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VIRGINIA DEPARTMENT OF
ENVIRONMENTAL QUALITY

Virginia's Nutrient Trading General Permit

ACWA's 2020 Virtual Nutrients Permitting Workshop
Baseline and Crediting

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Point Source Trading in Virginia

GVPDESWPTNTPDNTCBWV

General VPDES Watershed Permit for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Bay Watershed in Virginia
(9 VAC 25-820-10)

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Background on Chesapeake Bay Watershed

- Portions of 5 states and the District of Columbia in 2 EPA regions lie within the Basin:
  - 64,000 square miles watershed
  - 11,684 miles of shoreline
  - 200 miles long and 21 ft. deep on average
- Significant portions of Chesapeake Bay and its tidal tributaries are listed as impaired because of nitrogen, phosphorus, and sediment
- Home to over 18 million people
- Agricultural land use grew by >100,000 acres between 2004 and 2014
- Largest land area per unit volume of water of any estuary in the world

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CB Watershed Nutrient General Permit Highlights

- General permit overlays individual NPDES permits and addresses nutrient loads only
- Calendar year annual TN and TP load limits
- Cap & Trade Program
- “Bubbling” or aggregate permits allowed
- Common schedule of compliance
- Point Source-to-Point Source trading for existing facilities to meet initial load cap
- Point Source-to-Nonpoint Source trading reserved to accommodate new and expanding facilities
- Permittees given ownership of the market

Watershed General Permit Requirements

- Coverage
  - Over 150 facilities
  - 119 Significant Dischargers plus smaller, new or expanding facilities
  - Covers facilities in each of the 5 watersheds
- Limits
  - Annual mass delivered loads for nitrogen and phosphorus for all dischargers
  - Based on TMDL implementation
  - More restrictive requirements as needed to meet local TMDLs or water quality standards in individual permits
  - Conditions for nutrient credit transactions
- Other permit components
  - compliance schedules and plans
  - monitoring and reporting

Virginia's Chesapeake Bay Watershed-based GP

- Compliance with wasteload allocation requirements **for existing facilities** through
  - Meeting annual mass load meets permit requirements
  - Acquisition of sufficient point source credits independently or through the Nutrient Credit Exchange Association
  - Acquisition of credits through payments to Nutrient Offset Fund if no other option available

Virginia's Chesapeake Bay Watershed-based GP

- New or expanding facilities offset **new or expanded discharge** through acquisition of
  - Compliance credits from one or more permitted facilities
  - Purchase of WLAs from other sources (either short term or permanent)
  - Credits from nonpoint source best management practices
  - Credits through payments to Nutrient Offset Fund if no other option available
  - Allocations through other means approved by Virginia DEQ on a case-by-case basis
- Acquire 5 years of offsets prior to permitting

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Point Source Baseline for Trading

- Established in Code of Virginia
- Baseline = WLA
- WLAs for municipals currently established at design flow
- WLAs for industries based on full production
- Current proposal to establish “floating” WLAs for larger municipal dischargers
  - In any given year the applicable WLA is the lesser of the existing WLA or the floating WLA
  - Floating WLA is calculated at the end of each calendar year based on total flow treated x 4 mg/l TN and 0.3 mg/l TP
  - Challenges expected to rulemaking

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How Does this Work?
Annual Compliance Cycle

- Monthly DMRs with TN and TP average concentrations, flow and monthly Loads
- Year end DMR due January 10th reports annual TN and TP loads
- By April 1st, DEQ publishes summary of annual loads reported
  (who is over and who is under their WLAs)
- By June 1st, permittees complete and report all trades for previous compliance year
- By July 1st, DEQ publishes a list of all trades for previous compliance year

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April 1st Nutrient Loads Report

2019 Nutrient Load Analysis

§ 62.1-44.19:18.D. of the State Water Control Law requires that by April 1st of each year, DEQ prepare a report containing the annual mass loads of Total Nitrogen and Total Phosphorus discharged by each permitted facility, the number of point source Nitrogen and Phosphorus credits generated or required by each facility in the previous calendar year, and to the extent there are insufficient point source credits available for exchange to provide for full compliance by every permittee, the number of credits to be purchased from the Nutrient Offset Fund.

Actual discharged and delivered loads are included for each discharger. The degree to which each discharge was over or under the wasteload allocation is listed in the next to last column of each spreadsheet. The bottom figure in that same column indicates the degree to which the basin as a whole was over or under the basin-wide delivered wasteload allocation. The final column reflects credits which are held by the Nutrient Offset Fund in accordance with Part I.J.2.e. of the watershed general permit.

Sufficient Nitrogen and Phosphorus credits are available in every basin. With adequate credits available from permitted facilities, no credits will be made available by the Nutrient Offset Fund. Permitted facilities must complete and report all trades to DEQ by June 1, 2020. DEQ will publish notice of all credit exchanges for the previous calendar year by July 1, 2020.

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2019 James Total Phosphorus Discharges

Facility	Individual VPDES Permit No.	General Permit Registration No.	General Permit Outfall No.	Design Flow (MGD)	Discharged TP Wasteload Allocation (lbs/yr)	TP Delivery Factor	Delivered TP Wasteload Allocation (lbs/yr)	2019 Discharged TP (lbs)	2019 Delivered TP (lbs)	2019 Delivered TP Exceedance/ (Credit) (lbs)	Nutrient Offset Fund Held Credits (lbs)
Upper/Middle James											
Hopewell RWTF	VA0066630	VAN040083	500	50.00	61,749	1.00	61,749	120,101	120,101	58,352	- -
E. I. DuPont-Spruance	VA0004669	VAN040079	500	23.33	6,339	1.00	6,339	23,134	23,134	16,795	- -
Buena Vista STP	VA0020991	VAN040063	500	2.25	2,778	0.66	1,833	8,072	5,328	3,495	- -
Lake Monticello STP	VA0024945	VAN040074	500	0.995	1,229	0.66	811	4,763	3,144	2,333	0
Dominion-Chesterfield	VA0004146	VAN040086	500	- -	170	1.00	170	848	848	678	- -
Augusta Correctional Center	VA0091821	VAN040118	500	0.44	402	0.66	265	570	376	111	- -
Tyson Foods Glen Allen											
Amherst-Rutledge Creek WWTP	VA0031321	VAN040071	500	0.60	741	0.66	489	503	332	-157	- -
Philip Morris USA-Park 500	VA0026557	VAN040084	500	2.90	2,149	1.00	2,149	1,918	1,918	-231	- -
Manakin Farms WWTP	VA0027910	VAN040173	500	0.10	533	0.66	352	178	117	-234	
BWX Technologies, Inc.	VA0003697	VAN040072	500	1.00	1,235	0.66	815	842	556	-259	- -
Crewe WWTP	VA0020303	VAN040100	500	0.50	617	0.46	284	53	24	-260	- -
Powhatan Corr. Center STP	VA0020699	VAN040077	500	0.47	581	0.66	383	133	88	-295	- -
Farmville WWTP	VA0083135	VAN040097	500	2.40	2,964	0.46	1,363	1,811	833	-530	- -
Dillwyn WWTP	VA0027294	VAN040104	500	0.20	5,695	0.66	761	157	104	-657	- -
Covington STP	VA0025542	VAN040065	500	3.00	3,705	0.66	2,445	2,377	1,569	-876	- -
The Sustainability Park LLC (001)	VA0002780	VAN040078	500	2.10	1,556	1.00	1,556	16	16	-1,540	- -
Lex.-Rock. Regional WQCF	VA0088161	VAN040068	500	3.00	3,705	0.66	2,445	438	289	-2,156	- -
Alleghany County Aggregate	- -	VAN040069	500	- -	- -	- -	3,260		640	-2,620	734
Low Moor WWTP	VA0027979	- -	501	0.50	617	0.66		348			
Lower Jackson River WWTP	VA0090671	- -	502	1.50	4,323	0.66		621			
Lynchburg STP	VA0024970	VAN040075	500	22.00	27,169	0.66	17,932	22,904	15,117	-2,815	- -
Mohawk Industries, Inc.	VA0004677	VAN040067	500	2.00	9,880	0.66	6,521	102	67	-6,454	- -
RWSA-Moores Creek Regional STP	VA0025518	VAN040076	500	15.00	18,525	0.66	12,227	6,846	4,518	-7,709	- -
So. Central Wastewater Authority WWTF	VA0025437	VAN040087	500	23.00	28,404	1.00	28,404	19,871	19,871	-8,533	- -
AdvanSix Resins and Chemicals LLC	VA0005291	VAN040082	500	121.00	41,841	1.00	41,841	32,460	32,460	-9,381	- -
Chesterfield County Aggregate	- -	VAN040080	500	- -	- -	- -	45,817		35,264	-10,553	- -
Falling Creek WWTP	VA0024996	- -	501	10.10	12,473	1.00		11,988			
Proctors Creek WWTP	VA0060194	- -	502	27.00	33,344	1.00		23,276			
Greif Inc.	VA0006408	VAN040073	500	6.50	24,082	0.66	15,894	5,085	3,356	-12,538	- -
GP Big Island LLC	VA0003026	VAN040066	500	10.87	40,273	0.66	26,580	14,318	9,450	-17,130	- -
WestRock Virginia Corporation- Covington	VA0003646	VAN040070	500	35.00	96,771	0.66	63,869	59,298	39,137	-24,732	- -
Richmond WWTP	VA0063177	VAN040085	500	45.00	55,574	1.00	55,574	20,775	20,775	-34,799	- -
Henrico Co. WWTP	VA0063690	VAN040081	500	75.00	92,623	1.00	92,623	21,759	21,759	-70,864	- -
					Upper/Middle James Subtotals		**494,939**		**361,234**	**-133,704**	**734**

Facilities exceeding TP WLA

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July 1st Nutrient Trades Report

2019 Nutrient Trades Report

§ 62.1-44.19:18.E. of the State Water Control Law requires that by July 1st of each year, DEQ publish notice of all nitrogen and phosphorus credit exchanges and purchases for the previous calendar year and make all documents relating to the exchanges and purchases available to any person requesting them.

For calendar year 2019 all but 18 registrants under the Watershed General Virginia Pollutant Discharge Elimination System Permit (9 VAC 25-820-70) met their wasteload allocations without the need for trading. All 18 facilities that exceeded their Total Nitrogen and/or Total Phosphorus wasteload allocations acquired enough credits to meet their compliance needs. An adequate supply of credits was available in every basin.

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2019 Total Phosphorus Credit Transfers

Basin	Facility	Individual VPDES Permit No.	General Permit Registration No.	Discharged TP Wasteload Allocation (lbs/yr)	TP Delivery Factor	Delivered TP Wasteload Allocation (lbs/yr)	2019 Discharged TP (lbs)	2019 Delivered TP (lbs)	2019 Delivered TP Exceedance (lbs)	2019 Delivered TP Credits Obtained (lbs)	Source of Credits
Potomac	Merck (Outfall 101)[A]	VA0002178	VAN010007	4,384	0.54	2,367	5,703	3,080	2,488	2,488	VNCEA
Potomac	Front Royal STP	VA0062812	VAN010010	3,655	0.54	1,974	7,201	3,889	1,915	1,915	VNCEA
Potomac	Stoney Creek S.D. STP	VA0028380	VAN010015	667	0.53	354	1,015	538	184	184	VNCEA
Potomac	VA Poultry Growers Cooperative-Hinton	VA0002313	VAN010009	1,371	0.53	727	1,688	895	168	168	VAN010011
Rappahannock	HRSD-Urbanna	VA0026263	VAN020034	91	0.96	87	861	827	740	740	VNCEA
Rappahannock	Rapidan STP	VA0090948	VAN020020	348	0.77	422	991	765	341	341	VNCEA
James	Hopewell RWTF	VA0066630	VAN040083	61,749	1.00	61,749	120,101	120,101	58,352	58,352	VNCEA
James	E. I. DuPont-Spruance	VA0004669	VAN040079	6,339	1.00	6,339	23,134	23,134	16,795	16,795	VNCEA
James	Buena Vista STP	VA0020991	VAN040063	2,778	0.66	1,833	8,072	5,328	3,495	3,495	VNCEA
James	Lake Monticello STP	VA0024945	VAN040074	1,229	0.66	811	4,763	3,144	2,333	2,333	VNCEA
James	Dominion-Chesterfield	VA0004146	VAN040086	170	1.00	170	848	848	678	678	VAN040080
James	Augusta Correctional Center	VA0091821	VAN040118	402	0.66	265	570	376	111	111	VAN040077
Eastern Shore	Tangier Town WWTP	VA0067423	VAN050004	91	0.96	87	157	151	64	64	VAN050005
								Totals:	**87,664**	**87,664**	

Footnotes

[A] In any year when credits are available after all other exchanges within the Potomac Basin are completed in accordance with § 62.1-44.19:18 of the Code of Virginia, Merck shall acquire credits for TN discharged in excess of 14,619 lbs/yr and TP discharged in excess of 1,096 lbs/yr. Credits are only generated if discharged loads are less than these same loads. This equates to a need to obtain 0 delivered lbs of TN credits and 2,488 delivered lbs of TP credits for 2019.

VNCEA = Virginia Nutrient Credit Exchange Association

VAN010011 - George's Chicken

VAN040080 - Chesterfield County Aggregate

VAN040077 - Powhatan Correctional Center

VAN050005 - Tyson's Temperanceville

TP Credits Acquired

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That's it!
PS-to-PS trading is easy

What about PS-to-NPS trading?

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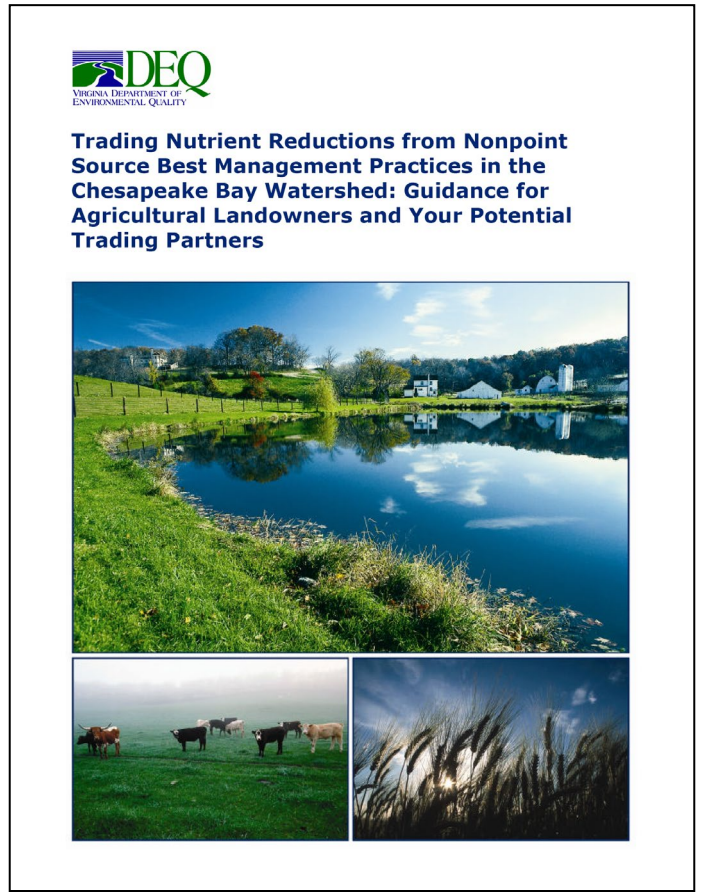
Nonpoint Source Trading in VA

Reserved for accommodating new and expanding point sources only

Guidance adopted in January 2008 and updated in 2020

Crediting established by Chesapeake Bay Watershed Model

First bank approved in July 2008



Practice-based Ag Baseline Requirements

Implementation of.....

- Soil Conservation Plan
- Nutrient Management Plans
- Cover Crops
- Livestock Stream Exclusion w/ 35’ buffer
- 35’ Riparian buffer

Level of effort rather than load based baseline
Chesapeake Bay TMDL close to E3 Scenario
(Everything, Everybody, Everywhere)

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Ag BMP Enhancements to Generate Credits

Implementation of.....

- Soil Conservation Plan – Continuous No Till
- Nutrient Management Plans – 15% TN reduction on corn
- Cover Crops – Early planting
- Livestock Stream Exclusion w/ 35’ buffer – increase buffer width
- 35’ Riparian buffer – increase buffer width

2:1 trading ratio

It takes a lot of land!

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So Why Are There No NPS-to-PS Trades in VA?

- Economic downturn brought new WWTPs to a halt
- Adequate capacity in market from existing POTW WLAs (adequate credits available from other point sources)
- Stringent NPS baseline under Chesapeake Bay TMDL
- It takes a lot of land and management– a problem of scale and resources

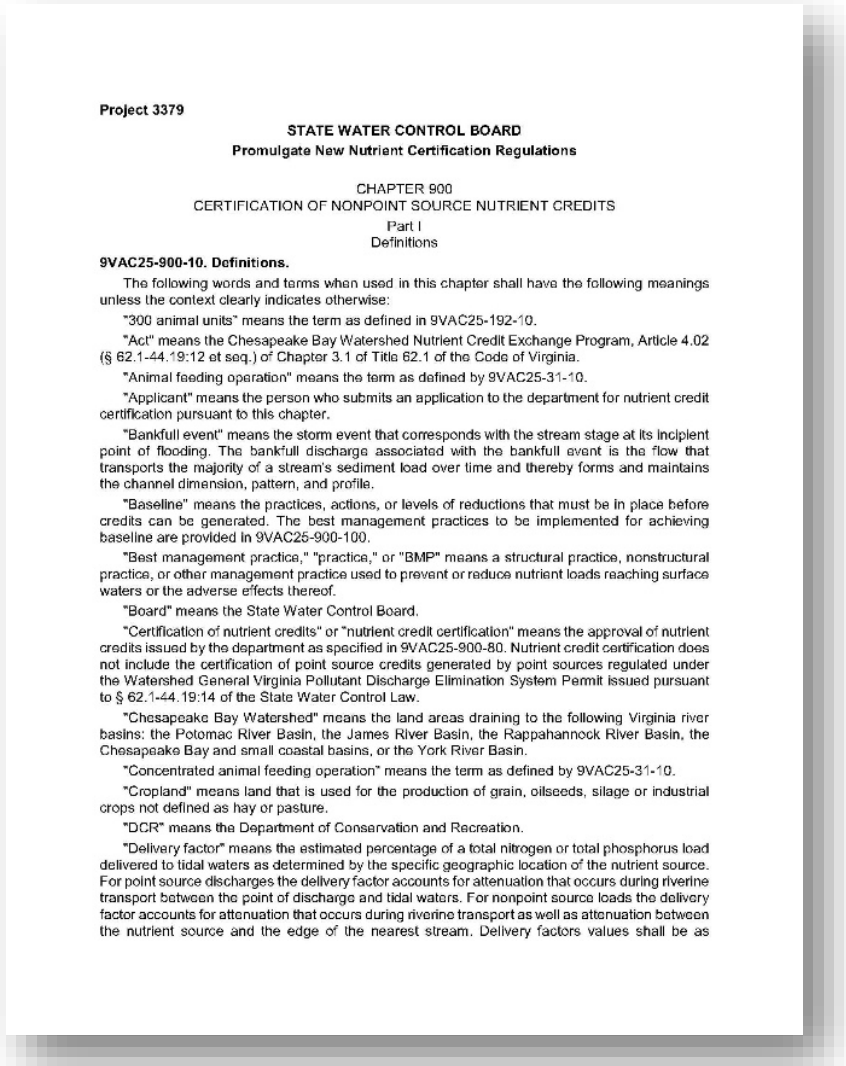
Current Status of NPS Trading in VA

- Current program consists of providing **permanent** stormwater offsets to meet Virginia's post construction P loading requirements under the Virginia Stormwater Management Program (VSMP). Permanent reductions generated from
  - Reforestation of ag land
  - Stream restoration projects
  - One stormwater BMP
- 172 NPS banks with 7,200 lbs of permanent TP offsets and 43,000 lbs of permanent TN offsets currently available on state registry

Current Status of NPS Trading in VA (cont.)

- Many small P trades – approximately 5,600 lbs of P sold with retirement of an associated 36,000 lbs of N reductions retired (P serves as a proxy for N reductions under VSMP
- Required N and P reductions in Municipal Separate Stormwater Sewer System (MS4) permitting program may create demand for NPS credit market
- Recently completed 8-year rulemaking on the certification of NPS credits (9VAC25-900). Protection of local water quality was the most controversial issue.

Certification of Nonpoint Source Nutrient Credits (9VAC25-900) – Effective 9/1/2020



Project 3379

STATE WATER CONTROL BOARD

Promulgate New Nutrient Certification Regulations

CHAPTER 900
CERTIFICATION OF NONPOINT SOURCE NUTRIENT CREDITS
Part I
Definitions

9VAC25-900-10. Definitions.

The following words and terms when used in this chapter shall have the following meanings unless the context clearly indicates otherwise:

"300 animal units" means the term as defined in 9VAC25-192-10.

"Act" means the Chesapeake Bay Watershed Nutrient Credit Exchange Program, Article 4.02 (§ 62.1-44.19:12 et seq.) of Chapter 3.1 of Title 62.1 of the Code of Virginia.

"Animal feeding operation" means the term as defined by 9VAC25-31-10.

"Applicant" means the person who submits an application to the department for nutrient credit certification pursuant to this chapter.

"Bankfull event" means the storm event that corresponds with the stream stage at its incipient point of flooding. The bankfull discharge associated with the bankfull event is the flow that transports the majority of a stream's sediment load over time and thereby forms and maintains the channel dimension, pattern, and profile.

"Baseline" means the practices, actions, or levels of reductions that must be in place before credits can be generated. The best management practices to be implemented for achieving baseline are provided in 9VAC25-900-100.

"Best management practice," "practice," or "BMP" means a structural practice, nonstructural practice, or other management practice used to prevent or reduce nutrient loads reaching surface waters or the adverse effects thereof.

"Board" means the State Water Control Board.

"Certification of nutrient credits" or "nutrient credit certification" means the approval of nutrient credits issued by the department as specified in 9VAC25-900-80. Nutrient credit certification does not include the certification of point source credits generated by point sources regulated under the Watershed General Virginia Pollutant Discharge Elimination System Permit issued pursuant to § 62.1-44.19:14 of the State Water Control Law.

"Chesapeake Bay Watershed" means the land areas draining to the following Virginia river basins: the Potomac River Basin, the James River Basin, the Rappahannock River Basin, the Chesapeake Bay and small coastal basins, or the York River Basin.

"Concentrated animal feeding operation" means the term as defined by 9VAC25-31-10.

"Cropland" means land that is used for the production of grain, oilseeds, silage or industrial crops not defined as hay or pasture.

"DCR" means the Department of Conservation and Recreation.

"Delivery factor" means the estimated percentage of a total nitrogen or total phosphorus load delivered to tidal waters as determined by the specific geographic location of the nutrient source. For point source discharges the delivery factor accounts for attenuation that occurs during riverine transport between the point of discharge and tidal waters. For nonpoint source loads the delivery factor accounts for attenuation that occurs during riverine transport as well as attenuation between the nutrient source and the edge of the nearest stream. Delivery factors values shall be as

- Application requirements and fees
- Baseline requirements
- Financial assurances required for long-term maintenance
- Requirements for stream/wetland restorations and innovative practices
- Provisions for local water quality effective 1/1/2021
- Local water quality guidance workgroup

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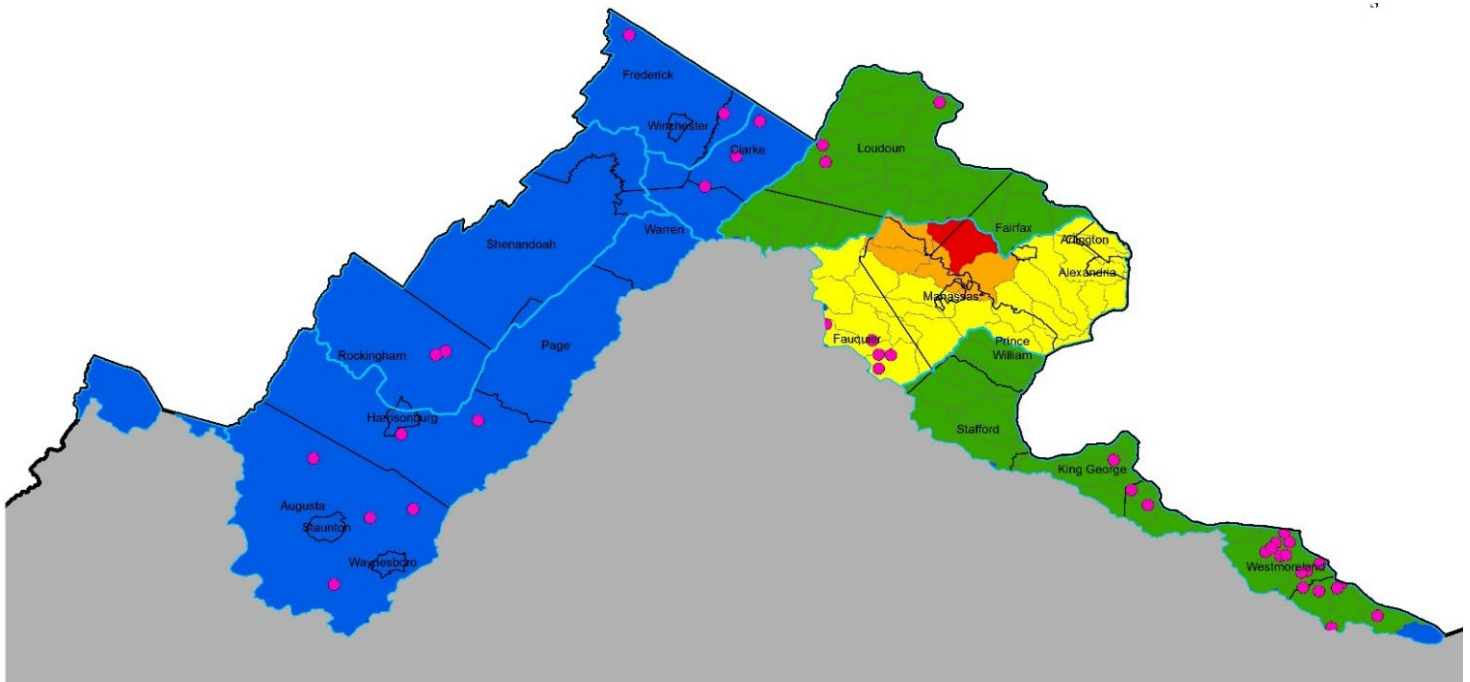
Local Water Quality Provisions (9VAC25-900-91)

For waters subject to a TMDL for nutrients, offsets must be acquired upstream of project.

For waters impaired for dissolved oxygen, benthic community, or nutrients but with no approved local TMDL, the exchange of credits must follow this hierarchy:

- (1) Upstream of where the discharge reaches impaired waters, if credits are available;
- (2) Within the same 12-digit HUC, if credits are available;
- (3) Within the same 10-digit HUC, if credits are available;
- (4) Within the same 8-digit HUC, if credits are available;
- (5) Within an adjacent 8-digit HUC within the same tributary, if credits are available; or
- (6) Within the same tributary.



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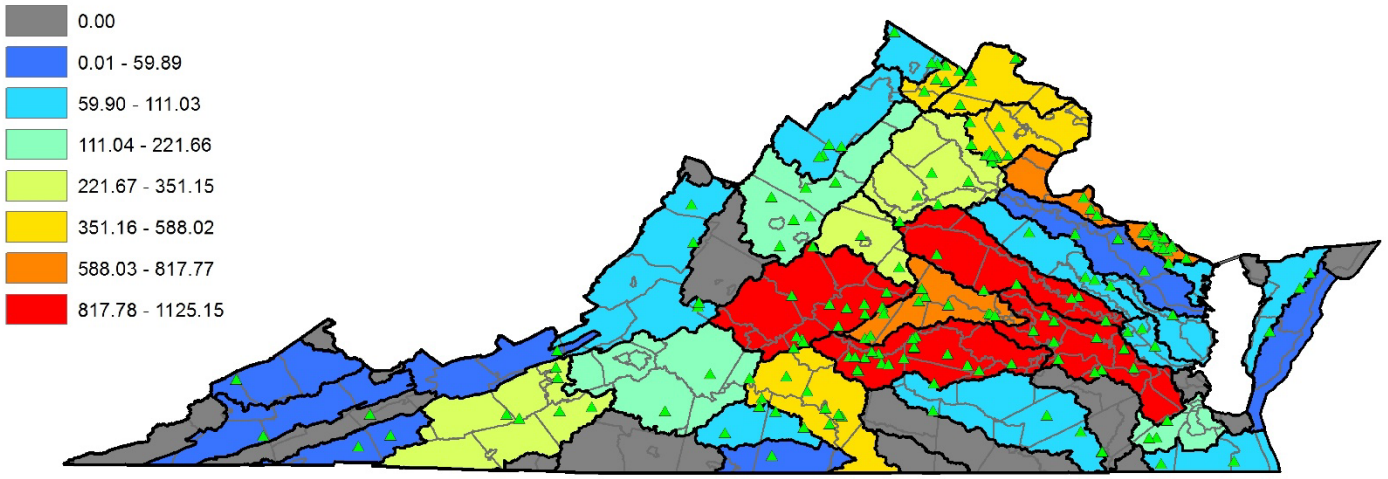
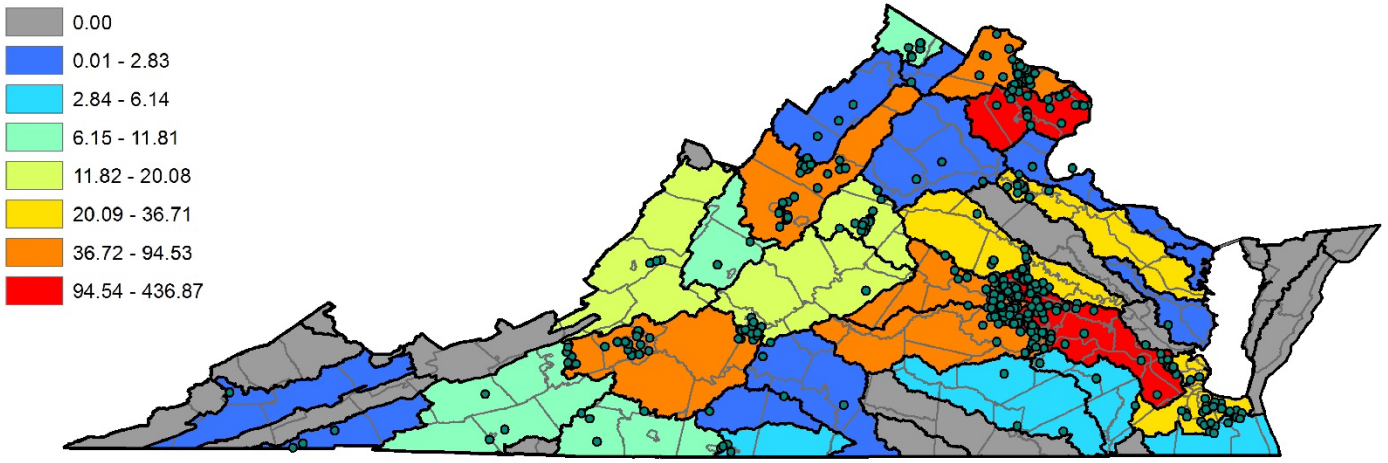
Phosphorus Credits (lbs) Generated by HUC8



Phosphorus Credits (lbs) Used by HUC8



Nutrient Banks

Credit purchases for CGP

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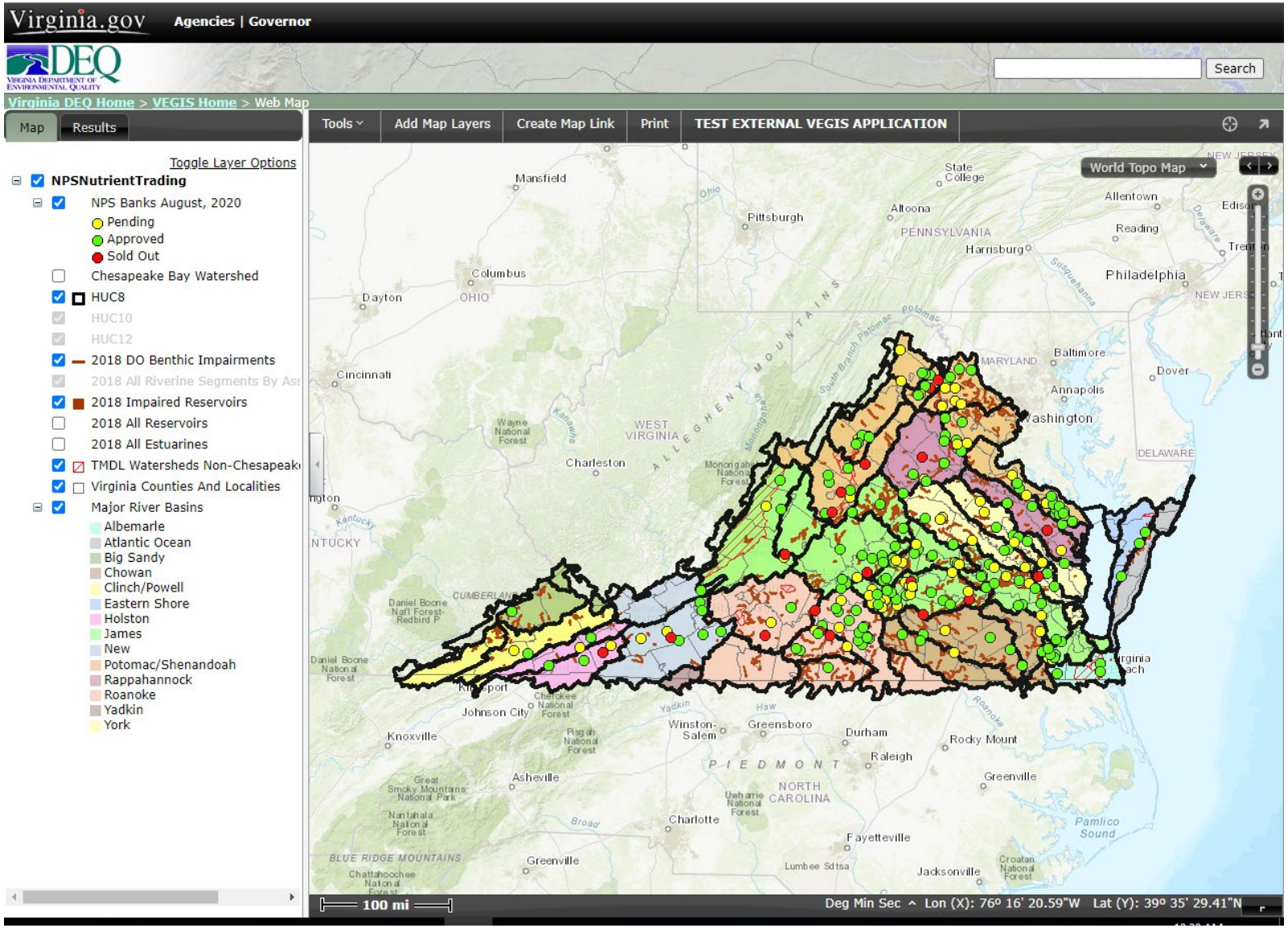
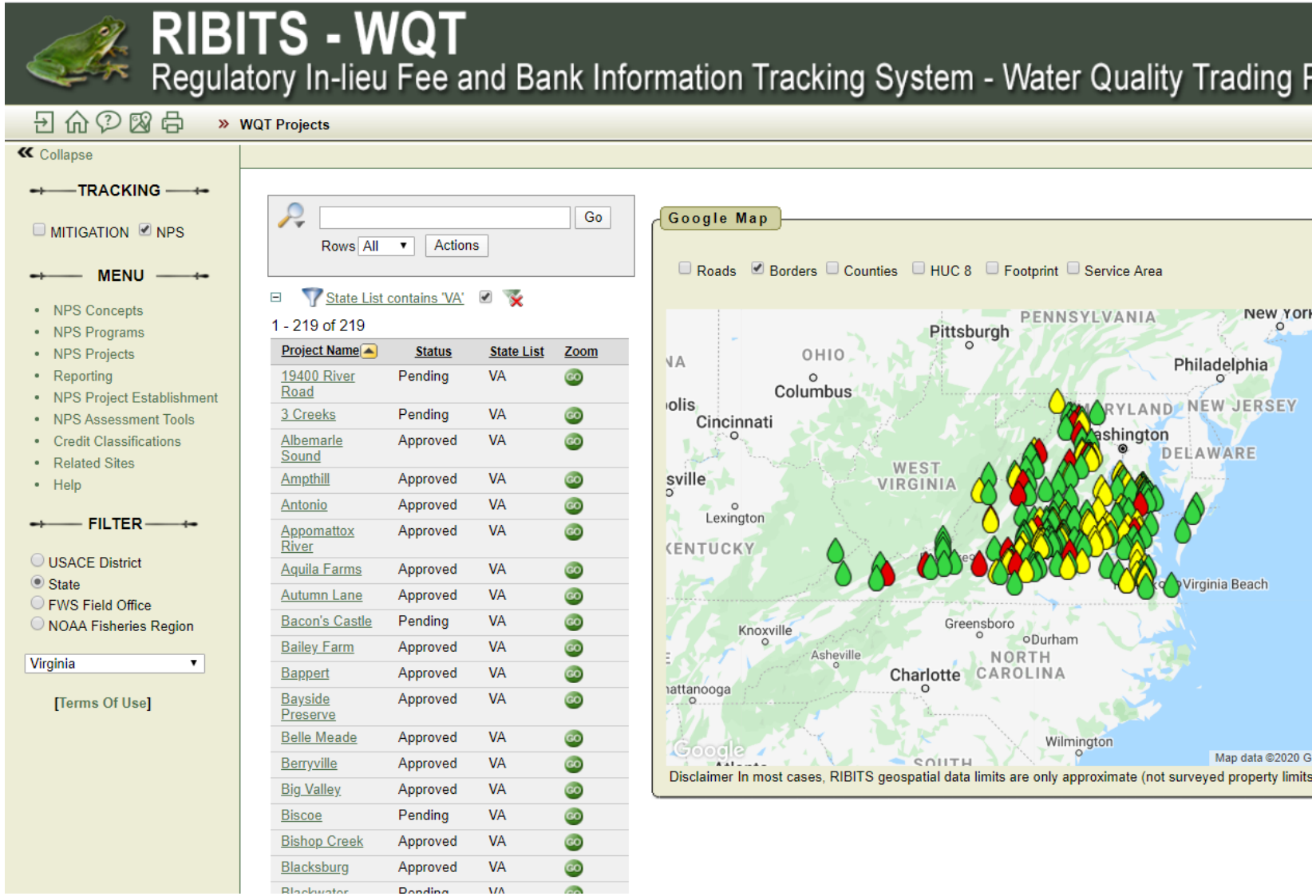
VEGIS NPS Trading Data Viewer



[VEGIS Data Viewer]

RIBITS Trading Registry



[U S Army Corps of Engineers RIBITS Database]

2017 Nutrient Trades

Point Source to Point Source under Watershed General Permit

- 25 facilities acquired approximately 28,000 lbs of TP and 306,000 lbs of TN credits
- Several minor WLA trades
- Approximately $1,800,000 market value

Non-Point Source Credits Sold (Permanent Offsets)

- Approximately 900 lbs of TP with 5,400 lbs of TN retired
- Approximately $18,000,000 market value

Takeaways on PS-to-PS Trading Baselines

- PS-to-PS trading is easy!
  - Baseline can be WQ (load) based or performance (concentration) based
  - WQ modeling to establish equivalence over larger watersheds
  - Beware of code provisions which may limit flexibility in the future
  - Watershed GP and permittee exchange association makes trading more efficient

Takeaways on NPS-to-PS Baselines

- NPS-to-PS can be much more difficult
  - WQ and watershed modeling to establish equivalence over larger watersheds and to establish credits from agricultural BMPs
  - Stringent TMDL can lead to stringent baselines which are a deterrent (E3 scenario)
  - Transaction costs must include certification and verification costs which can be significant for annual agricultural BMPs
  - Above issues lead to problems with scale and management

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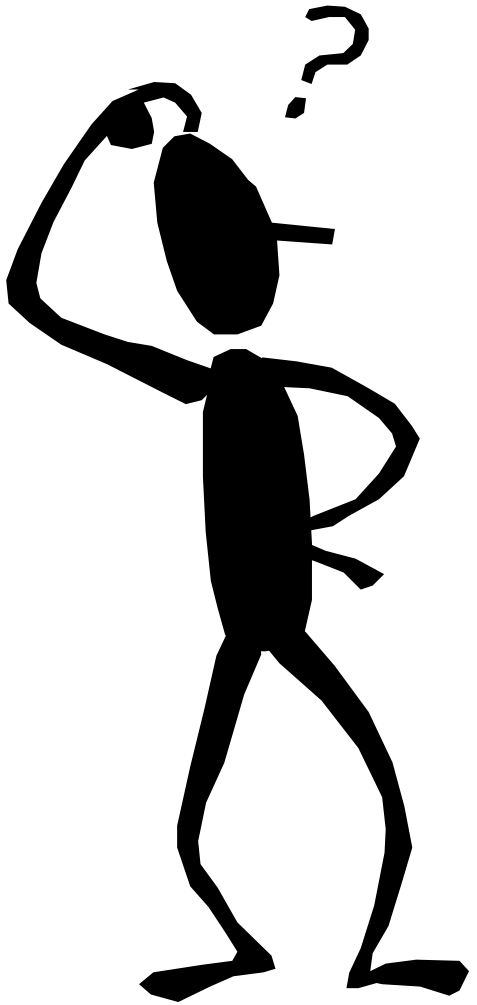
Questions?



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