier Levels. There are three separate components to the NH Screening Coverage:

- Conservation Sites represent key areas of the landscape worthy of protection and stewardship action because of the natural heritage resources and habitat they support. Conservation sites are polygons built around one or more rare plant or animal, or significant natural community or geological feature. Sites are designed to include the element and, where possible, its associated habitat, and buffer or other adjacent land thought necessary for the element's conservation. There are over 1900 terrestrial site records in the Conservation Sites coverage; these sites encompass all viable, recently-verified terrestrial element occurrences documented in our databases. Conservation Sites are given a biodiversity significance ranking based on the rarity, quality, and number of natural heritage resources they contain. Conservation Sites can be used to identify land management needs and protection priorities. They can also be used as a screening tool, to identify potential conflicts with development activities, and they can be used for proactive planning to ensure that development projects successfully avoid or enhance natural heritage resources.
- Stream Conservation Units (SCUs) identify stream reaches that contain aquatic natural heritage resources, including upstream and downstream buffer and tributaries associated with this reach. There are over 250 SCU's, and these sites encompass all viable, recently-verified aquatic element occurrences documented in our databases. SCU's are given a biodiversity significance ranking based on the rarity, quality, and number of natural heritage resources they contain. SCU's can be used to identify land management needs and protection priorities. They can also be used as a screening tool, to identify potential conflicts with development activities, and they can be used for proactive planning to ensure that development projects successfully avoid or enhance natural heritage resources.
- General Location Areas for Natural Heritage Resources represent the approximate locations of documented natural heritage resource occurrences that were not incorporated into Conservation Sites, either because they are poor quality, their location was not precisely identified, or they have not been reverified in over 20 years. These approximate locations, marked with a one-mile-diameter circle, are included in the Screening Coverage because they indicate areas with relatively high potential for natural heritage resource occurrences to be re-documented. Depending on the apparent suitability of local habitat, DCR-NH may recommend biological surveys when reviewing projects that intersect these locations. Some general location areas are not circular polygons. For these records a review of recent aerial photography in

conjunction with known habitat needs for the element identified potential habitat might exist within the limits documented in the original occurrence.

- Karst Screening Areas represent regions of karst topography that harbor significant cave communities and Natural Heritage Resources. In most cases karst areas involve a series of hydrologically connected caves and cavities that span a large area. Each significant karst feature is buffered with a 3 km radius. These regions are in the process of being re-evaluated and delineated as more detailed Conservation Sites.

Virginia Conservation Lands Needs Assessment (VCLNA)

The VCLNA layers are set to appear at different thresholds. The Landscape Corridors and Vulnerability Model will display at the state scale (no threshold is set on the layers). The Forest Economics Model has a threshold set to display when 4 or less grids of the DRG Quad Grid are shown. The remaining layers will be able to be displayed/ will display if turned on when the end user is zoomed in to a County level.

The VCLNA is a flexible, widely applicable tool for integrating and coordinating the needs and strategies of different conservation interests, using GIS (Geographic Information System) to model and map land conservation priorities and actions in Virginia. The VCLNA allows the manipulation of issue-specific data sets that can be weighted and overlaid to reflect the needs and concerns of a variety of conservation partners.

Ecological Model

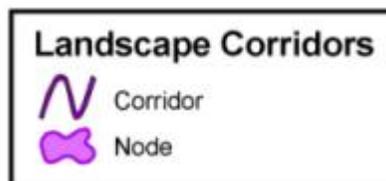
Natural land networks are integral parts of green infrastructure. They provide benefits in terms of wildlife and plant habitat, biodiversity conservation, open space, recreation, water resources protection, erosion control, sediment retention, protection from storm and flood damage, crop pollination, and carbon sequestration. The Virginia Natural Landscape Assessment (VaNLA) is a landscape-scale GIS analysis that has identified, prioritized, and linked important lands to form natural land networks throughout Virginia. Using land cover data derived from satellite imagery, the VaNLA identified large, unfragmented cores, which are patches of natural land with at least 100 acres of interior cover. This analysis also identified habitat fragments, which are smaller versions of the cores with 10 to 99 acres of interior cover. Cores provide habitat for a wide range of species, from interior-dependent forest species to habitat generalists, as well as for species that utilize marsh and maritime habitats. The cores layer shown here represents cores as polygons that are symbolized by Ecological Integrity scores, calculated from an Ecological Composite Model (ECM). Our description of Ecological Integrity is below, as well as a table of the attributes in this layer.

Ecological Integrity: Maintaining vital natural landscapes is essential for basic ecosystem services such as cleaning our air and filtering our water. Natural lands also harbor thousands of species of animals and plants and contain libraries of genetic information from which we derive new foods, materials, and medicinal compounds. These parts of the landscape also provide us with recreational opportunities and open space resources. But these qualities are represented differently across the cores and habitat fragments that constitute the natural landscape. To assess their unique values, each core and habitat fragment has been assigned an ECOLOGICAL INTEGRITY score that rates the relative contribution of that area to the ecosystem service values above. In general, larger, more biologically diverse areas are given higher scores. Scores are enhanced if the core or habitat fragment is part of a larger complex of natural lands. Scores also are increased for those cores and habitat fragments that contribute to water quality enhancement.



ATTRIBUTE	DESCRIPTION
COREID	Unique numeric identifier for each core or habitat fragment
TYPE	Identifies type of feature: large core (at least 10,000 acres of interior cover); medium core (1,000 - 9,999 acres of interior cover); small core (100 to 999 acres of interior cover); habitat fragment (10 to 99 acres of interior cover)
EO_COUNT	Number of Natural Heritage Element Occurrences per core or habitat fragment (VDCR-DNH)
TIER1EHACR	Acreage of potential and confirmed habitats for Tier 1 species identified by the Virginia Wildlife Action Plan (VDGIF)
SRMAX	Maximum potential species richness of vertebrates and lepidopterans per core or habitat fragment (VGAP)
TOTALACRES	Total acreage of each core or habitat fragment
DEPTHINTER	Depth of each core or habitat fragment
THREAT	Threat if not conserved of each core or habitat fragment (VDCR-DNH)
DRINKACRE	Acreage of high priority groundwater and surface water protection zones per core or habitat fragment (VDH)
UMNWIACRES	Acreage of unmodified wetlands per core or habitat fragment (NWI)
UMNWIPERC	Percent area of unmodified wetlands per core or habitat fragment (NWI)
PercConsVa	Percentage of each core or habitat fragment that is already conserved (VDCR-DNH)
SitesIndex	Conservation Sites Index values (VDCR-DNH)
SCUIndex	Stream Conservation Units Index values (VDCR-DNH)
ECM	Ecological Integrity score resulting from the Ecological Composite Model (ECM) for each core or habitat fragment.

Cores with the greatest Ecological Integrity were linked by landscape corridors, which facilitate movement of animals, seeds, and pollens between cores. In addition to ecological benefits, the core and corridor network lends itself to development of an extensive network of recreation trails throughout the commonwealth. The attributes of the Landscape Corridors and Nodes layer are shown in the table below.

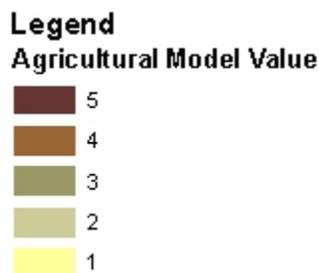


ATTRIBUTE	DESCRIPTION
TYPE	Identifies whether a feature is a corridor or a node.
CORRIDORID	Unique numeric identifier for corridors
NODEID	Unique numeric identifier for nodes

COREID	If a node is a core or habitat fragment, the COREID field contains the unique numeric identifier for that feature.
EndCore1	Contains the COREID of the core at one end of the corridor
EndCore2	Contains the COREID of the core at the other end of the corridor

Prime Farmland Model

The Virginia Agricultural Model identifies agricultural value of land in Virginia. Natural criteria such as slope, land use and prime farmland designation were used to identify landscape features. Cultural features from the Virginia Department of Historic Resources were used to identify historic farms.



The Prime Farmland Model has the following attributes:

ATTRIBUTE	DESCRIPTION
Agricultural Value	Agricultural Model Value showing ranked agricultural land based on model input parameters
5	High agricultural value.
4	Medium to high agricultural value.
3	Medium agricultural value.
2	Low to medium agricultural value.
1	Low agricultural value.

Cultural Model

The cultural model is a polygon feature class which represents the cultural value of land in Virginia as determined by the presence of an archaeological site, an architectural site, and / or an American Indian Land. Each dataset has specific weighting parameters associated with the entities listing according to the Department of Historic Resources. The purpose of the cultural dataset is to show the current location and value of cultural assets in the state of Virginia in an effort to promote awareness and conservation of our cultural assets.

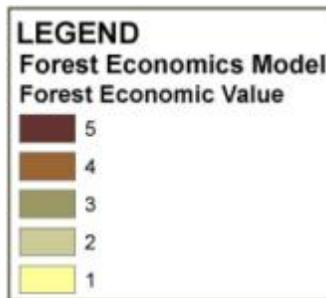


The Cultural Model contains the following attributes:

ATTRIBUTE	DESCRIPTION
TOT_VALUE	Total cultural value
ARCHAE_wt	Value representing the archaeological weight of the polygon
ARCHAE	Attribute indicating the absence or presence of an archaeological site.
Y	Archaeological entity present.
NA	Archaeological site not determined to be present (potential existence).
AIND	American Indian Area presence
Y	YES, the entity is present
NA	Entity is not present
AIND_wt	American Indian Land value
ARCHT_wt	Architectural value.
ARCHT	Attribute indicating the absence or presence of an architectural
Y	Architectural entity present
NA	Architectural site determined to be not present (potential).
CULT_ID	Cultural ID

Forest Economics Model:

The Forest Economics Model was developed to show ranked forest lands with economic value. Biophysical parameters evaluating forest suitability and productivity, management constraints evaluating timber harvesting constraints and socioeconomic data were evaluated to create a forest economic layer showing ranked forest land in Virginia.



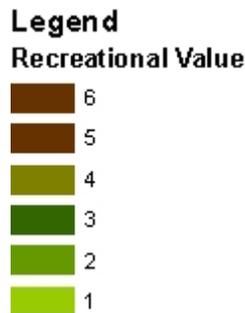
The Forest Economics Model has the following attributes:

ATTRIBUTE	DESCRIPTION
ForEconVal	Forest Economic Value showing the forest rank based on model input parameters
5	High forest economic value.
4	Medium to high forest economic value.
3	Medium forest economic value.
2	Low to medium forest economic value.
1	Low forest economic value.

Recreation Model:

The Virginia Recreation Model was developed to show recreational value of land in Virginia. Data shows presence of public recreational opportunities. This dataset is one component of the Virginia Conservation Lands Needs Assessment (VCLNA) project, which is being undertaken in an effort to map green infrastructure for the state of Virginia.

This dataset was created using the following existing datasets: Trails (DCR-DNH), Boating access points (VADGIF), Beaches (VIMS), Conservation Lands (DCR-DNH), Parks (DCR-DNH), Scenic Rivers (DCR-DNH), Fishing Lakes (VADGIF), Tidal Waters (DCR-DNH), Trout Streams (VADGIF), Navigable Water (VADGIF), Hunting Lands (VADGIF), VA Birding Trails (VADGIF), Scenic Byways (DCR-DNH).



The Recreational Model has the following attributes:

ATTRIBUTE	DESCRIPTION
RecValue	The value representing the number recreational resources present based on input parameters.
6	Six recreational resources present.
5	Five recreational resources present.
4	Four recreational resources present.
3	Three recreational resources present.
2	Two recreational resources present.
1	One recreational resource present.

Water Quality Integrity Model:

The Virginia Water Quality Integrity Model was developed to show the relative value of lands as it contributes to watershed or water quality integrity. The Watershed Integrity Model represents important terrestrial features that should be conserved for water quality integrity based on the best available data.



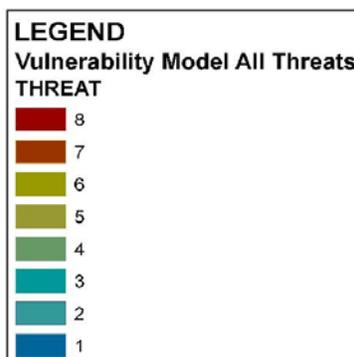
The Water Quality Integrity Model contains the following attributes:

ATTRIBUTE	DESCRIPTION
WQValue	Water Quality Integrity Value showing important terrestrial features that contribute to watershed or water quality integrity.
5	High terrestrial value for watershed integrity.
4	Medium to high terrestrial value for watershed integrity.
3	Medium terrestrial value for watershed integrity.
2	Low to medium terrestrial value for watershed integrity.
1	Low terrestrial value for watershed integrity.

Vulnerability Model (All Threats):

The Vulnerability Model represents predicted growth patterns in Virginia. The polygon values represent a threat level based on a scale of 1 to 8 indicating the potential threat of urban, suburban and rural growth into the landscape. A value of 8 indicates a hotspot of growth and a value of 1 represents a low threat of urban fringe growth into the landscape. This dataset is one component of the Virginia Conservation Lands Needs Assessment (VCLNA) project, which is being undertaken in an effort to map green infrastructure for the state of Virginia.

The purpose of this dataset is to provide an overview of the predicted growth patterns in Virginia. The model puts the predicted growth pattern into context in relation to the entire Virginia landscape, presenting an overview of where growth is occurring in the state.



ATTRIBUTE	DESCRIPTION
THREAT	Threat value associated with predicted growth pressure. The higher the value, the greater the threat.
8	Hotspot of growth.
7	Very high threat of predicted growth.
6	High threat of predicted growth.
5	Medium to High threat of predicted growth.
4	Medium threat of predicted growth.
3	Low to Medium threat of predicted growth.
2	Low of predicted growth.
1	Very low threat of predicted growth.

Diabase Screening Layer – source: VA DCR, Division of Natural Heritage

This is a digital representation of diabase soils with potential for Natural Heritage Resources.

Diabase soils were isolated from county soil survey data and NRCS soils data. These soils were further analyzed using digital orthophotography (VA Basemap Imagery), and areas where the landscape appeared to be disturbed or currently under heavy cultivation were removed.

In Northern Virginia, diabase supports occurrences of several global and state rare plant species: earleaf foxglove (*Agalinis auriculata*, G3/S1/NLNL), purple milkweed (*Asclepias purpurascens*, G4G5/S2/NL/NL), bluehearts (*Buchnera americana*, G3G4/S1/NL/NL), downy phlox (*Phlox pilosa*, G5T5/S2/NL/NL), stiff goldenrod (*Oligoneuron rigidum* var. *rigidum*, G5/S2/NL/NL), and marsh hedgenettle (*Stachys pilosa* var. *arenicola*, G5/S1/NL/NL).

Reference Layers

Digital Raster Graphic (DRG) Grid – source: U.S. Geological Survey

Reference grid for the USGS Digital Raster Graphics. This dataset includes the DRG boundaries, index numbers, and corresponding topographic quadrangle names.

USGS Place names – source: U.S. Geological Survey

Includes all features labeled on Virginia's USGS Topographic Quadrangles.

Trails - source: VA DCR, Division of Natural Heritage, NPS, USFS, Appalachian Trail Conference

Currently includes the Appalachian Trail, and trails located in many State Parks, the National Forest and Shenandoah National Park.

VDOT Roads – source: Virginia Department of Transportation

Virginia Department of Transportation maintained statewide geo-spatial databases on its maintained highway transportation network.

NHD Streams – source: U.S. Geological Survey

The National Hydrography Dataset (NHD) is a comprehensive set of digital spatial data that contains information about surface water features such as lakes, ponds, streams, rivers, springs and wells. Within the NHD, surface water features are combined to form "reaches," which provide the framework for linking water-related data to the NHD surface water drainage network. These linkages enable the analysis and display of these water-related data in upstream and downstream order.

The NHD is based upon the content of USGS Digital Line Graph (DLG) hydrography data integrated with reach-related information from the EPA Reach File Version 3 (RF3). The NHD supersedes DLG and RF3 by incorporating them, not by replacing them. Users of DLG or RF3 will find the National Hydrography Dataset both familiar and greatly expanded and refined.

<http://nhd.usgs.gov/>

Managed Conservation Lands - source: VA DCR, Division of Natural Heritage

Public and private conservation and recreation lands in Virginia. Includes properties protected by Virginia Outdoors Foundation easements, lands managed by state and federal

natural resource agencies, land trust holdings and others.

<http://www.dcr.state.va.us/dnh/constlandindex.htm>

Digital Raster Graphic (DRG) Grid – source: U.S. Geological Survey

Reference grid for the USGS Digital Raster Graphics. This dataset includes the DRG boundaries, index numbers, and corresponding topographic quadrangle names.

NWI Wetlands – source: U.S. Fish and Wildlife Service

National Wetlands Inventory. This data set represents the extent, approximate location and type of wetlands and deepwater habitats in the conterminous United States. These data delineate the aerial extent of wetlands and surface waters as defined by Cowardin et al. (1979). <http://www.nwi.fws.gov/>

Boundaries Data Group

Subhydrologic Units - source: EPA/DCR Division of Soil and Water Conservation

The boundaries of the 494 hydrologic units in Virginia at the 14 digit level of detail. This dataset covers the whole state and these units are the immediate subsets of the 11 digit level of hydrologic units in Virginia. Developed for finer watershed planning work in the state than the 11 or 8 digit level of hydrologic unit allows. This level is the basis for Virginia's non-point source pollution assessment and ranking. It is the official statewide hydrologic unit delineation for water quality reporting.

8 Digit USGS Watersheds – source: US Geological Survey

The United States is divided and sub-divided into successively smaller hydrologic units, or watersheds, which are classified into four levels: regions, sub-regions, accounting units, and cataloging units. The hydrologic units are arranged within each other, from the smallest (cataloging units) to the largest (regions). Each hydrologic unit is identified by a unique hydrologic unit code (HUC) consisting of two to eight digits based on the four levels of classification in the hydrologic unit system.

<http://water.usgs.gov/GIS/huc.html>

Physiographic Provinces - source: VA DCR, Division of Natural Heritage

A physiographic province is a landform region, an area delineated according to similar terrain that has been shaped by a common geologic history. Each province is characterized overall by its elevation, relief, lithology, and geologic structure.

Planning Districts (PDC) – There are 21 planning districts in Virginia and each is under the jurisdiction of a separate Planning District Commission.

Virginia Counties – source: Environmental Sciences Research Institute (ESRI)

County boundaries. These are set to turn on and off at the most appropriate map scale.

States – source: Environmental Sciences Research Institute (ESRI)

State boundaries. These are set to turn on and off at the most appropriate map scale.

Base Layers

VBMP Imagery – source: Virginia Geographic Information Network (VGIN)

Virginia Basemap Imagery (1 meter resolution): True color digital ortho-photography for the State of Virginia. Derived from photographs taken in the spring of 2002 during leaf off conditions. These are set to turn on and off at the most appropriate map scale.

24K TOPO – source: United States Geological Survey

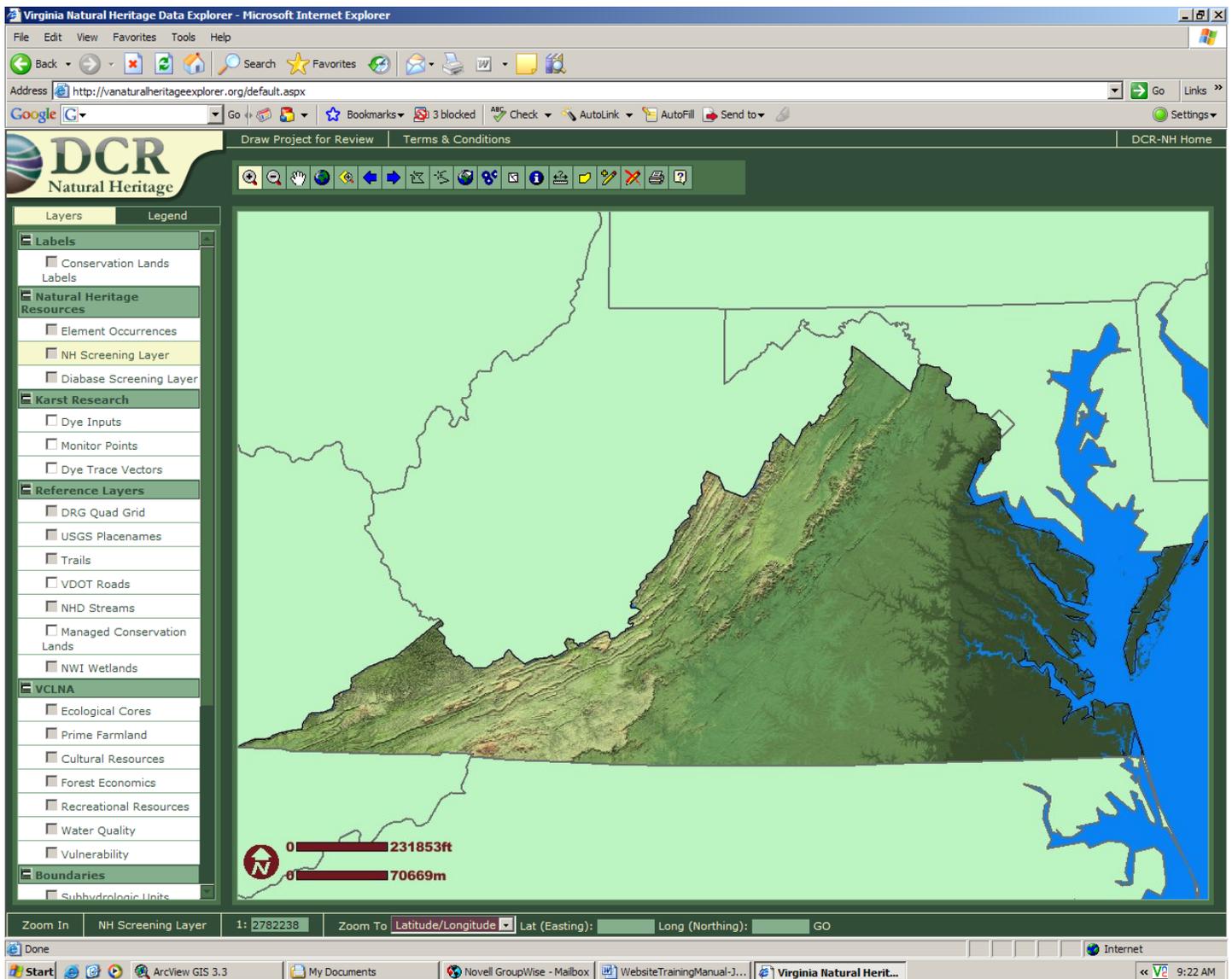
Digital Raster Graphics – 1:24,000 scale digital versions of the USGS topographic maps. Features include contour lines, roads, streams, and many types of labels. These are set to turn on and off at the most appropriate map scale.

100K TOPO - source: United States Geological Survey

Digital Raster Graphics – 1:100,000 scale digital versions of the USGS topographic maps. Features include contour lines, roads, streams, and many types of labels. These are set to turn on and off at the most appropriate map scale.

Elevation – Shaded relief image for the State of Virginia. This image gives you a sense of orientation at a small scale. Its colored based on the physiographic regions and shaded based on elevation.

Mapservice Navigation and Use



Menu Options: These menu options allow you to toggle between other specialized windows to perform searches, etc.

- Draw Project for Review - Enter a project boundary and query for conflicts with Natural Heritage Resources.
- Terms and Conditions - Explains the constraints on the use of this data.

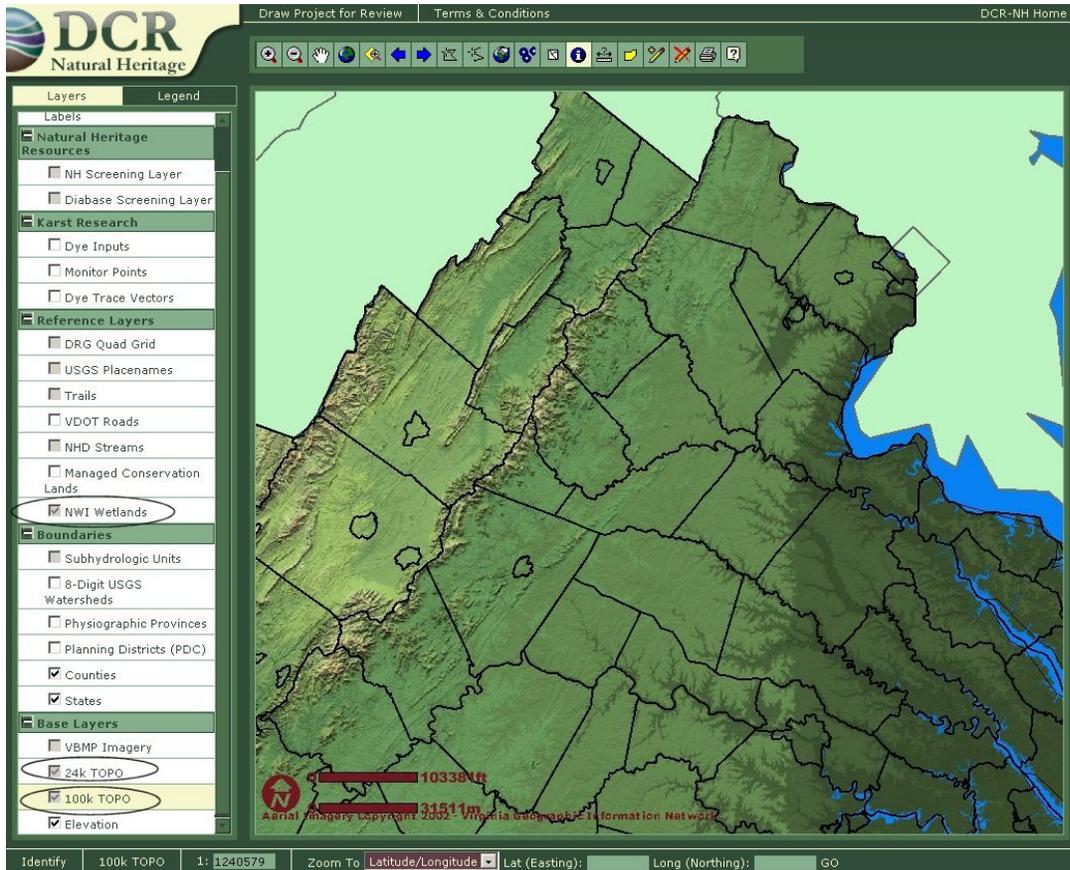
Menu Toggle - Click on Layer or Legend to toggle between a list of available datasets and a legend showing how the data appears (color, hatching, etc) in the map view.

Map Layers

- Map layers are grouped by type and each type can be hidden or expanded by clicking the + or -.
- The active map layer will be highlighted in yellow. A layer can be turned on and off by clicking the check box.
- Several layers are "scale dependent" meaning that they automatically turn on and off at certain scales based on the most appropriate scale for that layer (see page 28) . If a map layer's check box is grayed out then it can't be viewed at that scale.

Turning map layers on and off:

There's a check box next to each map layer. Click this box to toggle the layer on and off. Some of the layers are "scale dependent meaning that they are only available at certain map scales. This is done to maximize the performance of the natural heritage data explorer as some layers would take a log time to display and refresh at larger (more zoomed out) scales. Legend boxes are grayed out if a layer is unavailable at your current scale.



Scale - Displays the scale of the map view (1 map unit = # units in reality). You can change this number if you need to view at a particular scale.

Zoom to Lat/Long - Enter latitude and longitude in dd-mm-ss (degrees/minutes/seconds) to zoom to a specific location.

Zoom to a particular map coordinate: At the bottom of the map window there are two boxes for entering X / Y coordinates. You must first choose your coordinate system: Lat/Long, UTM zone 17, UTM zone 18. Lat/Long coordinates must be entered as degrees, minutes, and seconds values with no spaces (ddmmss). UTM coordinates can be entered as 2 digit numbers and decimal places (ex: 32.567429). Hit enter and the map view will move to a new location with the coordinate in the center of the screen.



Buttons - Buttons are used to navigate around the map view, query datasets, and submit project areas.



Zoom to view a feature more closely. Click once in the map view or draw a box containing an area of interest.



Zoom out to see a larger area by drawing a box or clicking on the map view.



Pan, or move the viewable area by holding the mouse button dragging.



Zoom to all features in all map layers.



Zoom to the spatial extent of the active map layer



View the previous screen



View the next screen



The select feature button allows you to create an irregular shape to select features. Draw a shape by clicking points on the screen and double click to perform the selection. Any features of the active theme (the one highlighted in yellow) that intersect the shape will be listed in the results window.



The line select button allows you to draw a line to select features of the active theme.



Search for a feature



Buffer selected features - use this tool to select features within a certain distance of the selected features.



Clear the selected features of the active theme.



Identify a feature in the active data layer by clicking on it.



Measure a distance on the map by clicking two or more points and double clicking to finish.



Delineate an area as a polygon. This will not be used for project review, only map making. **This will not be used for project review**, only map making.



Add a label by clicking on the map view and entering text.



Delete all labels added by the user.



Create a printable version of the map view. Click the button and when the print preview page opens press the **Page Setup** button. Set the print settings to **Landscape** orientation with **1" margins all the way around**. This will apply to all subsequent prints during the same map session.



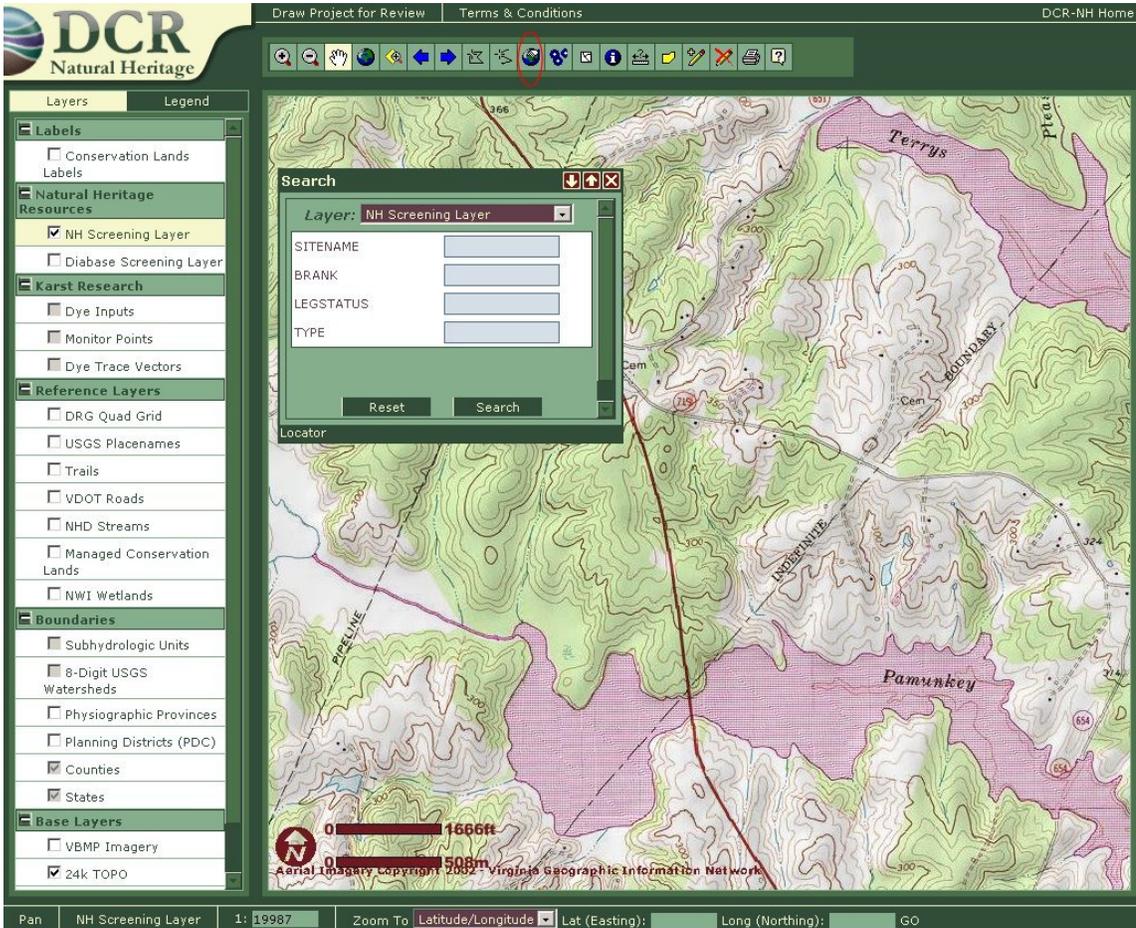
Enter the help screen

Please note during anytime you may exit the DNH on-line subscription service by using the back button.

Search for a certain feature in a layer

1. Click on the search tool button .
2. Select a layer to search by using the drop down button
3. Enter text in search field

- Click on search
- Results are returned and options are available to view details  of each record or zoom to the feature in the map view .
- Reset button will clear value.



Finding your Area of Interest

Method 1. Zoom to a map coordinate

- Locate the X and Y coordinate boxes at the bottom of the map view.
- Choose a coordinate system: Lat/Long, UTM zone 17, UTM zone 18. Lat/Long coordinates must be entered as degrees, minutes and seconds values with no spaces (ex. 364534). UTM coordinated can be entered as 2 digit numbers and decimal places (ex:32.567429). Use the tab key to move between lat/long fields.
- Click GO and the map view will move to the new location with a star representing the entered coordinates

Method 2. Search for and zoom to a Place Name:

- Press the Search button 
- Select USGS Place names layer from the pull-down menu
- Enter a name or part of a name in the Feature_na field: eg. Clinch will find any place name with Clinch anywhere in the name: Clinch Valley College or Middle Fork Clinch River. Then press Search. A results window will open

 to go to that location.

Zoom To	FEATURE_NAME	FEATURE_TYPE	COUNTY
	Clinch	ppl	Scott
	Clinch Mountain	range	Scott
	Clinch Mountain Spur	range	Russell
	Clinch Mountain State Wildlife Management Area	park	Russell
	Clinch Mountain Tunnel	tunnel	Scott
	Clinch Ranger District Office	building	Wise
	Clinch River Flyash Dike Number One Dam	dam	Russell
	Clinch River Flyash Dike Number Two Dam	dam	Russell

33 Records

4.

Method 3. Zoom to a known USGS quadrangle

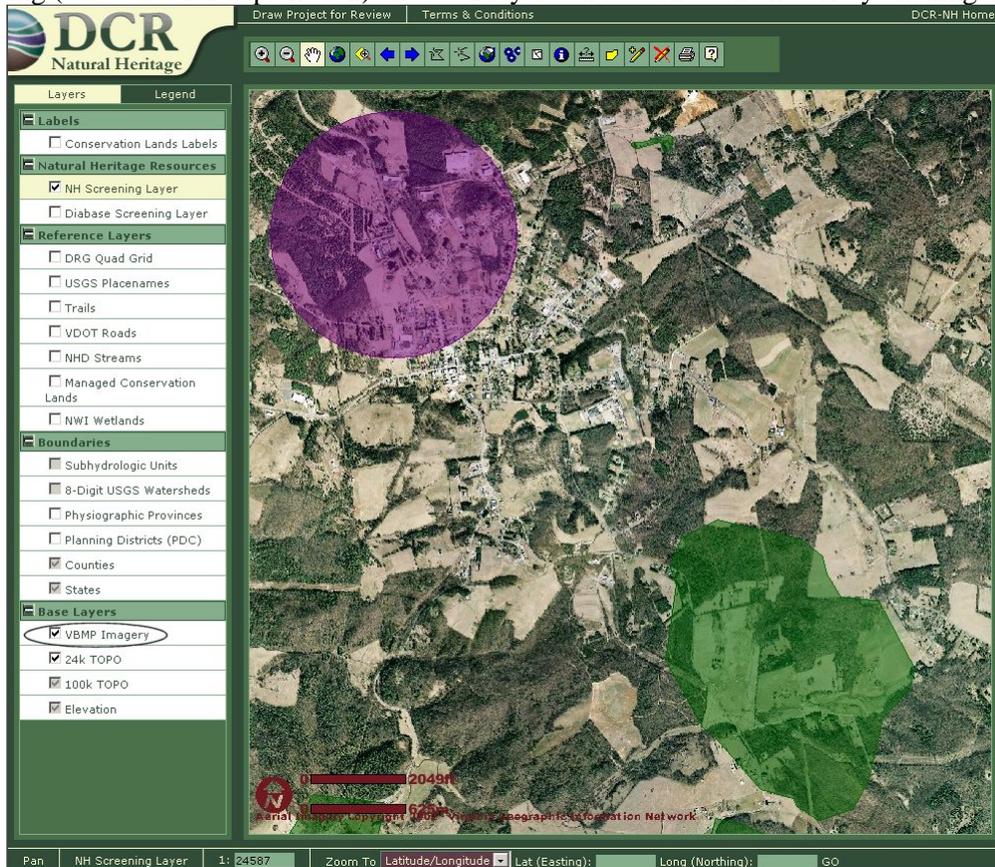
1. Press the Search button 
2. Select DRG Quad grid layer from the pulldown menu
3. Enter a name or part of a name in the NAME field: eg. north will find any quad name with 'north' anywhere in the name: Disputanta north or North View. You can also enter the USGS quad number in the Quadno field. Then press Search. A results window will open showing the matches (example below). Press the Zoom to icon  to zoom to that quad. It will be centered in your view frame with a shaded blue outline.

Zoom To	NAME	QUADNO
	COLONIAL BEACH NORTH	387638
	DISPUTANTA NORTH	377722
	TAZEWELL NORTH	378125
	RADFORD NORTH	378025
	NEWPORT NEWS NORTH	377614
	NORTH VIRGINIA BEACH	367588
	NORFOLK NORTH	367683
	NORTH VIEW	367872
	MIDDLESBORO NORTH	368366

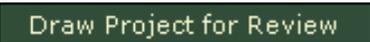
14 Records

View USGS Topographic maps and aerial photography:

All basemap layers are located in the base layer group of the table of contents. At certain scales these images are available for viewing (see above for explanation) and each layer can be turned on and off by clicking the box next to it.



Enter a project boundary for project review

1. Locate the area of interest on the **24K quadrangle** and zoom in to a scale of 30,000 or less. You cannot pan once you start drawing the project boundaries.
2. Click on the draw project boundary button: 
3. Draw the project boundaries by clicking and dragging the mouse, clicking at each change of direction. You cannot edit this polygon, so if you make any mistakes, double-click to end the polygon, then hit the Clear Features  button to delete it and start again.
4. When you have entered the last point, double click with the mouse to close the polygon and a window will open up allowing for entry of information about the project. Enter all required fields and a valid e-mail address.
5. Click "submit" button at the bottom of the open window.
6. A project boundary will appear in red labeled with project name. All users will receive a PDF report listing Natural Heritage Screening Coverage features within 2 miles of the project boundary and a map showing the project
7. location. If a natural resource is within the search area a generated PDF map and report will automatically be e-mailed to the DCR-DNH for review and to the subscriber. If there are no resources within the search area, a boilerplate "no find" letter will be e-mailed to the subscriber.

Make a Map with text labels

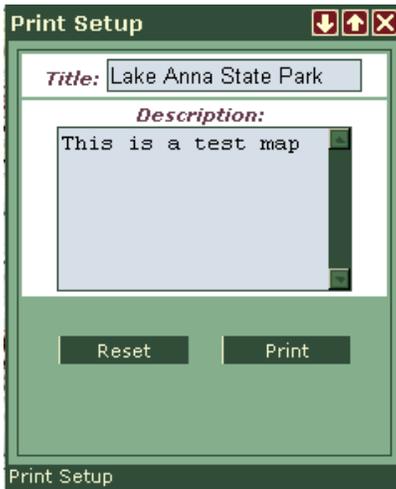
At any time, you can print what you see in your view, or you may customize the view by adding additional desired layers and labels.

If you wish to digitize your own area of interest, use the draw polygon button  to draw your polygon by clicking and dragging the mouse, clicking at each change of direction. You cannot edit this polygon, so if you make any mistakes, double-click to end the polygon, then hit the Clear Features  button to delete it and start again.

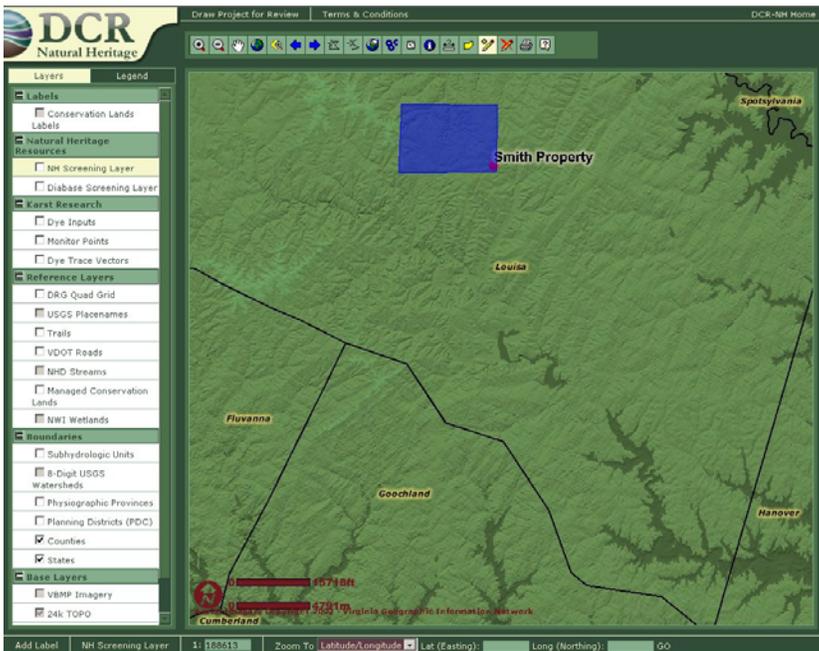
You can add labels by clicking on the Add label tool , then clicking in the polygon you just drew and entering text in the dialog box that opens. This will be added with a dot on the screen

You will see the size, in acres, of your polygon on the status line of the browser window. This polygon will persist until you press the Clear Features button .

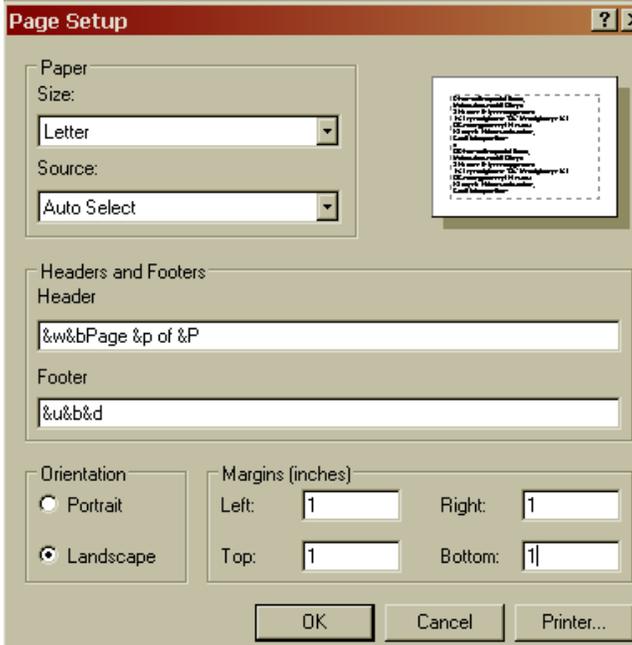
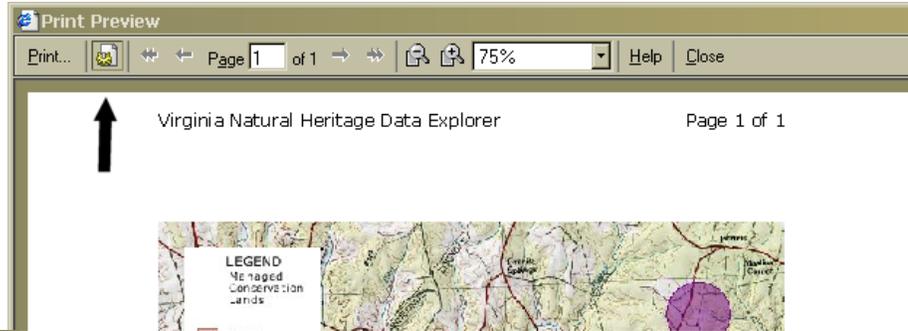
When you are finished, press the Print button . Enter a title and description for the map in the dialog box that opens.



Then press Print. You may get the following message: An ActiveX control on this page might be unsafe to interact with other parts of the page. Do you want to allow this interaction?. Click yes.



A print Preview window will open as shown on the left below, click the Page Setup icon as shown by the arrow, and set the paper orientation to Landscape and the map margins to 1” all around for the map to print correctly. These settings will persist for your session.



Find Features within a Specified Distance of Other Features

For example, you wish to find Managed Conservation Lands within some distance of a road.

Make VDOT Roads layer active, and then select a road by using

the Line or Polygon select tool.  

Choose the Buffer tool 

In the dialog that opens, select Managed Conservation Lands from the pulldown menu.

Enter your buffer distance, you are limited to 2 miles or less. Select your buffer units, miles, feet or meters from the pulldown menu.

A buffer will be drawn around the road and any intersected Conservation Lands will be highlighted and popped up in a results table.



You can then zoom  to each selected Land and/or see the detailed information on a land by pressing the  button.

If you close the results window you can recall it by pressing the Results tab on the menu so long as you have not done a new buffer or search.

Scales for viewing different layers:

LAYER	Min Scale - Don't show layers when zoomed out beyond	Max Scale - Don't show layers when zoomed in Beyond				
Element Occurrence	750000					
NH Screening Layer	750000					
Diabase Screening Layer	475000					
Dye Inputs	500000	62500				
Monitor Points	500000	62500				
Dye Trace Vectors	500000	62500				
DRG Quad Grid	250000	10000				
Trails	200000					
NHD Streams	500000	110000				
NWI Wetlands	64000					

Please note the VCLNA layer display is dependent on screen resolution and can be viewed at a four quarter-quad extent.

Project Submission Template

What information is needed to submit for the proper review?

The screenshot shows the Virginia Natural Heritage Data Explorer web application. The interface includes a top navigation bar with the DCR Natural Heritage logo and a 'Project Info' form overlaid on a map. The form contains the following fields:

- Project Number: []
- *Project Name: []
- *Project Description: []
- Priority Service:
- *Site Conditions: []
- Latitude: 385200
- Longitude: 770740
- *Contact Name: DCR TIER 1 USER
- *Company Name: DCR
- Tax ID: []
- *Street Address: 217 Governor Street
- *City: Richmond
- *State: VA
- *Zipcode: 23219
- *Phone: (804)786-8646
- *Fax: (804)371-2674
- *Email: nhwebreview@dcr.virginia
- Comments: []

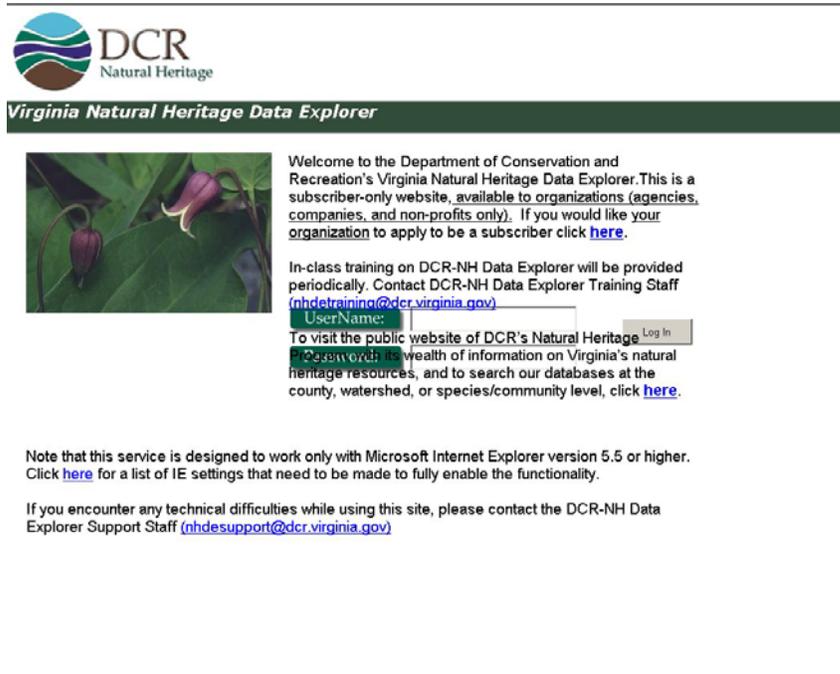
At the bottom of the form are 'Reset', 'Submit', and 'Cancel' buttons. The map background shows a topographic map of an area in Virginia, with labels for 'Arlington Heights' and 'Westmont'. The application's status bar at the bottom indicates the area is 696361.13 sq. meters (172.075 Acres) and the zoom level is 1:20000.

- Project number: give the project a unique, identifiable number that will be convenient for your reference if one is available
- Project name: give the title of the project for reference
- Project description: what is being done at the project site Ex: residential subdivision
- Site conditions: what is present conditions at the project site Ex: rolling, intermittent drainage ways that form headwaters
- Automatically generated: lat/long and agencies main contact. Information must be changed per person who is submitting project: contact name, agency name, street address, city ,state, zip code, phone, and fax
- Email: automatically prompts main contact for company, please change to reflect user submitting project, enter in your personal work email address. Your personal business email is where you will receive conformation of project submittal and report will be automatically sent to address entered
- Comments: this field is for important information that DCR-DNH would need for proper review Ex: wetland compensation, etc.

Troubleshooting Tips

- ⇒ Please make sure that you have attended website training or have signed up for a future training. This will help in understanding our information, using the application and providing useful information when trouble shooting with DCR staff.
- ⇒ When your project does not submit or you see an error message, please verify or test the following settings or steps prior to contacting Natural Heritage Data Explorer Support at nhdesupport@dcr.virginia.gov. Also, please screen capture the error message so it can be sent electronically to DCR-DNH.
- ❖ **IE Settings:** Check the Internet Explorer Settings (IE Settings) are correct. (See pages 2-4 in manual) or <http://www.vanaturalheritageexplorer.org/siterequirements.htm>.

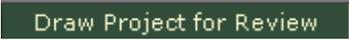
Text size too large.



Text size should be “medium” or smaller by clicking on the View menu on the top of the Internet Explorer toolbar.



- ❖ **Draw Project for Review:** After zooming into the project location at a 1:30,000 scale or less using the topographic base map, right click the **DRAW FOR PROJECT REVIEW** tab in the upper left hand corner of the view.



Locate the area of interest and zoom in as close (over 1:5,000 less than 1:30,000) as you can while still including the whole project area. After clicking on the draw project for review tab, immediately start drawing the polygon boundary on the topographic map by single clicking with the mouse to place vertices/corners. When you enter the last point double click with your mouse. A window will open up asking for information about your project area. Please note using an aerial imagery base map could result in the project boundaries displaying incorrectly on the topographic map generated for the PDF report. Enter all required fields and a valid email address. Click "submit" to submit your project. A red project boundary labeled with the project title will appear in the map window. Users will receive an e-mail with a PDF report attached listing all documented Natural Heritage resources within 2 miles of the project boundary. If there are no conflicts the document will report it as a "no hit".

Do not click any other buttons. Draw the project polygon using single click for vertices/corners and double click to finish drawing the polygon.

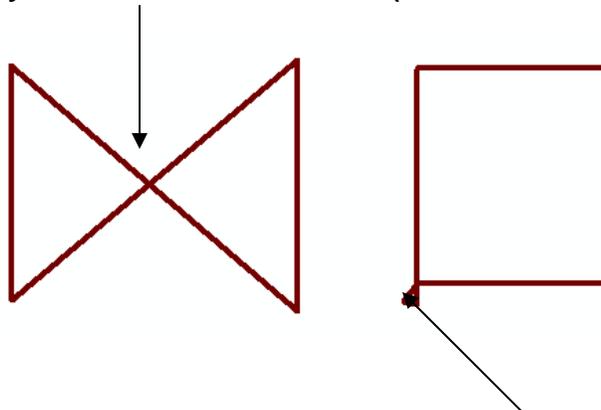
Please note using the draw polygon button  the project **will not** be submitted for review. This is used for map making purposes only.

- ❖ **Drawing the Project Boundaries:** When drawing your project boundaries do not cross the polygon lines. This will cause the project submittal to fail. Please note only one polygon can be submitted at a time for review.

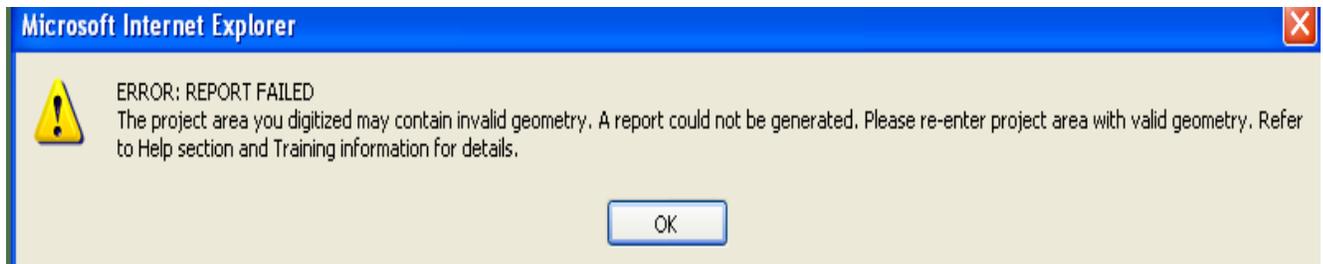
Project area boundaries should contain valid polygon geometry. This means that project area boundaries should be drawn so there are no self-intersecting or self-overlapping lines. Here is an example of valid polygon geometry:



Invalid polygon geometry includes self-intersections (lines of the boundary cross over itself):

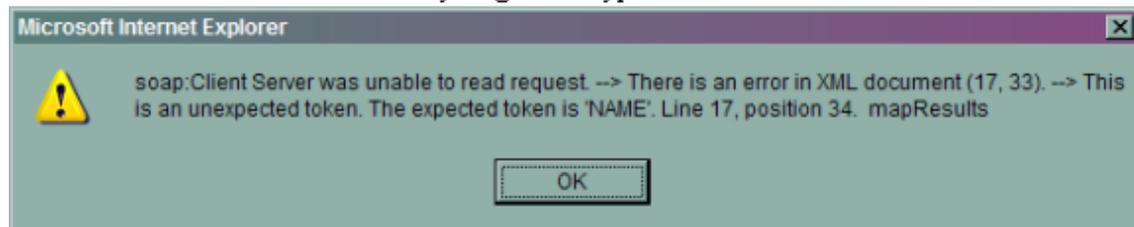


- ❖ **Cris-Cross and Bowties:** When drawing a polygon for project review, DO NOT criss-cross lines. This will ultimately fail the project and a PDF report will not be returned to the submitter or to DCR's Project Review.



- ❖ **Entering Project Information:** Do not enter characters such as &, <, > into the project information fields when submitting the project. This will cause the project submittal to fail and cause an error message to pop up on the computers screen (see below).

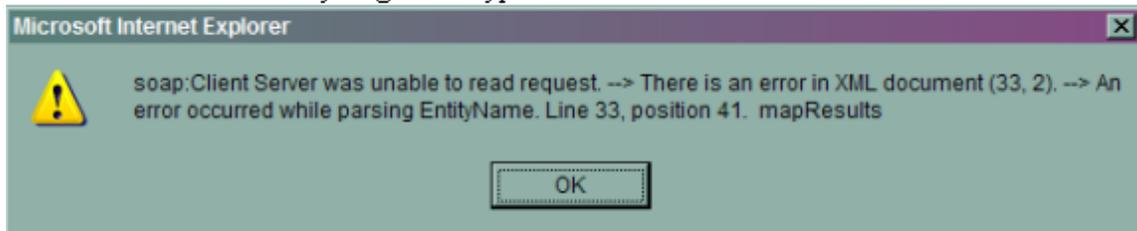
When the < character is entered – you get this type of error:



When the > character is entered – you get this type of error:



When the & is entered – you get this type of error:

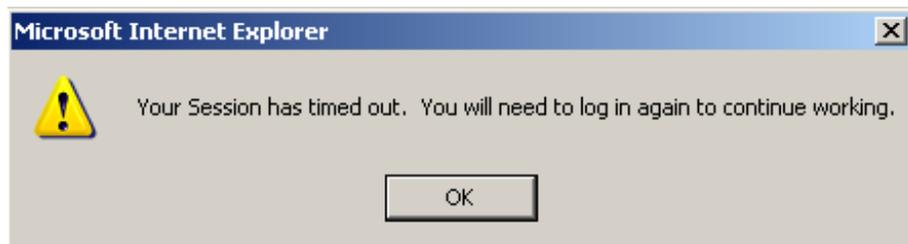


The line and position will depend on where the end user has entered the character in the project submittal form.

Please note when entering the project information, each field limit is 256 characters. Entering more characters in any one field will cause the project submittal to fail.

- ❖ **ISP Server:** When using this application make sure that there are no email blockers such as spam blocker, pop up blockers, or blacklists on the ISP server. This may cause the PDF report emails to be placed into a junk mail folder instead of being sent to the e-mail address entered in the project submittal form. If you are not receiving a confirmation email then most likely DCR-DNH is not receiving the project in their email mailbox. Please verify the **GIS.TIMMONS.COM** website has been added to your server's trusted domain list. **Please note:** The PDF report is sent from gis.timmons.com not dcr.virginia.gov.

- ❖ **Timing Out:** The website will time out for security reasons after 20 minutes of being idle. Please back out of the application using the back arrow for internet explorer and log in again.



- ❖ **Active X Control Settings:** As shown on page 3 of this user guide, please verify your active X control settings are correct. If these settings are not correct, you will receive the error message below and the project will not be submitted for review.



- ❖ **Proxy Settings Enabled:** If the proxy settings are enabled on your Internet Explorer settings a dialog box will appear requesting a username and password. You will have to back out of the application using the back arrow for internet explorer and log in again. To avoid this issue follow the instructions below.

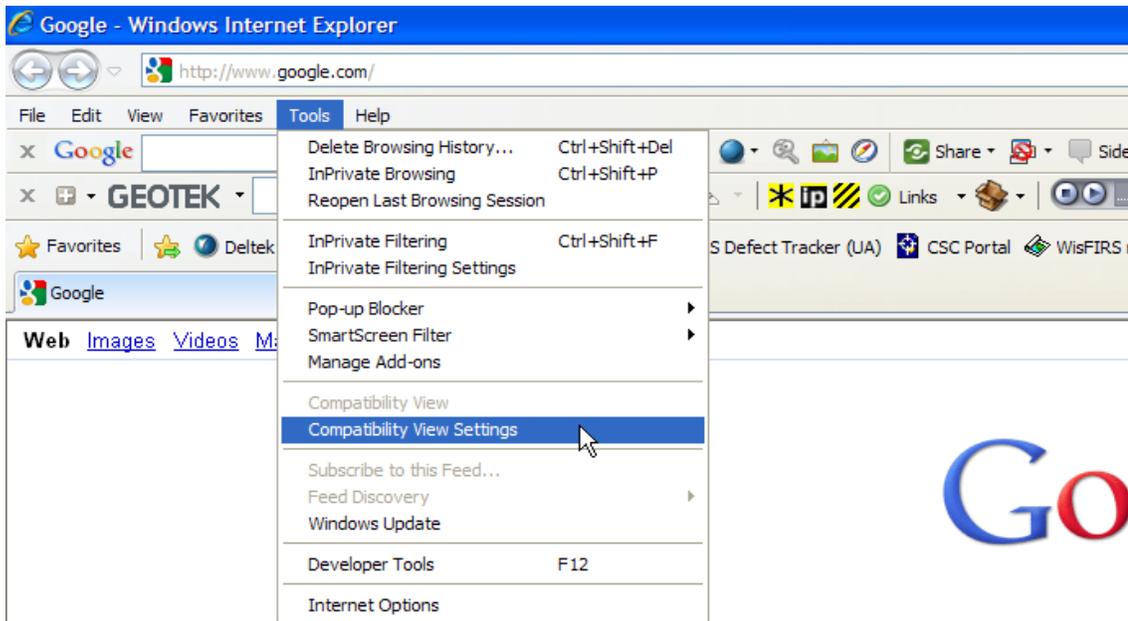


- To verify you do not have proxy settings enabled:

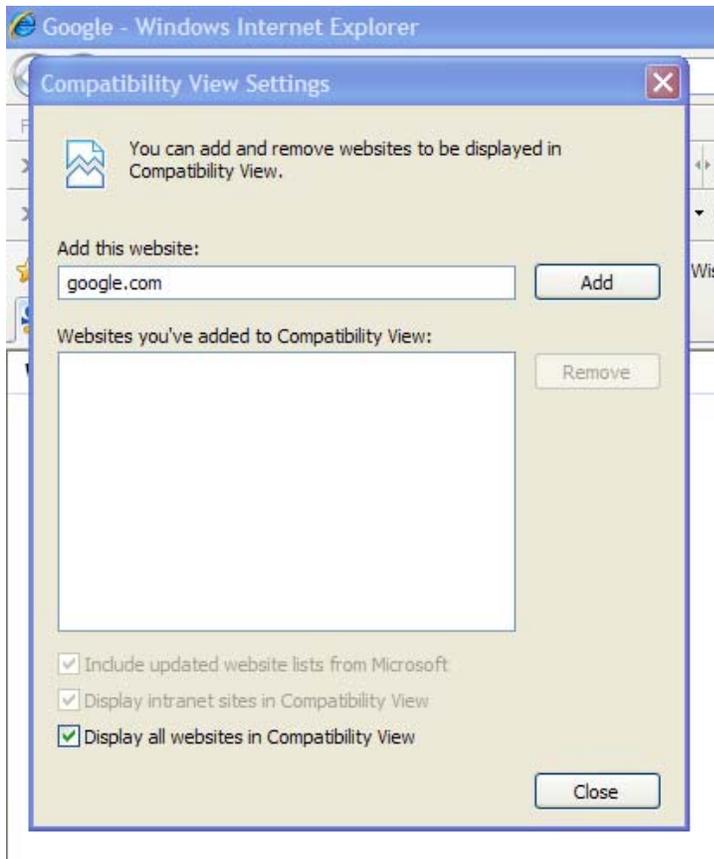
Find the Internet Explorer icon on your desktop.
Right click on it and select Properties
Select the Connections tab
Click on the LAN settings button
Make sure there are no boxes checked.
Click on OK on the windows.

Reopen the email and see if you get prompted for a password.

- ❖ **Internet Explorer Compatibility:** Internet Explorer 8 (IE8) has the ability to run in 'compatibility mode', which essentially enables sites to run like IE7 sites. Users have the ability to identify which sites they want to run in 'compatibility mode' (see attached DOC file). I have been running IE8 in compatibility mode for 10+ months now with no issues in LCDE or NHDE. This is the quickest and easiest solution. It might recommend, however, that a few minutes of training be dedicated to this during the regular training session, as well as updates to the 'help' file made.



You can choose to display all sites in compatibility mode (see checkbox below)



Website Support: Send questions to nhdesupport@dcr.virginia.gov.

Definitions of Abbreviations used on Natural Heritage Resource Lists

The following ranks are used by the Virginia Department of Conservation and Recreation to set protection priorities for natural heritage resources. Natural Heritage Resources, or "NHRs," are rare plant and animal species, rare and exemplary natural communities, and significant geologic features. The criterion for ranking NHRs is the number of populations or occurrences, i.e. the number of known distinct localities; the number of individuals in existence at each locality or, if a highly mobile organism (e.g., sea turtles, many birds, and butterflies), the total number of individuals; the quality of the occurrences, the number of protected occurrences; and threats.

- **S1** - Critically imperiled in the state because of extreme rarity or because of some factor(s) making it especially vulnerable to extirpation from the state. Typically 5 or fewer populations or occurrences; or very few remaining individuals (<1000).
- **S2** - Imperiled in the state because of rarity or because of some factor(s) making it very vulnerable to extirpation from the state. Typically 6 to 20 populations or occurrences or few remaining individuals (1,000 to 3,000).
- **S3** - Vulnerable in the state either because rare and uncommon, or found only in a restricted range (even if abundant at some locations), or because of other factors making it vulnerable to extirpation. Typically 21 to 100 populations or occurrences (1,000 to 3,000).
- **S4** - Apparently secure; Uncommon but not rare, and usually widespread in the state. Possible cause of long-term concern. Usually >100 populations or occurrences and more than 10,000 individuals.
- **S5** - Secure; Common, widespread and abundant in the state. Essentially ineradicable under present conditions. Typically with considerably more than 100 populations or occurrences and more than 10,000 individuals.
- **S#B** - Breeding status of an animal within the state
- **S#N** - Non-breeding status of animal within the state. Usually applied to winter resident species.
- **S#?** - Inexact or uncertain numeric rank.
- **SH** - Possibly extirpated (Historical). Historically known from the state, but not verified for an extended period, usually > 15 years; this rank is used primarily when inventory has been attempted recently.
- **S#S#** - Range rank; A numeric range rank, (e.g. S2S3) is used to indicate the range of uncertainty about the exact status of the element. Ranges cannot skip more than one rank.
- **SU** - Unrankable; Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.
- **SNR** - Unranked; state rank not yet assessed.

- **SX** - Presumed extirpated from the state. Not located despite intensive searches of historical sites and other appropriate habitat, and virtually no likelihood that it will be rediscovered.
- **SNA**- A conservation status rank is not applicable because the element is not a suitable target for conservation activities.

Global Ranks are similar, but refer to a species' rarity throughout its total range. Global ranks are denoted with a "G" followed by a character. Note GX means the element is presumed extinct throughout its range, not relocated despite intensive searches of historical sites/appropriate habitat, and virtually no likelihood that it will be rediscovered. A "Q" in a rank indicates that a taxonomic question concerning that species exists. Ranks for subspecies are denoted with a "T". The global and state ranks combined (e.g. G2/S1) give an instant grasp of a species' known rarity.

The ranks above should not be interpreted as legal designations.

FEDERAL STATUS

The Division of Natural Heritage uses the standard abbreviations for Federal endangerment developed by the U.S. Fish and Wildlife Service, Division of Endangered Species and Habitat Conservation.

LE - Listed Endangered	LT - Listed Threatened	PE - Proposed Endangered	PT - Proposed Threatened
C - Candidate (formerly C1 - Candidate category 1)	E(S/A) - treat as endangered because of similarity of appearance	T(S/A) - treat as threatened because of similarity of appearance	SOC - Species of Concern species that merit special concern (not a regulatory category)

STATE LEGAL STATUS

The Division of Natural Heritage uses similar abbreviations for State endangerment:

LE - Listed Endangered	PE - Proposed Endangered	SC - Special Concern - animals that merit special concern according to VDGIF (not a regulatory category)
LT - Listed Threatened	PT - Proposed Threatened	C - Candidate

For information on the laws pertaining to threatened or endangered species, please contact:

- U.S. Fish and Wildlife Service for all **FEDERALLY** listed species;
- Department of Agriculture and Consumer Services, Plant Protection Bureau for **STATE listed plants and insects**
- Department of Game and Inland Fisheries for all other **STATE listed animals**

CONSERVATION SITES RANKING

B-rank is a rating of the significance of the conservation site based on presence and number of natural heritage resources; on a scale of 1-5, 1 being most significant. Sites are also coded to reflect the presence/absence of federally/state listed species:

Conservation Site Ranks

Legal Status of Sites

B1 - Outstanding significance
B2 - Very High significance
B3 - High significance
B4 - Moderate significance
B5 - Of general Biodiversity significance

FL – Federally listed species present
SL – State listed species present
NL – No listed species present

Example Reports

Appendix D

Memoranda
For Projects
At Wallops Island



COMMONWEALTH of VIRGINIA
DEPARTMENT OF CONSERVATION AND RECREATION

Division of Natural Heritage
217 Governor Street
Richmond, Virginia 23219-2010
(804) 786-7951

August 11, 2010

Joel Mitchell
NASA, Goddard Space Flight Center
Wallops Flight Facility
Wallops Island, VA 23337

Re: NASA, Goddard Space Flight Center Wallops Flight Facility

Dear Mr. Mitchell:

The Department of Conservation and Recreation's Division of Natural Heritage (DCR) has searched its Biotics Data System for occurrences of natural heritage resources from the area outlined on the submitted map. Natural heritage resources are defined as the habitat of rare, threatened, or endangered plant and animal species, unique or exemplary natural communities, and significant geologic formations.

According to the information currently in our files, this site is located within the North Wallops Island Conservation Site. Conservation sites are tools for representing key areas of the landscape that warrant further review for possible conservation action because of the natural heritage resources and habitat they support. Conservation sites are polygons built around one or more rare plant, animal, or natural community designed to include the element and, where possible, its associated habitat, and buffer or other adjacent land thought necessary for the element's conservation. Conservation sites are given a biodiversity significance ranking based on the rarity, quality, and number of element occurrences they contain; on a scale of 1-5, 1 being most significant. North Wallops Island Conservation Site has been given a biodiversity significance ranking of B2, which represents a site of very high significance. The rare plants and communities of concern associated with the site are:

Maritime Dune Woodland		G1G2/SNR/NL/NL
Seaside plantain	Plantago maritime var. juncooides	G5T5/S1/NL/NL
Big-head rush	Juncus megacephalus	G4G5/S2/NL/NL
Southern beach spurge	Chamaesyce bombensis	G4G5/S2/NL/NL

The Maritime Dune Woodland is a tall, deciduous, maritime shrubland or scrub forest of the mid-Atlantic coast, although physiognomy can vary dramatically, ranging from open woodland to stunted forest to dense nearly impenetrable thicket. Individual trees tend to be wind-pruned and multi-stemmed. It generally occurs on the lee side of sand dunes along the coast and is subject to salt spray and winds. The substrate varies from pure sand directly adjacent to the ocean to loamy sands in more sheltered areas of the coast. At the southern end of the range in Virginia, this community occurs as a woodland variably

dominated by *Prunus serotina*, *Sassafras albidum*, *Diospyros virginiana*, and *Malus angustifolia* var. *angustifolia*. Vine tangles are patchy and interspersed with areas of open sand dominated by *Schizachyrium littorale* and also containing *Opuntia humifusa*, *Conyza canadensis*, *Nuttallanthus canadensis*, *Cirsium horridulum* var. *horridulum*, and other xerophytic herbs at lower cover. This maritime shrubland community is restricted to a narrow range on coastal dunes of barrier islands on the mid-Atlantic coast. It does not occur north of southern New Jersey or south of Virginia. Occurrences are naturally small (a few acres), confined to the oceanward portion of barrier islands. Potential or historic habitat has been reduced by extensive human development such as residential or commercial building, recreation, or road expansion.

Seaside plantain (*Plantago maritima* var. *juncooides*, G5T5/S1/NL/NL) is a low perennial herb of salt marshes, beaches and coastal rocks (Gleason and Cronquist 1991). Spikes of mostly densely arranged small white flowers arise on leafless stems from a basal rosette of fleshy, linear-lanceolate leaves. The species is circumboreal, with variety *juncooides* at least being found in Greenland, Canada, and extending into the east coast of the US in New England, New York, New Jersey and Virginia; plants of northwestern North America are variously included or separated from var. *juncooides* (Kartesz 1999, Weakley in prep.). In Virginia, seaside plantain has only been documented in salt marshes and flats on the Eastern Shore in Accomack County. Threats include habitat destruction from development and sea-level rise.

Big-headed rush a rare perennial in Virginia, is found along the coastal plain usually in open moist or wet areas and often in shallow water, sands, peats and marls; marshy shores, interdune hollows, swales, brackish and fresh marshes, marl prairies and bogs. It is also known to colonize abundantly in ditches. Big-headed rush occurs from south of Virginia to Florida and as far west as southeast Texas. It is known currently in Virginia from nine occurrences, and historically from two occurrences.

Southern beach spurge, a state rare plant species, occurs in mats and is found on the secondary dunes of the Atlantic Ocean and Chesapeake Bay. Virginia is the northern limit of its range with ten documented sites state-wide. The rarity of this plant is due to habitat destruction associated with commercial development along the coast (Ludwig, 1996). Southern beach spurge is currently known from 10 occurrences in Virginia, and historically known from an additional five occurrences.

The Maritime Dune Woodland is a very rare community type known only from two sites in Virginia. The proposed project would directly impact this natural heritage resource. In addition, documented occurrences of Southern beach spurge, Big-head rush, and Seaside plantain, state-rare plants would also be impacted by this project. DCR strongly recommends avoiding impacts to this globally rare community and these state rare plants by relocating the proposed landing strip. Please see the attached map for natural heritage resource locations within and adjacent to the project location.

Furthermore, Peregrine falcon (*Falco peregrinus*, G4/S1BS2N/NL/LT), Northern Harrier (*Circus cyaneus*, G5/S1S2B,S3N/NL/SC), Piping plover (*Charadrius melodus*, G3/S2B,S1N/LT/LT), Wilson's plover (*Charadrius wilsonia*, G5/S1B/NL/LE), and Little blue heron (*Egretta caerulea*, G5/S2B,S3N/NL/NL) have been documented within the project area and the project vicinity. DCR zoologist, Dr. Steve Roble recommends a study to evaluate the potential impacts on these birds as well as colonial waterbirds (herons, egrets, terns) and migratory songbirds by the proposed project. With the study results we can more accurately evaluate potential impacts to natural heritage resources and offer specific protection recommendations for minimizing impacts to the documented resources.

Due to the legal status of the Piping plover, DCR also recommends coordination with USFWS and VDGIF to ensure compliance with protected species legislation. Due to the legal status of the Peregrine falcon and Wilson's plover, DCR also recommends coordination with the VDGIF to ensure compliance with protected species legislation.

Under a Memorandum of Agreement established between the Virginia Department of Agriculture and Consumer Services (VDACS) and the Virginia Department of Conservation and Recreation (DCR), DCR represents VDACS in comments regarding potential impacts on state-listed threatened and endangered plant and insect species. The current activity will not affect any documented state-listed plants or insects.

Our files do not indicate the presence of any State Natural Area Preserves under DCR's jurisdiction in the project vicinity.

New and updated information is continually added to Biotics. Please contact DCR for an update on this natural heritage information if a significant amount of time passes before it is utilized.

The Virginia Department of Game and Inland Fisheries maintains a database of wildlife locations, including threatened and endangered species, trout streams, and anadromous fish waters that may contain information not documented in this letter. Their database may be accessed from <http://vafwis.org/fwis/> or contact Shirl Dressler at (804) 367-6913.

Should you have any questions or concerns, feel free to contact me at 804-692-0984. Thank you for the opportunity to comment on this project.

Sincerely,



Alli Baird, LA, ASLA
Coastal Zone Locality Liaison

CC: Amy Ewing, VDGIF

Literature Cited:

Gleason, H.A. and A. Cronquist. 1991. *Manual of Vascular Plants of Northeastern United States and Adjacent Canada*. Second Edition. The New York Botanical Garden. Bronx, NY. 910 pp.

Kartesz, J.T. 1999. *A Synonymized Checklist and Atlas with Biological Attributes for the Vascular Flora of the United States, Canada, and Greenland*. First Edition. In: Kartesz, J.T. and C.A. Meacham. *Synthesis of the North American Flora, Version 1.0*. North Carolina Botanical Garden, Chapel Hill, NC.

Ludwig, J. Christopher. 1996. Personal communication. Virginia Department of Conservation and Recreation, Division of Natural Heritage.

NatureServe. 2009. *NatureServe Explorer: An online encyclopedia of life* [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available <http://www.natureserve.org/explorer>. (Accessed: August 9, 2010).

Weakley, A.S. in prep. *Flora of the Southern and Mid-Atlantic States*. Working Draft of 8 March 2010. University of North Carolina Herbarium, North Carolina Botanical Garden, University of North Carolina at Chapel Hill, Chapel Hill, NC. 994 pp.



DCR Interoffice MEMORANDUM

To: Robbie Rhur, DCR-DPRR

From: Alli Baird, DCR-DNH

Date: April 5, 2010

Subject: DEQ 10-037F, NASA-Alternative Energy Project at Wallops Flight Facility

The Department of Conservation and Recreation's Division of Natural Heritage (DCR) has searched its Biotics Data System for occurrences of natural heritage resources from the area outlined on the submitted map. Natural heritage resources are defined as the habitat of rare, threatened, or endangered plant and animal species, unique or exemplary natural communities, and significant geologic formations.

According to the information currently in our files, the proposed project location at the Wallops Flight Facility on the Eastern Shore of Virginia, is within a significant migratory bird area that also supports breeding populations of numerous federally and state listed species including: Piping Plover (*Charadrius melodus*, G3/S2B, S1N/LT/LT), Least Tern (*Sterna antillarum*, G4/S2B/NL/SC), Wilson's Plover, (*Charadrius wilsonia*, G5/S1B/NL/LE), Peregrine falcon (*Falco peregrinus*, G4/S1B,S2N/NL/LT) and Bald Eagle, (*Haliaeetus leucocephalus*, G5/S2S3B,S3N/NL/LT). In addition, this area supports populations of wading birds such as the Great Egret (*Ardea alba*, G5/S2B,S4N/NL/SC), Tricolored heron (*Egretta tricolor* G5/S2B,S3N/NL/SC) and Little Blue Heron (*Egretta caerulea*, G5/S2B, S3N/NL/SC).

One of the major migratory corridors for neotropical migrant songbirds, as well as waterfowl and shorebirds, is the Atlantic Coast of North America south to Florida (Salathe, 1991; Watts & Mabey, 1994). It has been demonstrated that some of the most significant migration and stopover areas for landbirds in the Atlantic Flyway is the Eastern Shore of Maryland and Virginia (Mabey et al, 1993; Watts & Mabey, 1994).

Many species of migratory birds, particularly neotropical migrant songbirds that breed in North America and spend the non-breeding season in the sub-tropics and tropics, are experiencing population declines. For southbound migrants, the Chesapeake Bay is one of the largest physical barriers along the east coast. A combination of geographical, biological, and meteorological conditions serve to concentrate birds and keep them bottled up for short periods of time on the Eastern Shore. Habitats within these stopover concentration areas should be considered critical to the persistence of bird populations that depend on them in passage (Watts & Mabey, 1994).

The proposed construction of wind turbines, especially those of "utility scale" has the potential to adversely impact resident and migratory birds and bats. DCR is concerned that 200-250 foot towers may have an adverse impact on the migratory birds, especially when the significance of the Delmarva peninsula to the Atlantic Flyway is considered. Potential impacts to birds and bats can result from collisions with wind turbine monopoles and blades. Indirect impacts can result from alteration of habitat causing changes in foraging, breeding and migratory behaviors. (Kunz et al,2007).

DCR strongly supports the use of alternative energy sources in the Commonwealth. Because this is an area of global ecological significance we support sound planning as the project moves forward. If the "No Build" alternative is not feasible, DCR recommends Alternative Two (smaller residential scale turbines and solar panels) as the preferred alternative as it would be the least impactful to natural heritage resources. The smaller turbines and the ability of the hybrid system to produce energy utilizing the solar panels instead of the turbines during low wind speeds would potentially reduce bird/bat mortality.

However, should Alternative 1 the "utility scale" wind turbines be installed on Wallops Island, DCR

supports the two year post-construction monitoring study of bird/bat mortality and appropriate mitigation for impacts, possibly including seasonal low wind shutdowns.

Furthermore, due to the legal status of several of the natural heritage resources documented in this area, DCR also recommends coordination with the U.S. Fish and Wildlife Service (USFWS) and the Virginia Department of Game and Inland Fisheries to ensure compliance with protected species legislation.

There are no State Natural Area Preserves in the immediate project vicinity. State Natural Area Preserves do exist on the seaside, mainland and bayside of the Eastern Shore in part to help protect the same resources for which express caution as it relates to this project.

Under a Memorandum of Agreement established between the Virginia Department of Agriculture and Consumer Services (VDACS) and the Virginia Department of Conservation and Recreation (DCR), DCR represents VDACS in comments regarding potential impacts on state-listed threatened and endangered plant and insect species. The current activity will not affect any documented state-listed plants or insects.

New and updated information is continually added to Biotics. Please contact DCR for an update on this natural heritage information if a significant amount of time passes before it is utilized.

The Virginia Department of Game and Inland Fisheries maintains a database of wildlife locations, including threatened and endangered species, trout streams, and anadromous fish waters that may contain information not documented in this letter. Their database may be accessed from <http://vafwis.org/fwis/> or contact Shirl Dressler at (804) 367-6913.

Thank you for the opportunity to comment on this project.

Cc: Tylan Dean, USFWS
Amy Ewing, VDGIF

Literature Cited

Kingsley, Andrea & Becky Whittam, 2001. Potential Impacts of Wind Turbines on Birds at North Cape, Prince Edward Island: A report for the Prince Edward Island Energy Commission. Bird Studies, Canada, Atlantic Region.

Kunz, T.H., E. B. Arnett, B.M. Cooper, W.P. Erickson, R.P. Larkin, T. Mabee, M.L. Morrison, M.D. Strickland, J.M. Szewczk, 2007. Assessing Impacts of Wind-Energy Development on Nocturnally Active Birds and Bats: A Guidance Document. *Journal of Wildlife Management* 71(8):2449–2486; 2007.

Mabey, S., J. McCann, L. Niles, C. Bartlett, and P. Kerlinger. 1993. The neotropical migratory songbird coastal corridor study: Virginia special edition. A report of the Virginia Department of Environmental Quality to the Oceanic and Atmospheric Administration 's Office of Ocean and Coastal Resource Management, Washington D.C. 72 pp.

Salathe, T. 1991. Conserving migratory birds. ICBP Technical Publication No. 12. International Council for Bird Preservation, Cambridge, U.K. 393 pp.

Watts, B.D. and S.E. Mabey. 1994. Migratory landbirds of the Lower Delmarva: Habitat selection and geographic distribution. A report of the Virginia Department of Environmental Quality to the National Oceanic and Atmospheric Administration, Office of Ocean and Coastal Resource Management.



DCR Interoffice MEMORANDUM

To: Robbie Rhur, DCR-DPRR
From: Alli Baird, DCR-DNH
Date: March 19, 2010
Subject: DEQ 10-019F, NASA-Wallops Flight Facility Shoreline Restoration & Infrastructure Protection Program

The Department of Conservation and Recreation's Division of Natural Heritage (DCR) has searched its Biotics Data System for occurrences of natural heritage resources from the area outlined on the submitted map. Natural heritage resources are defined as the habitat of rare, threatened, or endangered plant and animal species, unique or exemplary natural communities, and significant geologic formations.

According to the information currently in our files, this site is located within the North Wallops Island Conservation Site. Conservation sites are tools for representing key areas of the landscape that warrant further review for possible conservation action because of the natural heritage resources and habitat they support. Conservation sites are polygons built around one or more rare plant, animal, or natural community designed to include the element and, where possible, its associated habitat, and buffer or other adjacent land thought necessary for the element's conservation. Conservation sites are given a biodiversity significance ranking based on the rarity, quality, and number of element occurrences they contain; on a scale of 1-5, 1 being most significant. North Wallops Island Conservation Site has been given a biodiversity significance ranking of B2, which represents a site of very high significance. The natural heritage resources of concern at this site is:

Piping Plover	Charadrius melodus	G3/S2B, S1N/LT/LT
---------------	--------------------	-------------------

The Piping Plover inhabits coastal areas, utilizing the flat, sandy beaches of barrier islands for breeding (Cross, 1991). Threats to this species include predation of eggs and young and the development and disturbance of barrier island breeding sites (Cross, 1991). Please note that this species is listed as threatened by the United States Fish and Wildlife Service (USFWS) and the Virginia Department of Game and Inland Fisheries (VDGIF).

Additionally the site is also within the North Assawoman; South Wallops Island Conservation Site. The North Assawoman; South Wallops Island Conservation Site has been given a biodiversity significance ranking of B2, which represents a site of very high significance. The natural heritage resources of concern at this site are:

Piping Plover	Charadrius melodus	G3/S2B, S1N/LT/LT
Least Tern	Sterna antillarum	G4/S2B/NL/SC
Wilson's Plover	Charadrius wilsonia	G5/S1B/NL/LE

Wilson's Plover is a rare, short-term summer visitor along the lower Chesapeake Bay and the Atlantic Coast south of Cape Henry. The summer males have a thick black bill and a white breast with a single band while the females, young, and winter males are grayish brown to reddish brown (Bergstrom, 1991).

Wilson's Plover habitat consists of the upper portions of sandy beaches on barrier islands, usually within 30 m of dune vegetation. Requirements for nesting include suitable foraging sites nearby for chicks, usually mud or sand flats. Predatory threats include foxes, herring gulls, great black gulls, and fish crows who eat the eggs and young. Nesting habitats are lost to both natural processes such as erosion and coastal

development, as well as human disturbance during the nesting season. Since the eggs are a pale tan or buff with irregular black specks, they blend easily into the sand which allows for them to be overlooked by unsuspecting beach visitors who crush them. Recommendations for protecting these birds consist of predator control measures involving protection from predators for nests and discouraging development on the nesting islands. Wilson's Plover is protected under the Migratory Bird Treaty Act (Bergstrom, 1991).

The Least Tern nests on broad, flat beaches with minimal vegetation and forages in saltwater near the shore. Threats to this species include loss of nesting habitat due to development and disturbance of breeding colonies by human activities and high numbers of predators (Beck, 1991). Please note that the Least Tern is listed as a special concern species by the Virginia Department of Game and Inland Fisheries (VDGIF).

Due to the legal status of the Piping Plover and Wilson's Plover, DCR recommends coordination with the VDGIF and USFWS to ensure compliance with protected species legislation. DCR also recommends the protection of rare bird habitat (Least tern, Wilson's plover, and Piping plover) during the nesting season from April 15th to August 15th. Additionally, the source for beach nourishment should be limited to the sand shoals (Unnamed Shoal A or Unnamed Shoal B) located offshore in Federal waters and not from the Piping plover habitat on the north end of Wallops Island. Please note, DCR continues to be concerned in regards to the effects of the shoreline hardening on the islands downdrift of the project area including The Nature Conservancy and DCR properties.

Alternative One (Preferred Alternative) would be DCR's preferred alternative provided sand is not taken from the beach on the north end of Wallops Island and the proposed seawall extension is limited to the minimum length absolutely necessary for the protection of the facility. The absence of groin or breakwater for this alternative makes it less likely to disrupt sand transport for resources located to the south of the project area. DCR continues to recommend exploring the feasibility of inland relocation of existing facilities.

Our files do not indicate the presence of any State Natural Area Preserves under DCR's jurisdiction in the project vicinity.

Under a Memorandum of Agreement established between the Virginia Department of Agriculture and Consumer Services (VDACS) and the Virginia Department of Conservation and Recreation (DCR), DCR represents VDACS in comments regarding potential impacts on state-listed threatened and endangered plant and insect species. The current activity will not affect any documented state-listed plants or insects.

New and updated information is continually added to Biotics. Please contact DCR for an update on this natural heritage information if a significant amount of time passes before it is utilized.

The Virginia Department of Game and Inland Fisheries maintains a database of wildlife locations, including threatened and endangered species, trout streams, and anadromous fish waters that may contain information not documented in this letter. Their database may be accessed from <http://vafwis.org/fwis/> or contact Shirl Dressler at (804) 367-6913.

Thank you for the opportunity to comment on this project.

Cc: Amy Ewing, VDGIF
Tylan Dean, USFWS

Literature Cited:

Bergstrom, P.W. 1991. Wilson's Plover. In Virginia's Endangered Species: Proceedings of a Symposium. K. Terwilliger ed. The McDonald and Woodward Publishing Company, Blacksburg, Virginia. pp.502-503.

Beck, R. A. 1991. Least Tern. In Virginia's Endangered Species: Proceedings of a Symposium. K. Terwilliger ed. The McDonald and Woodward Publishing Company, Blacksburg, Virginia. pp. 505-506.

Cross, R.R. 1991. Piping Plover. In Virginia's Endangered Species: Proceedings of a Symposium. K. Terwilliger ed. The McDonald and Woodward Publishing Company, Blacksburg, Virginia. pp. 501-502.

U.S. Fish and Wildlife, Northern Florida Office. Loggerhead sea turtle. December 29, 2005.
<http://www.fws.gov/northflorida/SeaTurtles/Turtle%20Factsheets/loggerhead-sea-turtle.htm>

Appendix E

Letter for Assateague Island National Seashore General Management Plan

Douglas W. Domenech
Secretary of Natural Resources



David A. Johnson
Director

COMMONWEALTH of VIRGINIA
DEPARTMENT OF CONSERVATION AND RECREATION

Division of Natural Heritage
217 Governor Street
Richmond, Virginia 23219-2010
(804) 786-7951

August 6, 2010

Trish Kicklighter
National Park Service
Assateague Island National Seashore
7206 National Seashore Lane
Berlin, MD 21811

Re: Assateague Island National Seashore General Management Plan

Dear Ms. Kicklighter:

The Department of Conservation and Recreation's Division of Natural Heritage (DCR) has searched its Biotics Data System for occurrences of natural heritage resources from the area outlined on the submitted map. Natural heritage resources are defined as the habitat of rare, threatened, or endangered plant and animal species, unique or exemplary natural communities, and significant geologic formations.

According to the information currently in our files, this site is located within the Assateague Island Conservation Site. Conservation sites are tools for representing key areas of the landscape that warrant further review for possible conservation action because of the natural heritage resources and habitat they support. Conservation sites are polygons built around one or more rare plant, animal, or natural community designed to include the element and, where possible, its associated habitat, and buffer or other adjacent land thought necessary for the element's conservation. Conservation sites are given a biodiversity significance ranking based on the rarity, quality, and number of element occurrences they contain; on a scale of 1-5, 1 being most significant. Assateague Island Conservation Site has been given a biodiversity significance ranking of B1, which represents a site of outstanding significance. The natural heritage resources within the project area are included in the attached Table 1: Assateague Island National Seashore General Management Plan – Natural Heritage Resources

DCR recommends avoidance of documented natural heritage resources including the mapped natural communities when planning for potential development. DCR also recommends contacting this office to request access to Natural Heritage digital data screening coverage for the Assateague Island National Seashore for use in planning and management of natural heritage resources. Please contact Rene' Hypes, Environmental Review Coordinator, at rene.hypes@dcr.virginia.gov or 804-371-2708 with your request.

Due to the legal status of the Loggerhead sea turtle, Piping plover, and Delmarva fox squirrel, DCR also recommends coordination with USFWS and VDGIF to ensure compliance with protected species

*State Parks • Soil and Water Conservation • Natural Heritage • Outdoor Recreation Planning
Chesapeake Bay Local Assistance • Dam Safety and Floodplain Management • Land Conservation*

legislation. Due to the legal status of the Peregrine falcon, Bald eagle, Gull-billed tern, Wilson's plover, , DCR also recommends coordination with VDGIF to ensure compliance with protected species legislation. Finally due to the legal status of the **Seabeach amaranth**, DCR recommends coordination with USFWS and VDACS to ensure compliance with protected species legislation.

Please note, additional global and state rare species and communities occurring within the project vicinity are listed in the attached Table 2 Natural Heritage Resources within 2 miles of Assateague Island National Seashore.

The Virginia Department of Agriculture and Consumer Services (VDACS), which has regulatory authority to conserve rare and endangered plant and insect species through the Virginia Endangered Plant and Insect Species Act, has established a Memorandum of Agreement with the Virginia Department of Conservation and Recreation (DCR). Under this Agreement DCR's Division of Natural Heritage, in consultation with VDACS, represents VDACS in its comments and recommendations regarding the potential impact of reviewed projects or activities on state-listed plant and insect species. Since it has been determined that this project or activity may impact **Seabeach amaranth**, a state rare plant, VDACS will respond directly to ensure compliance with Virginia's Endangered Plant and Insect Species Act. Further correspondence regarding the potential impacts of this project or activity on state-listed plant and insect species should be directed to VDACS.

Our files do not indicate the presence of any State Natural Area Preserves under DCR's jurisdiction occurring in the project vicinity.

New and updated information is continually added to Biotics. Please contact DCR for an update on this natural heritage information if a significant amount of time passes before it is utilized.

The Virginia Department of Game and Inland Fisheries maintains a database of wildlife locations, including threatened and endangered species, trout streams, and anadromous fish waters that may contain information not documented in this letter. Their database may be accessed from <http://vafwis.org/fwis/> or contact Shirl Dressler at (804) 367-6913.

Should you have any questions or concerns, feel free to contact me at 804-692-0984. Thank you for the opportunity to comment on this project.

Sincerely,



Alli Baird, LA, ASLA
Coastal Zone Locality Liaison

CC: Amy Ewing, VDGIF
Tylan Dean, USFWS
Keith Tignor, VDACS

Table I- ASSATEAGUE ISLAND NATIONAL SEASHORE GENERAL MANAGEMENT PLAN- Natural Heritage Resources

Group Name	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Protected	FWS Species of Concern	Site Name
Vertebrate Animal	Falco peregrinus	Peregrine Falcon	G4	S1B,S2N		LT		ASSATEAGUE ISLAND
Vascular Plant	Carex silicea	Sea-beach Sedge	G5	S1				
Natural Community	Maritime Dune Woodland	Maritime Dune Woodland	G1G2	SNR				ASSATEAGUE ISLAND
Vascular Plant	Heliotropium curassavicum	Seaside Heliotrope	G5	S1				ASSATEAGUE ISLAND
Natural Community	Interdune Pond	Interdune Pond	G1Q	SNR				ASSATEAGUE ISLAND
Natural Community	Tidal Oligohaline Marsh	Tidal Oligohaline Marsh	G3	SNR				ASSATEAGUE ISLAND
Natural Community	Maritime Wet Grassland	Maritime Wet Grassland	G3	SNR				ASSATEAGUE ISLAND
Natural Community	Interdune Pond	Interdune Pond	G1Q	SNR				ASSATEAGUE ISLAND
Natural Community	Maritime Dune Grassland	Maritime Dune Grassland	G2	SNR				ASSATEAGUE ISLAND
Natural Community	Maritime Wet Grassland	Maritime Wet Grassland	G1G2	SNR				ASSATEAGUE ISLAND
Vascular Plant	Vaccinium macrocarpon	Large Cranberry	G4	S2				ASSATEAGUE ISLAND
Natural Community	Maritime Wet Grassland	Maritime Wet Grassland	G3	SNR				ASSATEAGUE ISLAND
Natural Community	Maritime Dune Woodland	Maritime Dune Woodland	G1G2	SNR				ASSATEAGUE ISLAND
Natural Community	Interdune Pond	Interdune Pond	G1Q	SNR				ASSATEAGUE ISLAND
Vascular Plant	Plantago maritima var. juncoides	Seaside Plantain	G5T5	S1				ASSATEAGUE ISLAND
Vertebrate Animal	Charadrius wilsonia	Wilson's Plover	G5	S1B		LE		ASSATEAGUE ISLAND
Vascular Plant	Polygonum glaucum	Sea-beach Knotweed	G3	S1S2				ASSATEAGUE ISLAND
Vertebrate Animal	Haliaeetus leucocephalus	Bald Eagle	G5	S2S3B,S3N		LT		ASSATEAGUE ISLAND
Vertebrate Animal	Charadrius wilsonia	Wilson's Plover	G5	S1B		LE		ASSATEAGUE ISLAND
Vascular Plant	Juncus megacephalus	Big-head Rush	G4G5	S2				ASSATEAGUE ISLAND
Vascular Plant	Cyperus diandrus	Umbrella Flatsedge	G5	S1				ASSATEAGUE ISLAND
Vascular Plant	Dichanthelium ovale var. ovale	Oval-fruited Panic Grass	G5T5	S1?				WILDCAT MARSH, ASSATEAGUE ISLAND
Vascular Plant	Chamaesyce bombensis	Southern Beach Spurge	G4G5	S2				ASSATEAGUE ISLAND
Vascular Plant	Paspalum distichum	Joint Paspalum	G5	S2				ASSATEAGUE ISLAND
Vascular Plant	Amaranthus pumilus	Seabeach Amaranth	G2	S1	LT	LT		ASSATEAGUE ISLAND
Natural Community	Maritime Swamp Forest	Maritime Swamp Forest	G3	SNR				ASSATEAGUE ISLAND
Natural Community	Interdune Pond	Interdune Pond	G2G4	SNR				ASSATEAGUE ISLAND
Natural Community	Interdune Pond	Interdune Pond	G2G4	SNR				ASSATEAGUE ISLAND
Vascular Plant	Scleria verticillata	Whorled Nutrush	G5	S2				ASSATEAGUE ISLAND
Vascular Plant	Chamaesyce bombensis	Southern Beach Spurge	G4G5	S2				ASSATEAGUE ISLAND
Natural Community	Maritime Upland Forest	Maritime Upland Forest	G2	SNR				ASSATEAGUE ISLAND
Natural Community	Maritime Upland Forest	Maritime Upland Forest	G2	SNR				ASSATEAGUE ISLAND
Natural Community	Maritime Upland Forest	Maritime Upland Forest	G2	SNR				ASSATEAGUE ISLAND
Vascular Plant	Plantago maritima var. juncoides	Seaside Plantain	G5T5	S1				
Vascular Plant	Polygonum glaucum	Sea-beach Knotweed	G3	S1S2				
Vertebrate Animal	Caretta caretta	Loggerhead (Sea Turtle)	G3	S1B,S1N	LT,PE	LT		
Vascular Plant	Cuscuta polygonorum	Smartweed Dodder	G5	S2?				ASSATEAGUE ISLAND
Vascular Plant	Cyperus diandrus	Umbrella Flatsedge	G5	S1				ASSATEAGUE ISLAND
Natural Community	Maritime Wet Grassland	Maritime Wet Grassland	G1G2	SNR				ASSATEAGUE ISLAND
Natural Community	Interdune Pond	Interdune Pond	G1Q	SNR				ASSATEAGUE ISLAND
Natural Community	Maritime Dune Woodland	Maritime Dune Woodland	G1G2	SNR				ASSATEAGUE ISLAND
Vascular Plant	Heliotropium curassavicum	Seaside Heliotrope	G5	S1				
Vascular Plant	Amaranthus pumilus	Seabeach Amaranth	G2	S1	LT	LT		
Vertebrate Animal	Charadrius melodus	Piping Plover	G3	S2B,S1N	LT	LT		ASSATEAGUE ISLAND
Vertebrate Animal	Sciurus niger cinereus	Delmarva Fox Squirrel	G5T3	S1	LE	LE		
Invertebrate Animal	Cicindela lepida	Spectral Tiger Beetle	G3G4	S1				ASSATEAGUE ISLAND
Vascular Plant	Amaranthus pumilus	Seabeach Amaranth	G2	S1	LT	LT		
Vascular Plant	Dichanthelium caeruleum	Blue Witch Grass	G2G3	S1			SOC	ASSATEAGUE ISLAND
Site Name	Biodiversity Rank	Legal Status						
ASSATEAGUE ISLAND	B1	FL						

Table 2 -Natural Heritage Resources within a 2 mile Radius of Assateague Island National Seashore

Group Name	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Protection	FWS Species of Concern	Site Name
Vertebrate Animal	Falco peregrinus	Peregrine Falcon	G4	S1B,S2N		LT		ASSATEAGUE ISLAND
Vascular Plant	Carex silicea	Sea-beach Sedge	G5	S1				
Natural Community	Maritime Dune Woodland	Maritime Dune Woodland	G1G2	SNR				ASSATEAGUE ISLAND
Vascular Plant	Plantago maritima var. juncooides	Seaside Plantain	G5T5	S1				NORTH WALLOPS ISLAND
Vertebrate Animal	Egretta thula	Snowy Egret	G5	S2B,S3N				
Vascular Plant	Heliotropium curassavicum	Seaside Heliotrope	G5	S1				ASSATEAGUE ISLAND
Natural Community	Interdune Pond	Interdune Pond	G3	SNR				NORTH WALLOPS ISLAND
Vertebrate Animal	Haliaeetus leucocephalus	Bald Eagle	G5	S2S3B,S3N		LT		WILDCAT MARSH
Natural Community	Interdune Pond	Interdune Pond	G1Q	SNR				ASSATEAGUE ISLAND
Natural Community	Tidal Oligohaline Marsh	Tidal Oligohaline Marsh	G3	SNR				ASSATEAGUE ISLAND
Natural Community	Maritime Dune Woodland	Maritime Dune Woodland	G1G2	SNR				NORTH WALLOPS ISLAND
Vertebrate Animal	Falco peregrinus	Peregrine Falcon	G4	S1B,S2N		LT		NORTH WALLOPS ISLAND
Vertebrate Animal	Gelochelidon nilotica	Gull-billed Tern	G5	S2B		LT		
Vertebrate Animal	Circus cyaneus	Northern Harrier	G5	S1S2B,S3N		SC		WALLOPS ISLAND CAUSEWAY MARSHES, NORTH WALLOPS ISLAND, ASSAWOMAN ISLAND
Natural Community	Maritime Wet Grassland	Maritime Wet Grassland	G3	SNR				ASSATEAGUE ISLAND
Animal Assemblage	Bird Nesting Colony		G5	SNR				
Natural Community	Interdune Pond	Interdune Pond	G1Q	SNR				ASSATEAGUE ISLAND
Vertebrate Animal	Ardea alba	Great Egret	G5	S2S3B,S3N		SC		
Animal Assemblage	Bird Nesting Colony		G5	SNR				
Natural Community	Maritime Dune Grassland	Maritime Dune Grassland	G2	SNR				ASSATEAGUE ISLAND
Natural Community	Maritime Wet Grassland	Maritime Wet Grassland	G1G2	SNR				ASSATEAGUE ISLAND
Vascular Plant	Vaccinium macrocarpon	Large Cranberry	G4	S2				ASSATEAGUE ISLAND
Natural Community	Tidal Mesohaline / Polyhaline Marsh	Tidal Mesohaline / Polyhaline Marsh	G4G5	SNR				NORTH WALLOPS ISLAND
Natural Community	Maritime Dune Scrub	Maritime Dune Scrub	G2	SNR				NORTH WALLOPS ISLAND
Natural Community	Maritime Dune Grassland	Maritime Dune Grassland	G2	SNR				NORTH WALLOPS ISLAND
Vascular Plant	Juncus megacephalus	Big-head Rush	G4G5	S2				NORTH WALLOPS ISLAND
Vascular Plant	Chamaesyce bombensis	Southern Beach Spurge	G4G5	S2				NORTH WALLOPS ISLAND
Natural Community	Maritime Wet Grassland	Maritime Wet Grassland	G3	SNR				ASSATEAGUE ISLAND
Natural Community	Maritime Dune Woodland	Maritime Dune Woodland	G1G2	SNR				ASSATEAGUE ISLAND
Natural Community	Interdune Pond	Interdune Pond	G1Q	SNR				ASSATEAGUE ISLAND
Vascular Plant	Plantago maritima var. juncooides	Seaside Plantain	G5T5	S1				ASSATEAGUE ISLAND
Vertebrate Animal	Charadrius wilsonia	Wilson's Plover	G5	S1B		LE		ASSATEAGUE ISLAND
Vascular Plant	Polygonum glaucum	Sea-beach Knotweed	G3	S1S2				ASSATEAGUE ISLAND
Vertebrate Animal	Haliaeetus leucocephalus	Bald Eagle	G5	S2S3B,S3N		LT		ASSATEAGUE ISLAND
Vertebrate Animal	Charadrius wilsonia	Wilson's Plover	G5	S1B		LE		ASSATEAGUE ISLAND
Vascular Plant	Juncus megacephalus	Big-head Rush	G4G5	S2				ASSATEAGUE ISLAND
Vascular Plant	Cyperus diandrus	Umbrella Flatsedge	G5	S1				ASSATEAGUE ISLAND
Vascular Plant	Dichanthelium ovale var. ovale	Oval-fruited Panic Grass	G5T5	S1?				WILDCAT MARSH, ASSATEAGUE ISLAND
Vascular Plant	Chamaesyce bombensis	Southern Beach Spurge	G4G5	S2				ASSATEAGUE ISLAND
Vascular Plant	Paspalum distichum	Joint Paspalum	G5	S2				ASSATEAGUE ISLAND
Vascular Plant	Amaranthus pumilus	Seabeach Amaranth	G2	S1		LT	LT	ASSATEAGUE ISLAND
Natural Community	Maritime Swamp Forest	Maritime Swamp Forest	G3	SNR				ASSATEAGUE ISLAND
Natural Community	Interdune Pond	Interdune Pond	G2G4	SNR				ASSATEAGUE ISLAND
Natural Community	Interdune Pond	Interdune Pond	G2G4	SNR				ASSATEAGUE ISLAND
Vascular Plant	Scleria verticillata	Whorled Nutrush	G5	S2				ASSATEAGUE ISLAND
Vascular Plant	Chamaesyce bombensis	Southern Beach Spurge	G4G5	S2				ASSATEAGUE ISLAND
Natural Community	Maritime Upland Forest	Maritime Upland Forest	G2	SNR				ASSATEAGUE ISLAND
Natural Community	Maritime Upland Forest	Maritime Upland Forest	G2	SNR				ASSATEAGUE ISLAND
Natural Community	Maritime Upland Forest	Maritime Upland Forest	G2	SNR				ASSATEAGUE ISLAND
Vascular Plant	Plantago maritima var. juncooides	Seaside Plantain	G5T5	S1				
Vascular Plant	Polygonum glaucum	Sea-beach Knotweed	G3	S1S2				
Vertebrate Animal	Caretta caretta	Loggerhead (Sea Turtle)	G3	S1B,S1N		LT,PE	LT	
Vertebrate Animal	Caretta caretta	Loggerhead (Sea Turtle)	G3	S1B,S1N		LT,PE	LT	
Vascular Plant	Cuscuta polygonorum	Smartweed Dodder	G5	S2?				ASSATEAGUE ISLAND
Vascular Plant	Cyperus diandrus	Umbrella Flatsedge	G5	S1				ASSATEAGUE ISLAND
Natural Community	Maritime Wet Grassland	Maritime Wet Grassland	G1G2	SNR				ASSATEAGUE ISLAND
Vertebrate Animal	Hydroprogne caspia	Caspian Tern	G5	S1B,S2N		SC		
Natural Community	Interdune Pond	Interdune Pond	G1Q	SNR				ASSATEAGUE ISLAND
Natural Community	Maritime Dune Woodland	Maritime Dune Woodland	G1G2	SNR				ASSATEAGUE ISLAND
Vascular Plant	Heliotropium curassavicum	Seaside Heliotrope	G5	S1				
Vertebrate Animal	Rynchops niger	Black Skimmer	G5	S2B,S1N				WIRE NARROWS MARSH
Vertebrate Animal	Himantopus mexicanus	Black-necked Stilt	G5	S1B				WIRE NARROWS MARSH
Vertebrate Animal	Egretta tricolor	Tricolored Heron	G5	S2B,S3N		SC		WIRE NARROWS MARSH
Vertebrate Animal	Egretta thula	Snowy Egret	G5	S2B,S3N				WIRE NARROWS MARSH
Vascular Plant	Amaranthus pumilus	Seabeach Amaranth	G2	S1		LT	LT	

Table 2 -Natural Heritage Resources within a 2 mile Radius of Assateague Island National Seashore

Vertebrate Animal	Charadrius melodus	Piping Plover	G3	S2B,S1N	LT	LT		ASSATEAGUE ISLAND
Vertebrate Animal	Sciurus niger cinereus	Delmarva Fox Squirrel	G5T3	S1	LE	LE		
Invertebrate Animal	Cicindela lepida	Spectral Tiger Beetle	G3G4	S1				ASSATEAGUE ISLAND
Vascular Plant	Amaranthus pumilus	Seabeach Amaranth	G2	S1	LT	LT		
Vascular Plant	Dichantherium caeruleum	Blue Witch Grass	G2G3	S1			SOC	ASSATEAGUE ISLAND
Vertebrate Animal	Charadrius melodus	Piping Plover	G3	S2B,S1N	LT	LT		NORTH WALLOPS ISLAND
Site Name	Biodiversity Rank	Legal Status						
WIRE NARROWS MARSH	B5	NL						
NORTH WALLOPS ISLAND	B2	FL						
ASSATEAGUE ISLAND	B1	FL						
WILDCAT MARSH	B4	SL						

Appendix F

Map of Localities With Natural Heritage Information

Coastal Localities

Accomack
Charles City
Chesterfield
City of Chesapeake
City of Colonial Heights
City of Fredericksburg
City of Hopewell
City of Newport News
City of Norfolk
City of Virginia Beach
Fairfax
Gloucester
Hanover
Henrico
Isle of Wight
James City
King George
Lancaster
Mathews
New Kent
Northampton
Northumberland
Port Royal
Prince George
Prince William
Richmond
Spotsylvania
Stafford
Westmoreland
York

Western Localities

Albemarle
Augusta
Botetourt
Campbell
City of Danville
City of Lynchburg
Cumberland
Fauquier
Floyd
Franklin
Goochland
Loudoun
Mecklenburg
Montgomery
Nelson
Orange
Page
Patrick
Pulaski
Roanoke
Scott
Smyth
Southampton
Town of Blacksburg
Town of Leesburg
Town of Rocky Mount

Legend

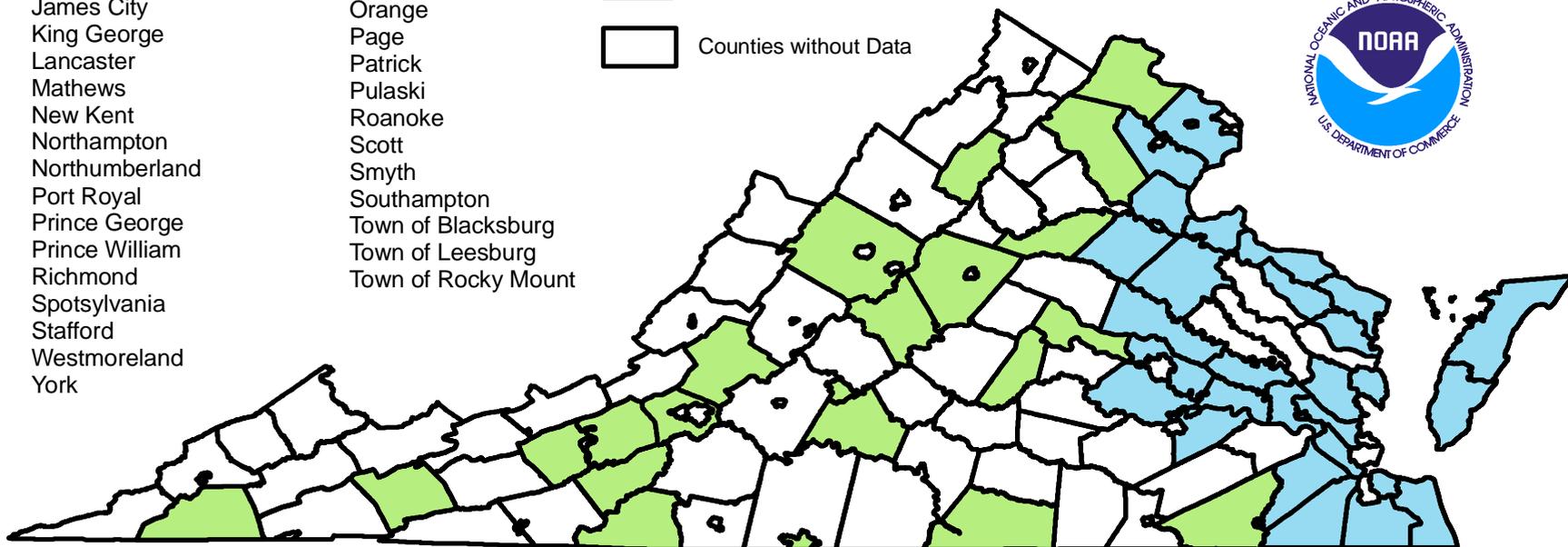
-  Western Counties with Data
-  Coastal Counties with Data
-  Counties without Data



Department of Conservation & Recreation
CONSERVING VIRGINIA'S NATURAL & RECREATIONAL RESOURCES



Virginia Coastal Zone
MANAGEMENT PROGRAM



Appendix G

Virginia Natural Heritage Program Survey

Virginia Natural Heritage Program Survey

The Virginia Natural Heritage Program is conducting a quick 10 question survey of individuals using our project review services.

This survey is intended to gather basic information on the value and quality of the information and services provided by the Heritage Program. All information will be kept anonymous, unless you provide contact information for follow up. The information gathered will be used internally to improve the quality of our services to you.

Thank you in advance for your help!

1) The Division of Natural Heritage provides a variety of information services. Please check all services utilized in the past year.

	Percent	Responses
Project Review	63.2%	48
Project Review with Accompanying Map	38.2%	29
Project Review Priority Service	9.2%	7
Custom Natural Heritage Reports	13.2%	10
Custom Natural Heritage Maps	14.5%	11
Access Natural Heritage Resources of Virginia: Rare Animals and/or Plant Species List	36.8%	28
Natural Heritage Data Explorer Subscription	43.4%	33
Digital Data Subscription Services (ShapeFiles)	19.7%	15

2). Do you find it easy to understand what data are available, how to access them, and at what price?

	Percent	Response
Yes	78.9%	60
No Opinion	11.8%	9
No	9.2%	7

3) How beneficial/useful are our project review comments?

	Percent	Response
Informative	38.7%	29
Applicable for Project needs	54.7%	41
NOT useful	1.3%	1
N/A	17.3%	13

4) Is the cost of the digital information services (ie. Shapefile or Natural Heritage Data Explorer Website) provided by the Natural Heritage cost effective?

	Percent	Response
Yes, it is cost effective	37.3%	28
No opinion	53.3%	40
No, it is not cost effective	9.3%	7

5) Please check yes or no indicating what information you use from the Natural Heritage Data Explorer Website.

	YES	NO
Karst	34.9% (22)	65.1% (41)
Virginia Conservation Lands Needs Assessment	39.0% (23)	61.0% (36)
Natural Heritage Resources	86.5% (64)	13.5% (10)
Aerial Photography	48.4% (31)	51.6% (33)
Topographic Maps	50.0% (32)	50.0% (32)
Latitude/Longitude of Project Location	52.4% (33)	49.2% (31)
Watershed (HUC Code)	47.5% (29)	52.5% (32)
DRG Quadrangle	25.9% (15)	74.1% (43)
USGS Place Names	39.3% (13)	60.7% (26)
NHD Streams	46.9% (30)	53.1% (34)
Conservation Lands	67.7% (44)	25.6% (11)
NWI Wetlands	52.3% (34)	47.7% (31)
VDOT Road	42.6% (26)	57.4% (35)
Trail	33.9% (20)	66.1% (39)

6) Is the Natural Heritage Data Explorer Website user friendly?

	Percent	Response
Yes, I was able to navigate and complete my task without any problems	75.0%	51
Yes, but in order to complete my task I required assistance (ie. user manual, support link, etc.)	19.1%	13
No, I was unable to complete my task	5.9%	4

7) If troubleshooting assistance was used to complete your task on Natural Heritage Data Explorer website, which way was most helpful?

	Percent	Response
The HELP tab at the top of the Natural Heritage Data Explorer Website	14.8%	9
The user manual packet troubleshooting tips	11.5%	7
The use of the Website Support at nhdesupport@dcr.virginia.gov	6.6%	4
Contacting support personnel directly at Natural Heritage	26.2%	16
N/A	52.5%	32

8) How helpful was the Natural Heritage Data Explorer Website training session?

	Percent	Response
Very helpful	28.8%	19
Just enough to figure it out on my own	25.8%	17
Too Long	1.5%	1
Too Short	3.0%	2
Need more training	9.1%	6
N/A	34.8%	23

9) How would you rate the value of the Natural Heritage Data Explorer Website for your use?

	Percent	Response
Extremely valuable	31.9%	22
Useful	58.0%	40
NOT useful because of Limitations of the application	4.3%	3
Other	5.8%	4

10) How would you characterize yourself?

	Percent	Response
Government Planner	29.3%	22
Government Land Resource Manager	8.0%	6
Government Regulator	20.0%	15
Environmental Consultant	22.7%	17
NGO Land Resource Manager	2.7%	2
Researcher	5.3%	4
Land Conservation Practitioner	13.3%	10
Other	6.7%	5

If you would like to request a follow up from DCR in regards to this survey please provide your Name, Company Name, Email and Phone Number.

VDOT Environmental

▲
▼

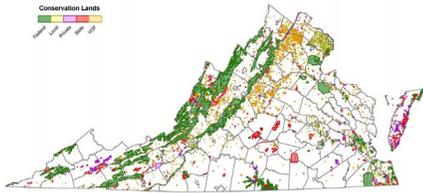
◀
▶

Appendix H

Virginia's Natural Heritage Conservation Tools

VIRGINIA'S NATURAL HERITAGE PLAN CONSERVATION TOOLS

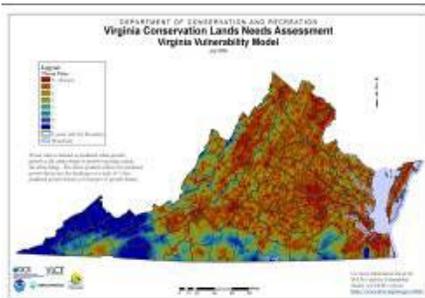
Conservation Lands Database



http://www.dcr.virginia.gov/natural_heritage/clinfo.shtml

The Conservation Lands Database includes local, state, federal, and private protected lands including conservation easements. Land Conservation Data Explorer allows users to explore and query the database through an internet map window, or download the data files for more extensive analysis. State resource agencies, universities, land trusts, and regional and local government will find it invaluable for environmental, recreation, and conservation planning. For example, this is a key database used in the development of the 2007 Virginia Outdoors Plan. DCR is continually seeking GIS data to update and improve the Conservation Lands Database. To **contribute to this effort**, or to learn more about this project, please contact the Conservation Lands GIS Planner: David Boyd, david.boyd@dcr.virginia.gov

Virginia Conservation Lands Needs Assessment (VCLNA)

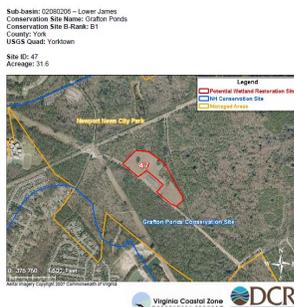


http://www.dcr.virginia.gov/natural_heritage/vclna.shtml

The VCLNA is a flexible, widely applicable tool for integrating and coordinating the needs and strategies of different conservation interests, using GIS (Geographic Information System) to model and map land conservation priorities and actions in Virginia. The VCLNA consists of seven mapping models.

The Virginia Vulnerability Model (or growth prediction model) are four statewide and one composite model showing predicted growth patterns across the landscape. The model uses GIS and statistical methods to analyze housing allocation, lot size estimation, growth hotspot, residential land conversion hotspots and travel time proximity in an effort to model urban, suburban (urban fringe) and rural (outside the urban fringe) growth patterns. For more information please contact: Joe Weber, joseph.weber@dcr.virginia.gov

Wetland Restoration Catalog

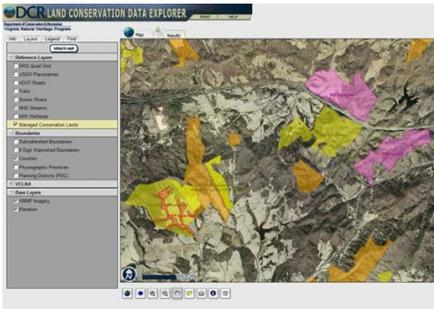


www.dcr.virginia.gov/natural_heritage/documents/wetland_restoration_catalog_final.pdf

DCR-DNH has developed a catalog of potential wetland restoration sites, within or adjacent to natural heritage conservation sites. This catalog is intended to guide agencies and organizations to appropriate sites for various conservation purposes including wetland mitigation. 15 B1, 32 B2, and 75 B3 potential restoration sites were developed. 92 of the 122 sites are located within the coastal zone. Sites range in size from 1.1 acres to 2482.4 acres. A PDF document showing the Potential Wetland Restoration Sites is available online.

Because these sites fall within sensitive biological conservation sites, DCR requests coordination for any proposed mitigation actions. For more information please contact the project review coordinator at rene.hypes@dcr.virginia.gov or the coastal locality liaison at alice.baird@dcr.virginia.gov

Land Conservation Data Explorer (LCDE)

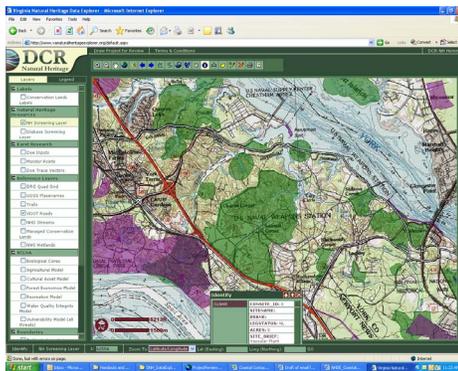


www.vaconservedlands.org

The Land Conservation Data Explorer provides a comprehensive data resource, and efficient, technologically sophisticated tools for extracting the knowledge needed for Land Conservation and Green Infrastructure Planning. This site features the Virginia Conservation Lands Needs Assessment (VCLNA) and the Conservation Lands database, also managed by the Natural Heritage Program.

Basic navigational tools allow users to zoom, pan, identify, measure distance, and create printable maps from the results. More advanced capabilities include a query function that allows users to search the many different datasets based upon their specific interests. Users can search for Conservation Lands by name, land type, watershed, county, and acreage range.

Natural Heritage Data Explorer (NHDE)



www.dcr.virginia.gov/natural_heritage/nhdeinfo.shtml

The Virginia Natural Heritage Data Explorer is an internet mapping website that allows internet-users to conduct basic GIS functions remotely over the internet with minimal instruction. This informational tool will help to identify natural heritage area conservation sites and karst resources in a particular area, evaluate potential easement or land acquisition projects, and identify potential projects for land conservation grant programs such as the Virginia Land Conservation Fund. By providing immediate access to Natural Heritage information through the internet, we are empowering partners to utilize and apply land conservation information more rapidly and effectively by having it at their desk top.

Natural Heritage Data Explorer website access is available by subscription only. For more information please e-mail nhderegister@dcr.virginia.gov or contact Alli Baird at alice.baird@dcr.virginia.gov

Natural Heritage Program Contact Information:

David Boyd (Dave)
Virginia Department of Conservation and Recreation
Division of Natural Heritage
217 Governor Street
Richmond, VA 23219
(804) 371-4801
david.boyd@dcr.virginia.gov

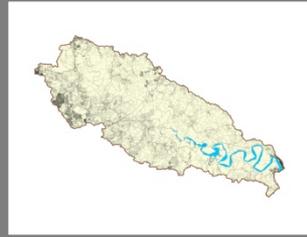
Joseph Weber (Joe)
Virginia Department of Conservation and Recreation
Division of Natural Heritage
217 Governor Street
Richmond, VA 23219
(804) 371-2545
joseph.weber@dcr.virginia.gov

Alice Baird (Alli)
Virginia Department of Conservation and Recreation
Division of Natural Heritage
217 Governor Street
Richmond, VA 23219
(804) 692-0984
alice.baird@dcr.virginia.gov

Appendix I

Pilot for
Upgraded Wetlands Catalog

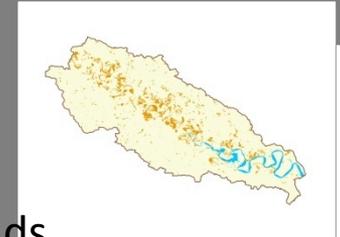
Methods



Parcel Layer



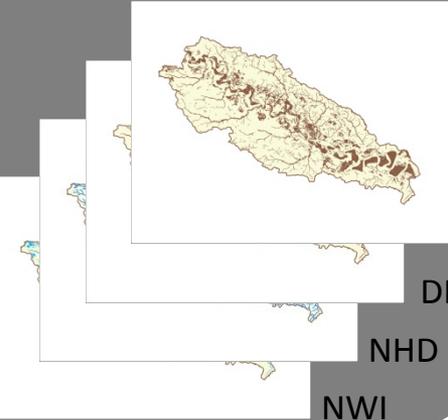
Subwatershed Layer



Farmed Wetlands
Healthy Water
RIBITS
303d
PCS
VaNLA
Prioritization Source Layers

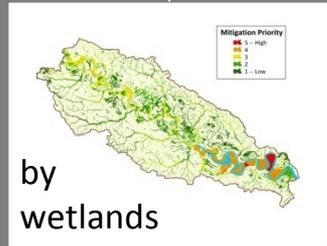
Union Overlay

Calculations

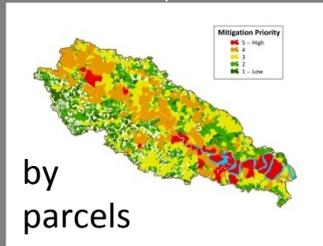


Wetland Source Layers

SSURGO
DFIRM
NHD
NWI



by wetlands



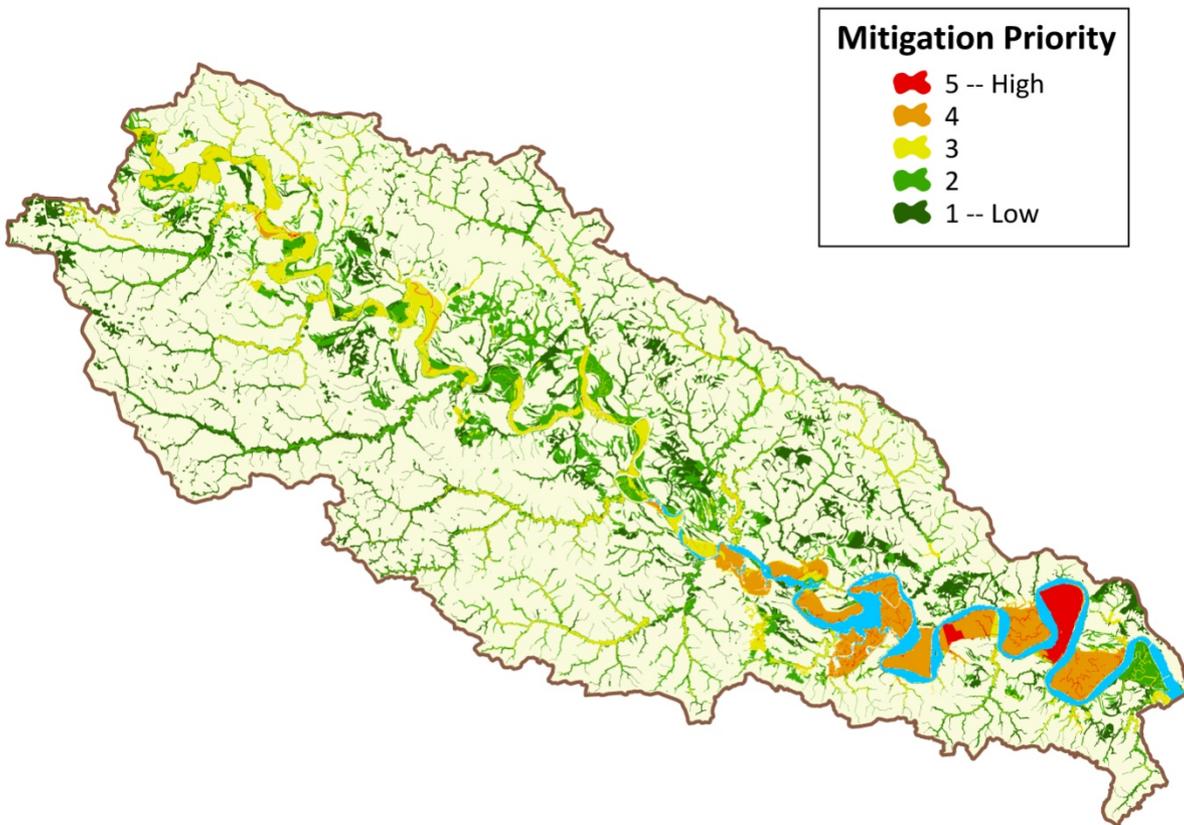
by parcels

Map Products

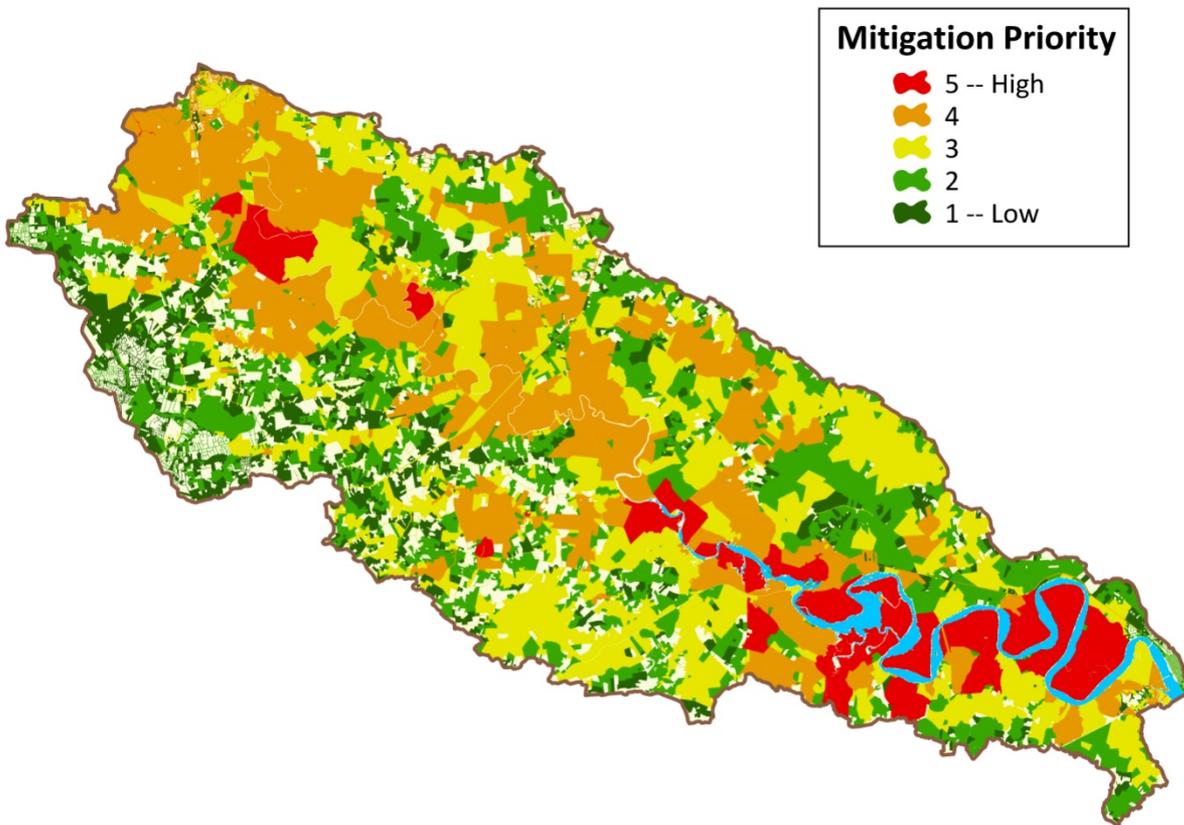
ParID	WSID_1	WSID_2	WSID_3	WSID_4	PS1W	PS2W	PS3W	PS4W	PS5W	WetOver	MitPrior	CompPrior	Reclass5
127-584	NW199332	NH002080106006070	DFIRM2134	SSURGO21133	2	3	1	0	3	4	9	13	5
127-584	NW199332	NH002080106006075	DFIRM2134	SSURGO21133	2	3	1	0	3	4	9	13	5
127-584	NW199332	NH002080106006076	DFIRM2134	SSURGO21133	2	3	1	0	3	4	9	13	5
127-584	NW199332	NH002080106006070	DFIRM2134	SSURGO21133	2	3	1	0	3	4	9	13	5
127-584	NW199332	NH002080106006075	DFIRM2134	SSURGO21133	2	3	1	0	3	4	9	13	5
127-584	NW199332	NH002080106006070	DFIRM2134	SSURGO21133	2	3	1	0	3	4	9	13	5
127-584	NW199332	NH002080106006076	DFIRM2134	SSURGO21133	2	3	1	0	3	4	9	13	5
127-584	NW199332	NH002080106006075	DFIRM2134	SSURGO21133	2	3	1	0	3	4	9	13	5
127-584	NW199332	NH002080106006070	DFIRM2134	SSURGO21133	2	3	1	0	3	4	9	13	5
127-584	NW199332	NH002080106006075	DFIRM2134	SSURGO21133	2	3	1	0	3	4	9	13	5
127-584	NW199332	NH002080106006076	DFIRM2134	SSURGO21133	2	3	1	0	3	4	9	13	5

Tabular Product

Catalog Displayed by Wetlands



Catalog Displayed by Parcels



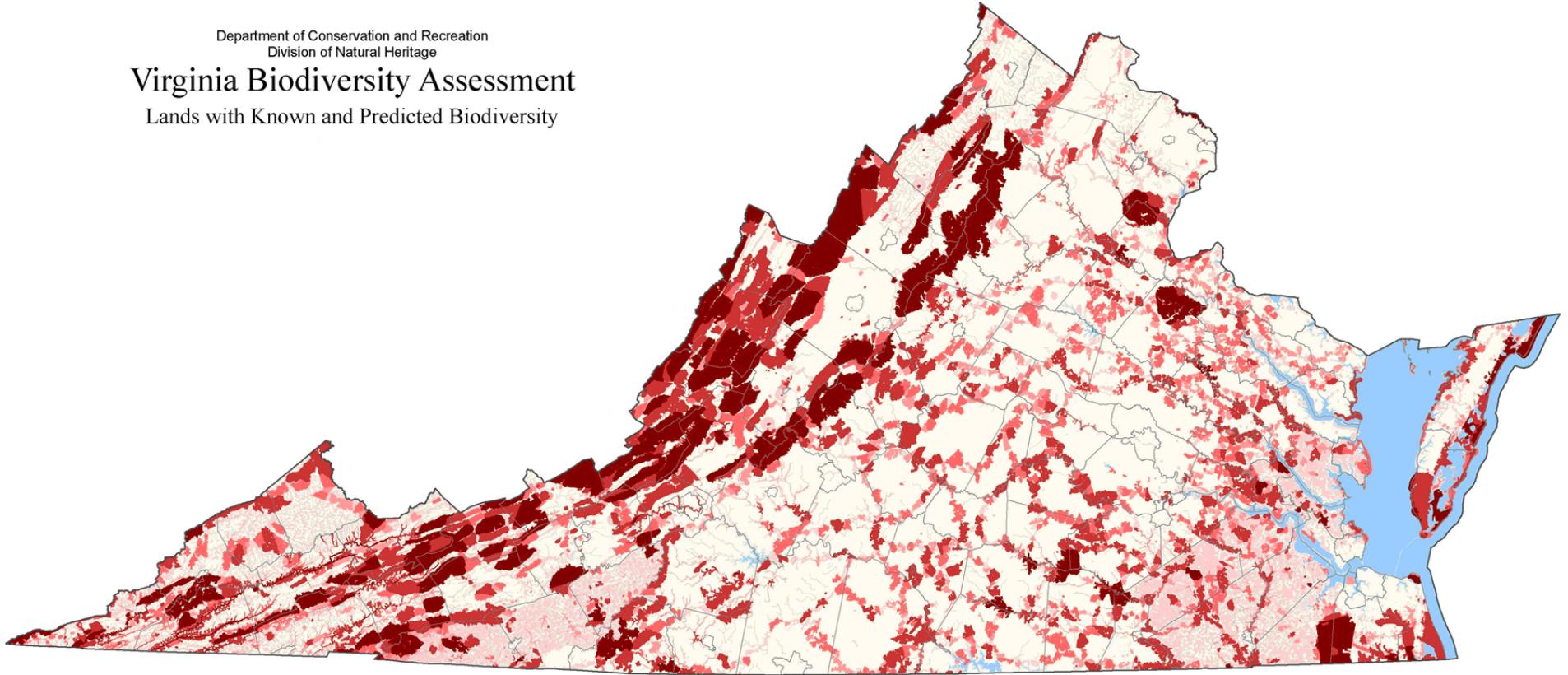
Appendix J

Virginia Biodiversity Assessment Map

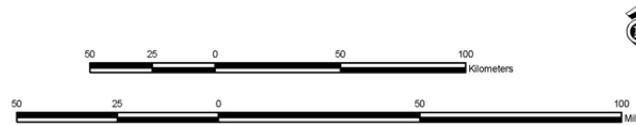
Department of Conservation and Recreation
Division of Natural Heritage

Virginia Biodiversity Assessment

Lands with Known and Predicted Biodiversity



Biodiversity Significance



Sources:

DCR - Natural Heritage Conservation Sites and Virginia Natural Landscape Assessment

DGIF - Essential Habitats of Species of Greatest Conservation Need (Tier I and II species from Wildlife Action Plan plus species on federal and state endangered and threatened lists)

This project was funded in part by the National Oceanic and Atmospheric Administration through the Virginia Coastal Zone Management Program in the Virginia Department of Environmental Quality (FY2007 Task 93.03, NOAA Grant #NA07NOS4190178)

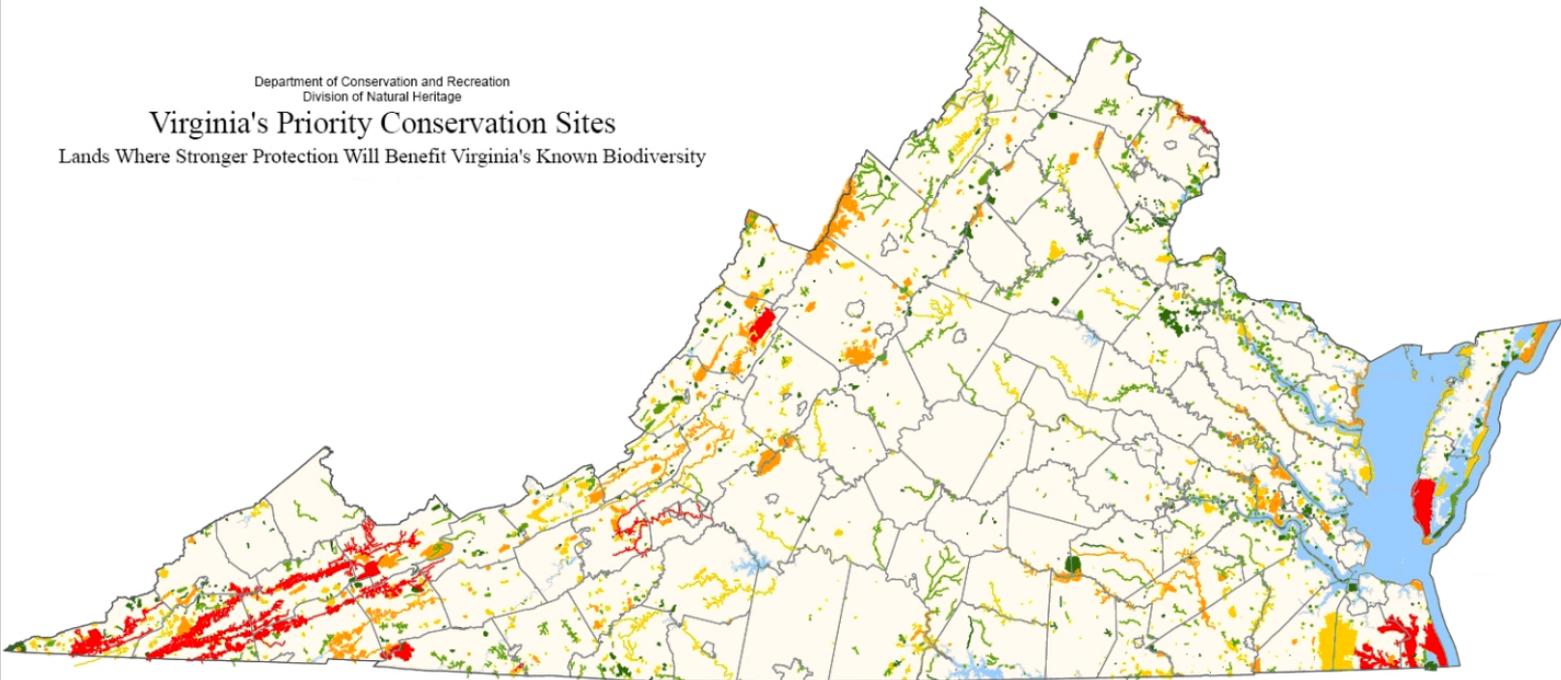
Appendix K

Priority Conservation Sites Map

Department of Conservation and Recreation
Division of Natural Heritage

Virginia's Priority Conservation Sites

Lands Where Stronger Protection Will Benefit Virginia's Known Biodiversity



Biodiversity Conservation Need

-  1 - Critical
-  2
-  3
-  4
-  5 - Moderate



This project was funded in part by the National Oceanic and Atmospheric Administration through the Virginia Coastal Zone Management Program in the Virginia Department of Environmental Quality (FY2006 Task 93.03, NOAA Grant #NA08NOS4190241)

Sources:

DCR - Natural Heritage Element Occurrences, Conservation Sites, Stream Conservation Units, Cave Sites, and Conservation Lands
DGIF - Species of Greatest Conservation Need Observations*, Wildlife Action Plan Confirmed Reaches, and Threatened and Endangered Species Waters
* WMA Bird Surveys, Bald Eagle Nests, Staff Incidental Observations, Colonial Waterbird Locations, and Scientific Collection, Threatened and Endangered Species, and Salvage Permits