





Virginia's Nutrient Trading General Permit

ACWA's 2020 Virtual Nutrients Permitting Workshop Trading and Flexibilities

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Point Source Trading in Virginia

GVPDES WPTNTPDNTCBWV

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)

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

Water Quality Impairments

- Dissolved Oxygen
- Water Clarity
- Submerged Aquatic Vegetation

Drivers for Virginia's Approach

- General Assembly determines that adoption and utilization of a watershed general permit and market-based point source nutrient credit trading program will assist in:
 - meeting the nutrient cap load allocations cost-effectively and as soon as possible in keeping with the 2010 timeline and objectives of the Chesapeake 2000 agreement,
 - accommodating continued growth and economic development in the Chesapeake Bay watershed, and
 - providing a foundation for establishing market-based incentives to help achieve the Chesapeake Bay Program's nonpoint source reduction goals.

CB Watershed Nutrient General Permit Highlights

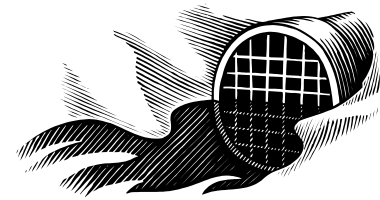
- General permit overlays individual NPDES permits and addresses nutrient loads only
- Calendar year annual TN and TP load limits
- Cap & Trade Program
- “Bubbling” or aggregate permits allowed
- Common schedule of compliance
- Point Source-to-Point Source trading for existing facilities to meet initial 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
 - Compliance
 - Addresses significant existing discharges and new and expanding discharges
 - 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

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

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.

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	--
Upper James Glen Allen	VA0001834	VAN040080	500	1.07	400	0.46	188	87	45	112	--
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-Moore's 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**

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.

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	VA0098948	VAN020028	348	0.77	422	331	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

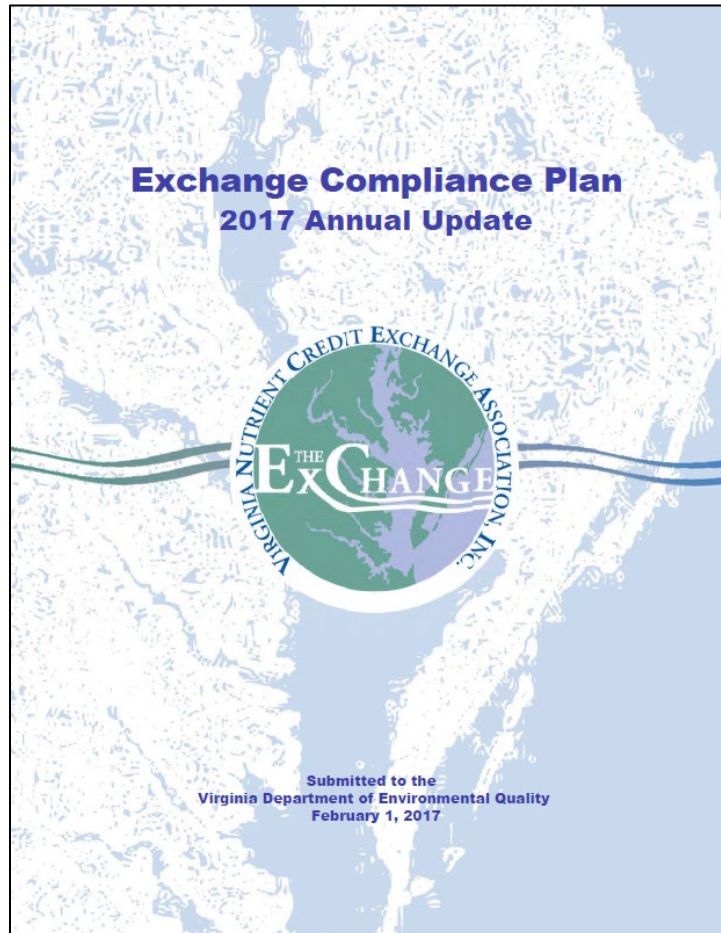
VAN050005 - Tyson's Temperanceville

TP Credits
Acquired

Virginia Watershed-based Permit Benefits

- Environmental Benefits
 - Quicker nutrient reductions from point sources
 - Manages additional loadings from growth through offsets of loads from new or expanding facilities
 - Creates incentives for NPSs to meet load allocations
 - BMP secondary benefits (e.g., habitat restoration, carbon sink)
- Benefits to Permittees
 - Provides several different tools for achieving compliance
 - More cost-effective approach than treatment upgrades only
 - Allows for future growth as it eases costs and resource demands
- Benefits to Virginia DEQ
 - More streamlined and efficient permitting process
 - Increased stakeholder support

Primary Factors in Success of the Point Source Trading Program



- Watershed general permit
 - Expedient – one negotiation
 - Common schedule of compliance
 - Consistent requirements
- Formation of the Virginia Nutrient Credit Exchange Association with voluntary membership
- Permittees given ownership of the market and have embraced the program

Nutrient Credit Exchange Association

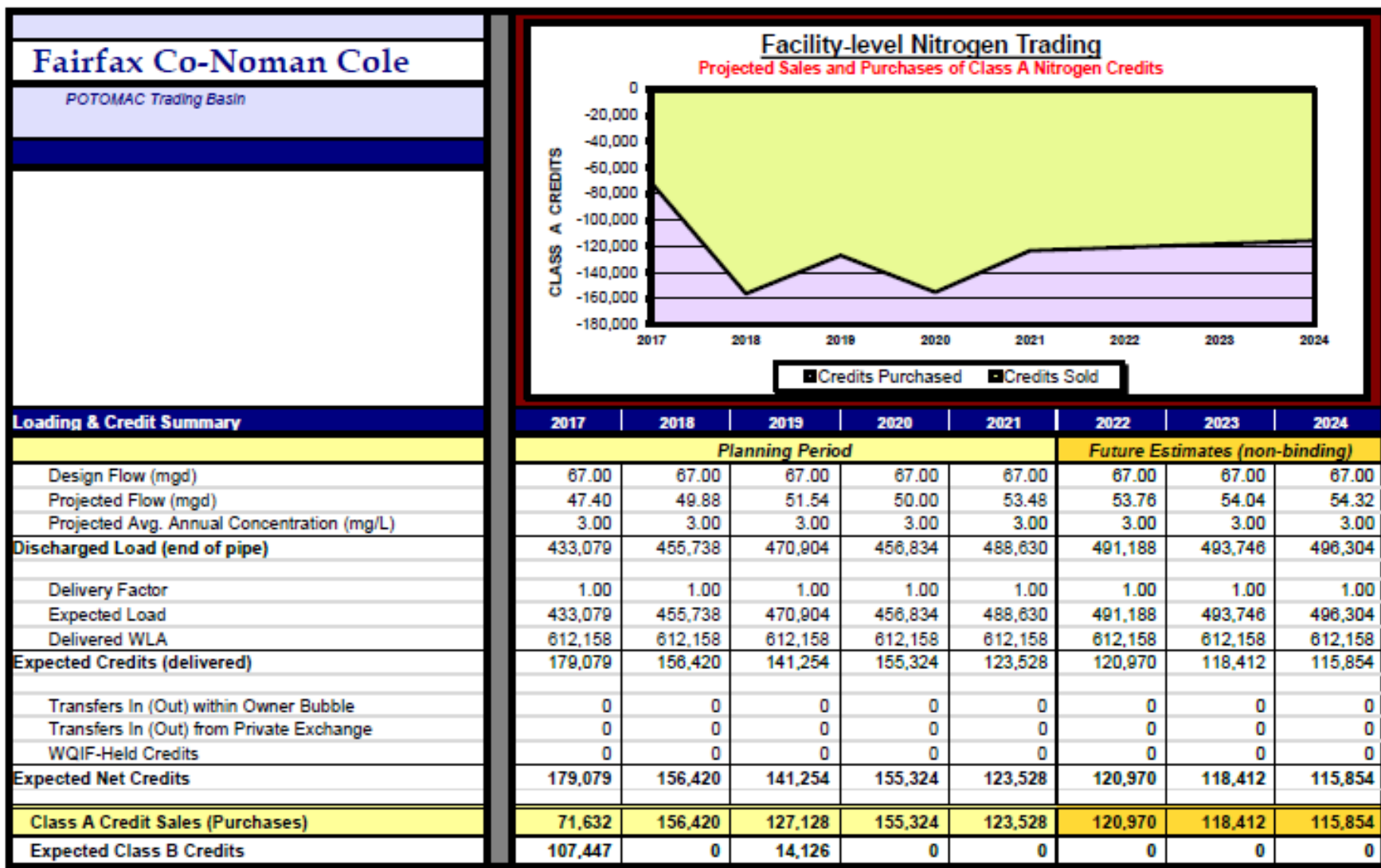
- The Nutrient Credit Exchange Association is an association of owners of 108 permitted facilities discharging nutrients in the Bay watershed.
- Voluntary membership in non-stock corporation formed to facilitate the trading program
- Benefits of Membership
 - Easy access to buyers and sellers
 - Acts as clearinghouse – buys all generated credits and offers cost-sharing from sales
 - First right to buy generated credits

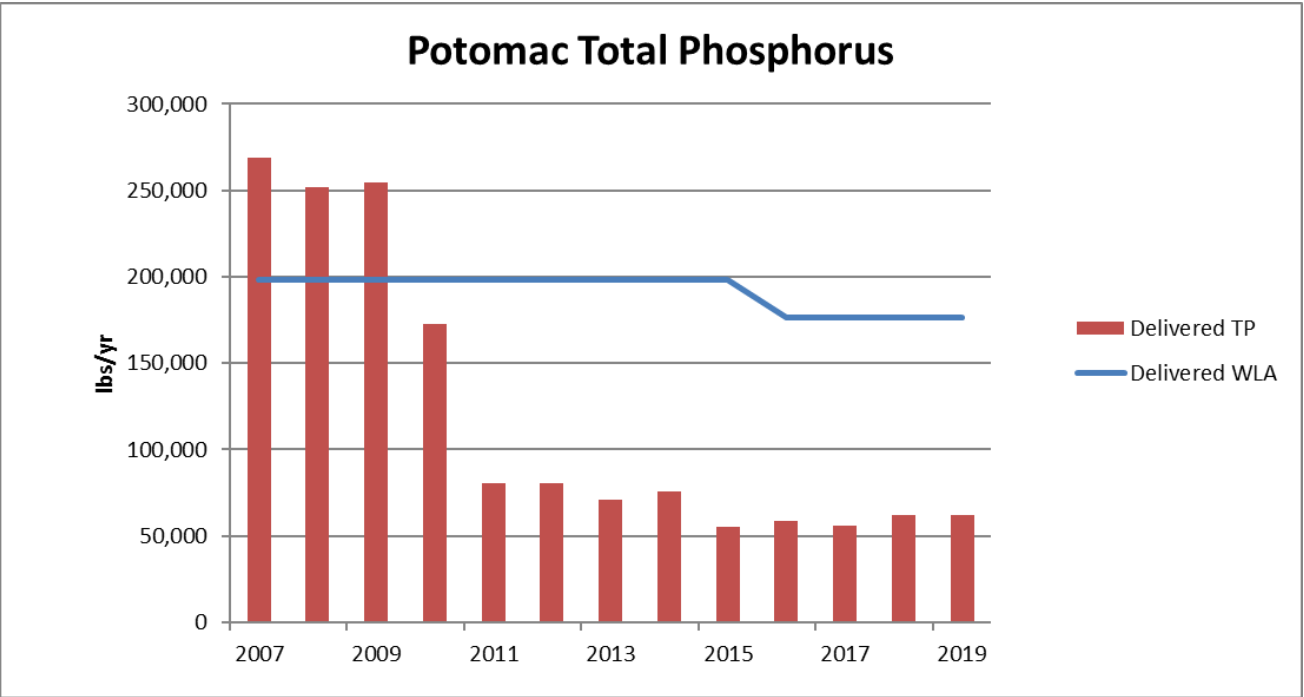
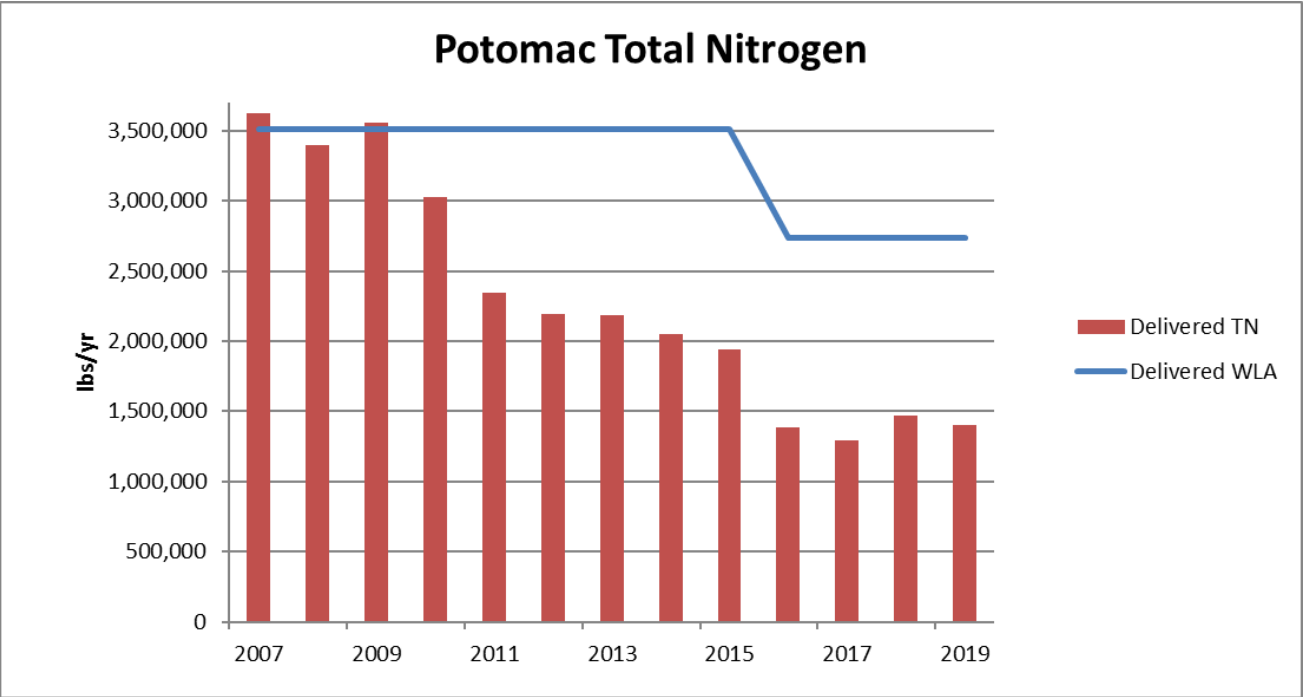
POTOMAC Basin: Nitrogen Credit Ledger											
Compliance Year:	2018	Credit Forecasts		Preliminary Use of Credits			Expected Net Credits	Credit Exchange (Pounds)			
Facility Name	Delivered WLA	Expected Load	Expected Credits	In-Bubble Exchange	Private Exchange	WQIF-Held Credits			Class A Sales	Class A* Purchases	Class B** (expected)
The Exchange (group)	2,612,604	1,906,103	706,501	-	(274)	(24,365)	681,862	PRICE: \$ 0.07	\$ 3.78	\$ 0.02	
								535,306	(11,587)	158,143	
ACSA-Fishersville	4,873	1,845	3,028	(3,028)	-	-	-	-	-	-	-
ACSA-Greenville	1,424	497	927	(875)	-	-	252	118	-	-	134
ACSA-Harriston	1,025	203	822	(822)	-	-	-	-	-	-	-
ACSA-Middle River	8,284	3,764	4,520	-	-	-	4,520	2,123	-	-	2,397
ACSA-Mt. Sidney	854	1,307	(453)	453	-	-	-	-	-	-	-
ACSA-Stuarts Draft	2,436	588	1,848	-	-	-	1,848	869	-	-	979
ACSA-Vesper View	1,025	546	479	-	-	-	479	225	-	-	254
ACSA-Weyers Cave	1,462	5,534	(4,072)	4,072	-	-	-	-	-	-	-
Alexandria Renew Ent.	493,381	367,386	125,995	-	-	-	125,995	94,496	-	-	31,499
Arlington Co.	365,284	232,985	132,299	-	-	-	132,299	132,299	-	-	-
Berryville	5,373	3,070	2,303	-	-	-	2,303	2,000	-	-	303
Broadway Regional	5,601	4,924	677	-	-	-	677	-	-	-	677
Fairfax Co-Noman Cole	612,158	455,738	156,420	-	-	-	156,420	156,420	-	-	-
FCWSA-Vint Hill	579	219	360	-	-	-	360	-	-	-	360
Front Royal	29,725	25,303	4,422	-	-	-	4,422	1,056	-	-	3,366
FWSA-Opequon	31,681	18,402	13,279	-	-	-	13,279	-	-	-	13,279
FWSA-Parkins Mill	15,837	11,086	4,751	-	-	-	4,751	-	-	-	4,751
HRRSA-North River	55,746	36,664	19,082	-	-	-	19,082	19,082	-	-	-
KGCSA-Dahlgren S.D.	9,137	6,700	2,437	-	-	-	2,437	-	-	-	2,437
KGCSA-Fairview Beach	1,827	731	1,096	(427)	-	-	669	-	-	-	669
KGCSA-Purkins Corner	1,096	1,523	(427)	427	-	-	-	-	-	-	-
Leesburg	97,458	31,261	66,197	-	(274)	(24,365)	41,558	-	-	-	41,558
Loudoun Water- Broad Run	119,264	54,929	64,335	-	-	-	64,335	56,632	-	-	7,703
Luray	8,187	1,688	6,499	-	-	-	6,499	6,499	-	-	-
Massanutten PSC	6,030	2,975	3,055	-	-	-	3,055	-	-	-	3,055
Merck	4,824	14,473	(9,649)	-	-	-	(9,649)	-	(9,649)	-	-
MillerCoors LLC	18,091	18,091	-	-	-	-	-	-	-	-	-
Mt. Jackson	2,900	2,237	663	-	-	-	663	-	-	-	663
Purcellville	13,157	9,648	3,509	-	-	-	3,509	2,023	-	-	1,486
PWCSA-HL Mooney	219,280	175,881	43,399	-	-	-	43,399	30,379	-	-	13,020
Stafford Co-Aquia	73,093	64,596	8,497	-	-	-	8,497	7,647	-	-	850
Stoney Creek	2,891	2,814	77	-	-	-	77	-	-	-	77
Strasburg	5,134	7,072	(1,938)	-	-	-	(1,938)	-	(1,938)	-	-
UOSA	302,607	292,754	9,853	-	-	-	9,853	-	-	-	9,853
VA Am. Water PW Sec. 1	42,029	22,842	19,187	-	-	-	19,187	11,512	-	-	7,675
VA Am. Water PW Sec. 8	42,029	22,842	19,187	-	-	-	19,187	11,512	-	-	7,675
Waynesboro	6,822	2,985	3,837	-	-	-	3,837	414	-	-	3,423
Purchase by Eastern Shore	-	-	-	-	-	-	-	-	-	-	-

* For this Compliance Year, 0% of all Class A Credit Purchases are expected to be satisfied using Class B Credits.

** Expected Class B Credits are estimates only. Actual Class B Credits—and the resulting Class B sales price—will vary from estimates based on actual Delivered Loads in the Compliance Year.

NITROGEN FACILITY SUMMARY





Point Source Compliance Trades

2011

35 facilities	246,309 lbs of TN	1.5 % of WLA
	79,128 lbs of TP	4.5 % of WLA

2019

18 facilities	317,258 lbs of TN	2.0 % of WLA
	87,664 lbs of TP	7.5 % of WLA

100 of 119 significant facilities trade as members of the Virginia Nutrient Credit Exchange Association.

What's Next in Nutrient Trading?

- Chesapeake Bay Phase III Watershed Implementation Plan
- Phase III WIP must provide for the implementation of measures sufficient to meet the CB TMDL by the end of 2025
- Significant additional reductions necessary due to lagging progress in urban stormwater and agriculture sectors and additional reductions to address climate change.
- Draft Phase III WIP included technology-based limits (4 mg/l TN and 0.3 mg/l TP) for 96 significant municipal facilities
- Significant pushback from POTWs

Code of Virginia

§ 62.1-44.19:14. Watershed general permit for nutrients.

A. By January 1, 2006, or as soon thereafter as possible, the Board shall issue a Watershed General Virginia Pollutant Discharge Elimination System Permit, hereafter referred to as the general permit, authorizing point source discharges of total nitrogen and total phosphorus to the waters of the Chesapeake Bay and its tributaries. **Except as otherwise provided in this article, the general permit shall control in lieu of technology-based, water quality-based, and best professional judgment, interim or final effluent limitations for total nitrogen and total phosphorus in individual Virginia Pollutant Discharge Elimination System permits for facilities covered by the general permit where the effluent limitations for total nitrogen and total phosphorus in the individual permits are based upon standards, criteria, waste load allocations, policy, or guidance established to restore or protect the water quality and beneficial uses of the Chesapeake Bay or its tidal tributaries.**

Phase III WIP - Floating Wasteload Allocations

- Currently modifying Water Quality Management Planning Regulation (9VAC25-720) to include “floating” WLAs for large municipal WWTPs
- 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
- Dischargers challenge
 - Notice of intent to sue over Phase III WIP
 - Budget provision

Budget Provision – Item 377 #6c

"F.2. The Department shall work with permittees operating under the Chesapeake Bay Watershed Nutrient General Permit and interested stakeholders through a workgroup including local government representatives, the Chesapeake Bay Foundation and the James River Association to review the assumptions used in estimating the effluent nutrient concentrations and trends of wastewater facilities and to identify cost-effective options to achieve wastewater nutrient load levels with reasonable assurance consistent with the needs of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan. The review shall be completed and provided to the Chairs of the House Appropriations Committee, the Senate Finance and Appropriations Committee, the House Committee on Agriculture, Chesapeake and Natural Resources, the Senate Committee on Agriculture, Conservation, and Natural Resources and the Virginia delegation of the Chesapeake Bay Commission by December 1, 2020. The Department shall continue issuing Water Quality Improvement Fund grants for additional nutrient removal projects in accordance with the appropriations under Items 379 and C-70 of this act and §§ 10.1-1186.01 and 10.1-2117 of the Code of Virginia."

Explanation:

(This amendment directs The Department of Environmental Quality to review the assumptions used to estimate nutrient concentrations and trends of wastewater facilities and to identify cost-effective options to achieve wastewater nutrient load levels consistent with the needs of Phase III of the Watershed Implementation Plan.)

Water Quality Management Plan Regulation 9VAC25-720

- Regulatory Advisory Panel (RAP) formed and 9 meetings held to date
- Alternatives workgroup formed in response to budget provision and 5 meetings held to date – report due December 1, 2020
- Expect to present floating WLA modifications to State Water Control Board in December for approval to publish public notice
- Completion of rulemaking scheduled for late 2021
- Challenges likely

Stay Tuned!

Questions?

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