Nontidal Network Overview

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Nontidal Network

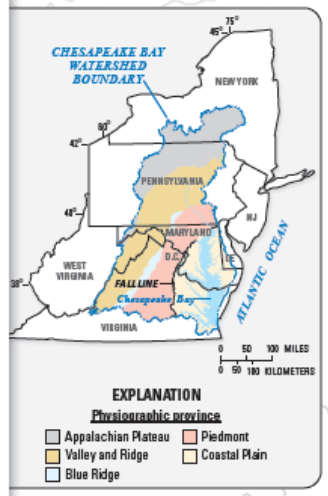
2020 status

EXPLANATION

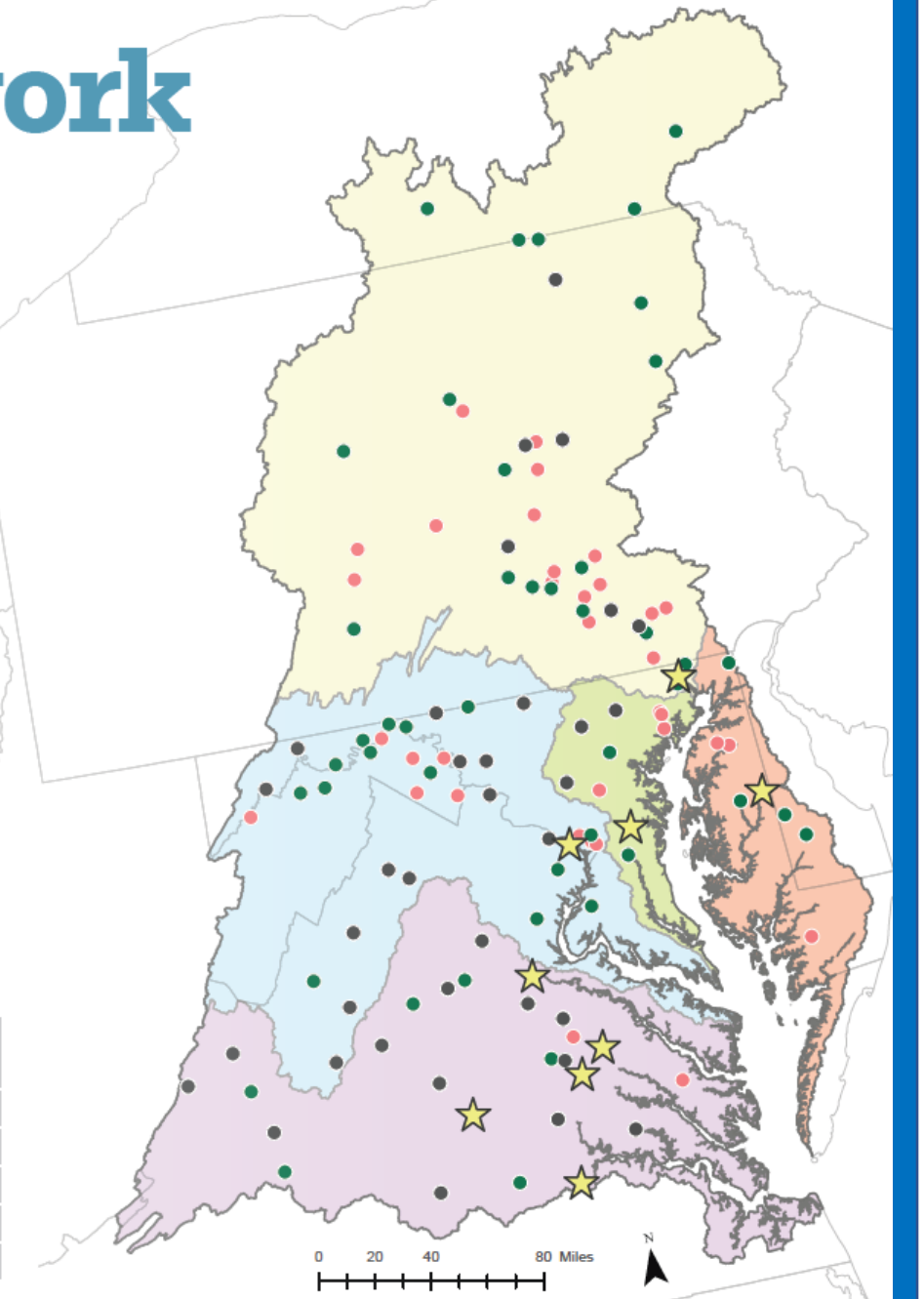
- *Load-only Site*
- *Short-term Trend Site*
- *Long-term Trend Site*
- *RIM Site*

Major Basins

- *Eastern Shore*
- *Potomac*
- *Susquehanna*
- *Virginia*
- *Western Shore*



BASIN	n Stations	TN Loads	TN Short	TP Loads	TP Short
SUSQUEHANNA	42	42	26	42	26
EASTERN SHORE	8	8	5	8	5
WESTERN SHORE	10	10	6	10	6
POTOMAC	37	37	28	34	22
VIRGINIA	26	26	24	16	11



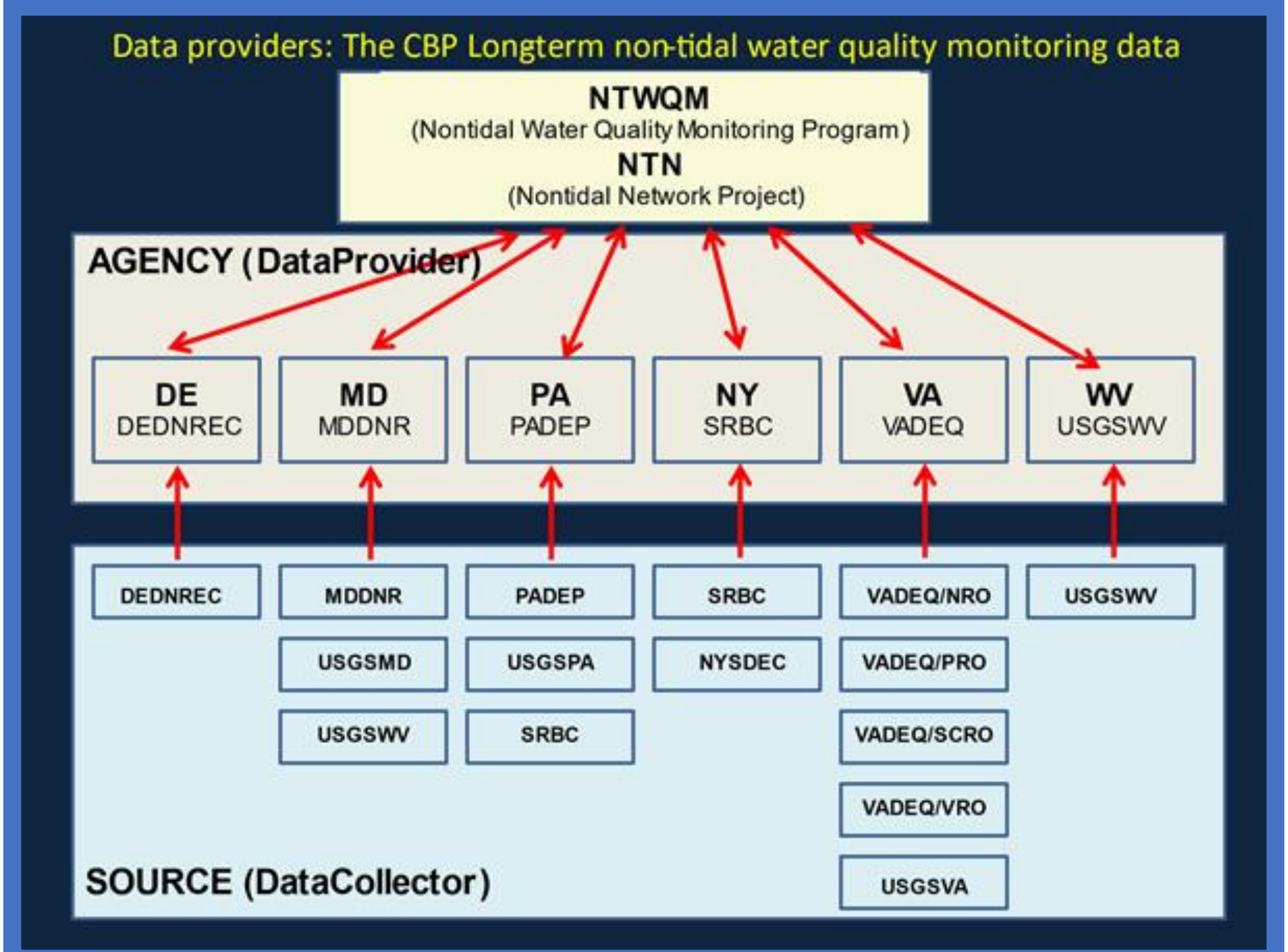
USGS
science for a changing world

Monitoring data provides the foundation to determine USGS load and trend results.

- Analyses are based on water-quality and stream-discharge measurements made across the NTN since 2004.
  - 123 Stations (and growing)
  - Includes 9 RIM Stations
  - > 2,400 water-quality samples collected annually

- Monitoring funding support is provided by a diverse set of federal and state partners.

Chesapeake Bay Program



Acronym Guide

Monitoring strengthens decision-making.

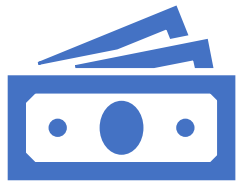
- NTN offers the most accurate representation of how CBW water-quality conditions are changing.

- Data inform CBP modeling tools.
  - Plan management activities
  - Forecast responses

- Monitoring-based insights will help explain how and why water quality is changing in the CBW.

Chesapeake Bay Program

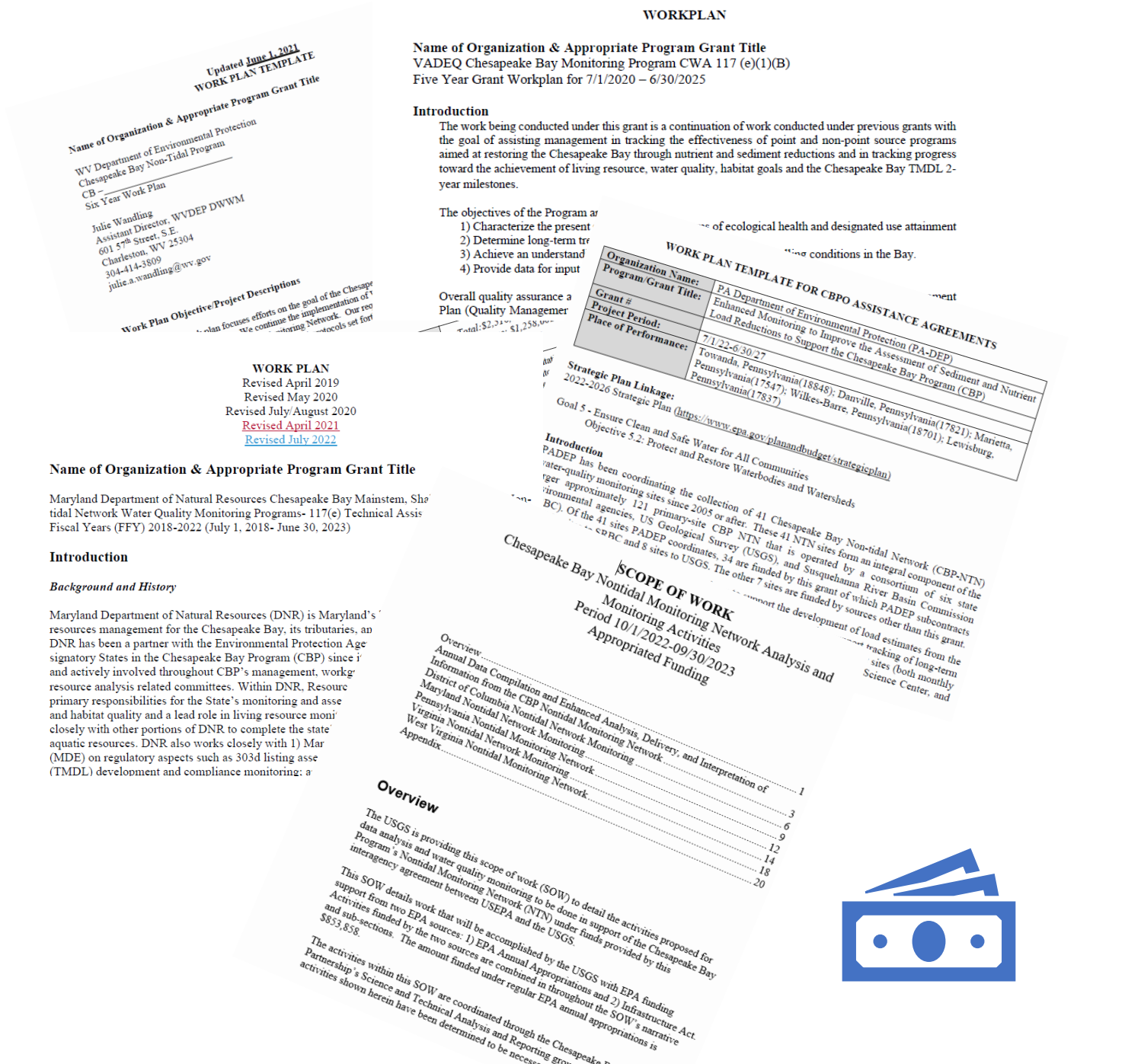
Current Funding of the Network



What are we doing? Understanding Network Funding Relationships

We are compiling information from available documents (i.e., 117e SOWs and others) to create a relational database that can be used to understand:

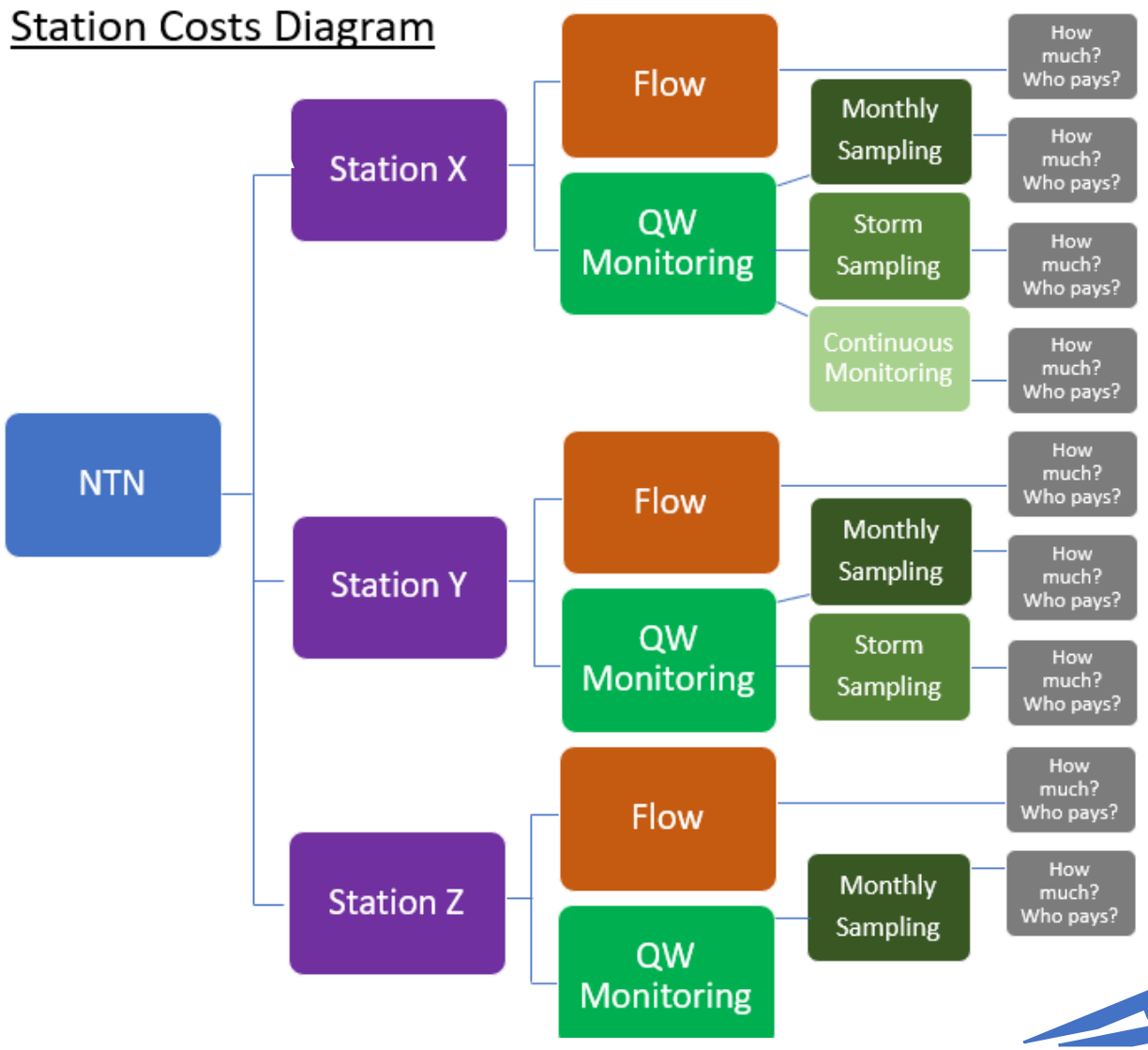
- Starting with funding
- How $s are leveraged to create and run the network
- Create easily understandable tables, charts, and maps that contain information on the site level about things like who is responsible for work components and how funding flows
- Create tables and charts that can be used to clearly communicate the complexity and cooperation required to run the network
- Aggregate information and make it available by themes like geography (watershed), funding source, political divisions, congressional district, etc.
- Can be expanded to track other non-fiscal items such as changes in analysis labs.



Why Are We Doing This?

The information we're compiling will help us to:

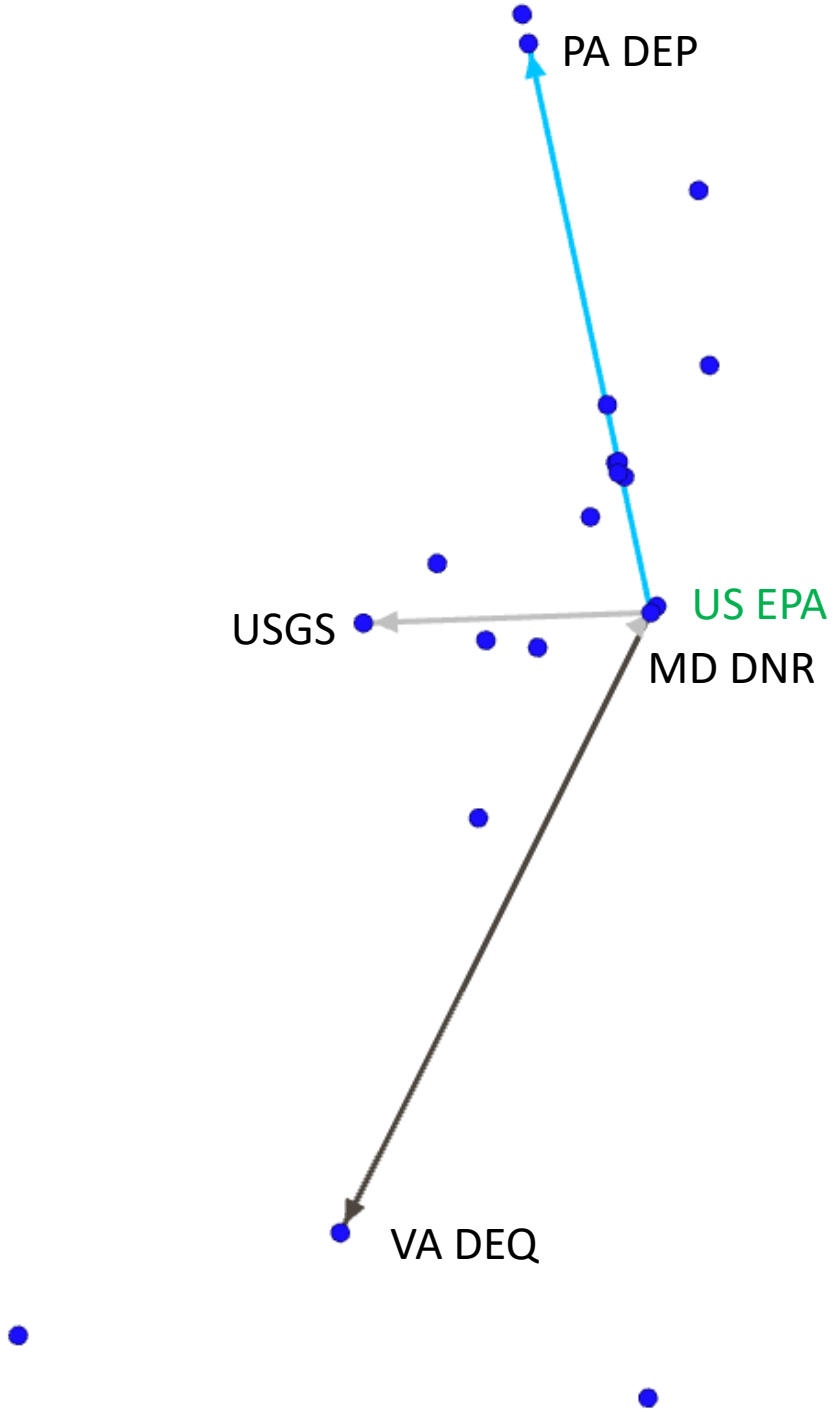
- Demonstrate how $ are leveraged
  - The NTN is really a network built on networks of funding
  - This leads to a situation where funding sources and importance of funders may be somewhat opaque
- Create communication tools that allow us to more easily and clearly talk about the importance of all partners to the sustaining the network
- Track, possibly forecast, and hopefully adjust for funding and responsibility changes that may befall the network



Simple Funding Diagram

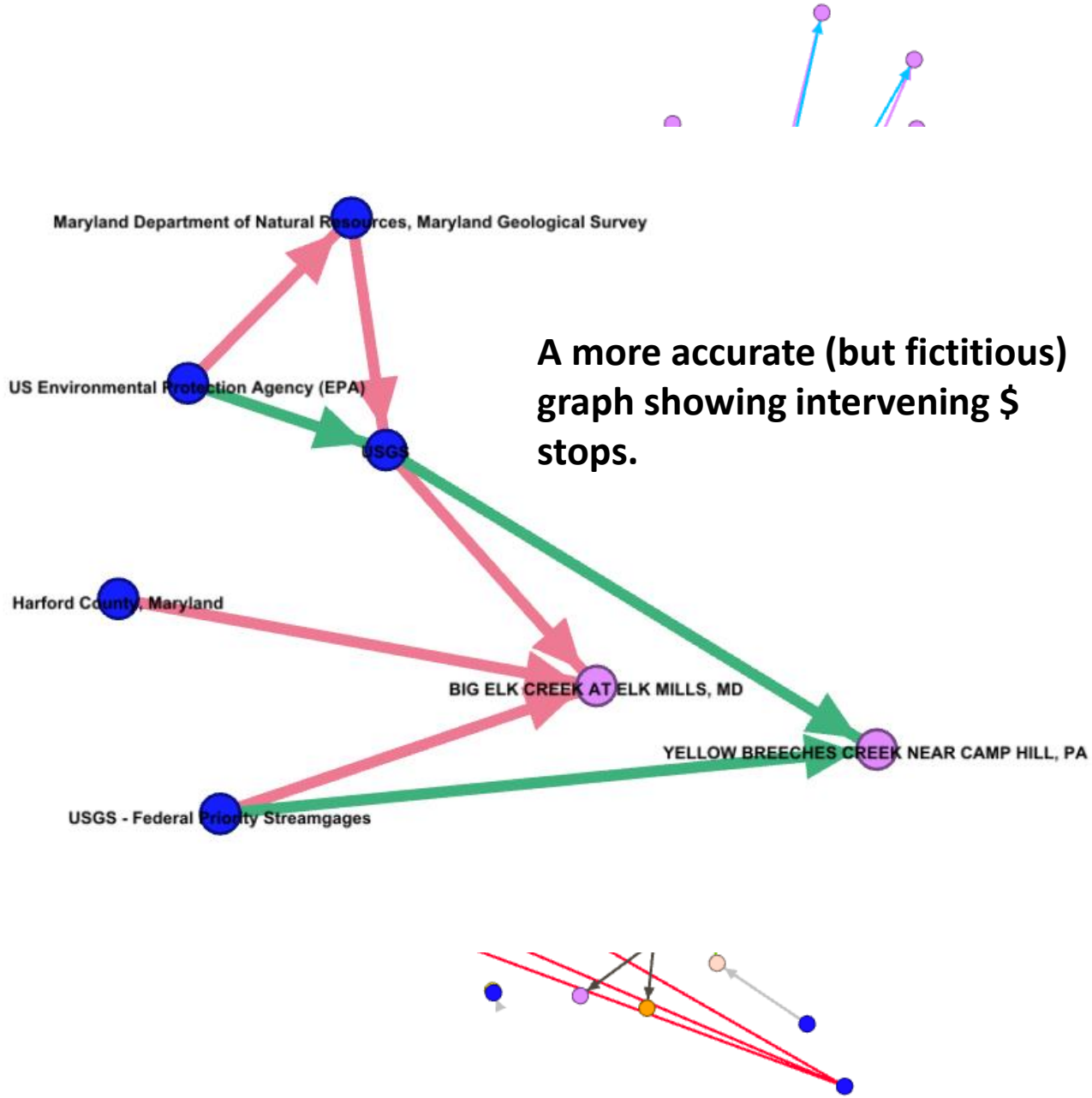
(Locations plotted using lat, longs)

- We're looking at using multiple ways to look at how funding money flows through the network to stations
  - Graphical
  - Tabular
- This simple example shows NTN monitoring funds moving from US EPA (green text) to IA grant recipients, in this case MD DNR, VA DEQ, PA DEP, and USGS
- The remaining blue dots represent other NTN funders (such as US Army Corps of Engineers - Norfolk District, Harford County MD, and the Town of Farmville, VA) that do not receive EPA funding for the NTN.



Funding Diagram

- This graph shows entities that are involved in funding the NTN
- Arrows originate at the funding sources (blue points) and end at the stations they support (purple, yellow, orange, and taupe)
- Arrows are color coded by agency:
  - Orange – US EPA
  - Red – US ACE
  - Black – VA DEQ
  - Purple – USGS
  - Light Blue – PA DEP
  - Green – MD DNR
  - Additional colors that can't be seen well are for entities like counties and towns whose funding is more localized
- In order to easily see funding connections this is a simplified view of the funds flow and doesn't show intervening $ stops (i.e. in reality USACE pays USGS for gage services).



A more accurate (but fictitious) graph showing intervening $ stops.

Prototype Reports

117e and NTN Sites - Funding Report Example

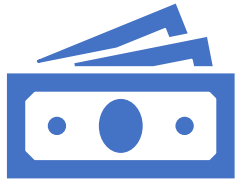
Funding Lines are From USGS SiFTA and Do Not Include Partner Information

STAID	Station Name	Customer Name	USGS CMF$	USGS Approp$	Cooperator$	Data Collected
1570500	SUSQUEHANNA RIVER AT HARRISBURG, PA	Load	NTN			
QW Sampling: , Strm Flow: USGS, Cont. Montr: USGS						
		Pennsylvania Department of Environmental Protection, Bureau of Clean Water	$769	$0	$3,845	Water Quality, Continuous
		Constellation Energy Generation, LLC	$0	$0	$7,485	Full Range Streamflow Station
		Pennsylvania Department of Environmental Protection, Bureau of Safe Drinking Water	$2,100	$0	$4,725	Full Range Streamflow Station
		USGS - Federal Priority Streamgages	$0	$4,770	$0	Full Range Streamflow Station
		Station Subtotals:	*$2,869*	*$4,770*	*$16,055*	*Station Total:* *$23,694*
1648010	ROCK CREEK AT JOYCE ROAD, WASHINGTON, DC	Load	NTN			
QW Sampling: USGS, Strm Flow: USGS, Cont. Montr: USGS						
		Montgomery County	$0	$0	$17,060	Full Range Streamflow Station
		US Environmental Protection Agency (EPA)	$0	$0	$14,657	Periodic Sample Collection and Pro
		Montgomery County	$0	$0	$25,000	Water Quality, Continuous
		Department of Energy and Environment	$0	$0	$40,000	Periodic Sample Collection and Pro
		Montgomery County	$32,974	$0	$77,123	Periodic Sample Collection and Pro
		Station Subtotals:	*$32,974*	*$0*	*$173,840*	*Station Total:* *$206,814*

	USGS CMF$	USGS Approp$	Reimburs$
Grand Totals:	***$319,858***	***$641,340***	***$2,061,132***

NTN Funding By Participant, Including Leveraged $s

Participant Name	Description	Sum of Cooperator $s	Sum of USGS Match $s	Sum of USGS Approp $s
Baltimore County, Maryland				
	Full Range Streamflow Station	$11,149.00	$5,911.00	$0.00
Brookfield Renewable Energy Group - Safe Harbor				
	Full Range Streamflow Station	$8,395.00	$0.00	$0.00
Charles County				
	Water Quality, Measurement	$52,840.00	$26,240.00	$0.00
City of Baltimore				
	Full Range Streamflow Station	$17,060.00	$0.00	$0.00
City of Newport News, VA				
	Add Temp,Cond to gage	$5,810.00	$0.00	$0.00
	Full Range Streamflow Station	$12,100.00	$4,100.00	$0.00
Constellation Energy Generation, LLC				
	Full Range Streamflow Station	$24,545.00	$0.00	$0.00
Department of Energy and Environment				
	Full Range Streamflow Station	$11,140.00	$5,920.00	$0.00
	Periodic Sample Collection and Processing	$124,400.00	$0.00	$0.00
Harford County, Maryland				
	Full Range Streamflow Station	$49,056.00	$2,124.00	$0.00
	Periodic Sample Collection and Processing	$160,055.45	$11,829.55	$0.00
	Water-Quality Monitor, Continuous (Two Bridges)	$46,000.00	$0.00	$0.00



An Example of Network Cooperative Funding Complexity

1673800	PO RIVER NEAR SPOTSYLVANIA, VA	Load and trend	NTN				
QW Sampling: VA DEQ, Strm Flow: USGS, Cont. Montr:							
	Virginia Department of Environmental Quality	$0	$0	$340	Discharge, Continuous, Furnished		
	Station Subtotals:	*$0*	*$0*	*$340*	*Station Total:*	*$340*	

2011500	BACK CREEK NEAR MOUNTAIN GROVE, VA	Load and trend	NTN				
QW Sampling: VA DEQ, Strm Flow: USGS, Cont. Montr: USGS							
	US Army Corps of Engineers - Norfolk District - Data Gaging Program	$0	$0	$3,010	Water Quality, Continuous		
	US Army Corps of Engineers - Norfolk District - Data Gaging Program	$0	$0	$16,200	Full Range Streamflow Station		
	Station Subtotals:	*$0*	*$0*	*$19,210*	*Station Total:*	*$19,210*	

2) What will be accomplished during the current grant cycle?

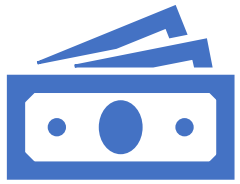
Table 1) RIM Sites

USGS STATION ID	DESCRIPTION	CBP Type
01668000	Rappahannock River at Fredericksburg, VA	Primary
01674500	Mattaponi River near Beulahville, VA	Primary
01673000	Pamunkey River near Hanover, VA	Primary
02037618	James River at Boulevard Bridge at Richmond, VA	Primary
02041650	Appomattox River at Matoaca, VA	Primary
02035000	James River near Cartersville, VA	Primary

Virginia Department of Environmental Quality (DEQ) maintains a collection of 35 NTN water-quality and streamflow monitoring sites throughout the state; of those 34 sites, 24 are operated as primary sites (both monthly samples, and targeted storm samples), and 11 are operated as secondary sites (monthly samples only). The network is jointly operated by DEQ with the USGS Virginia Water Science Center, and is an integral component of the larger CBP NTN operated by a large consortium of federal, state, and local partners. At the Primary sites each year, monthly samples are collected, as well as at least 8 storm samples. At the Secondary sites, only monthly samples are collected. Streamflow is collected continuously at all sites. In general, DEQ collects water-quality samples at the Secondary sites, and the USGS Virginia Water Science Center collects water-quality

Table 3) Remaining NTN Sites Sampled by DEQ (Secondary sites)

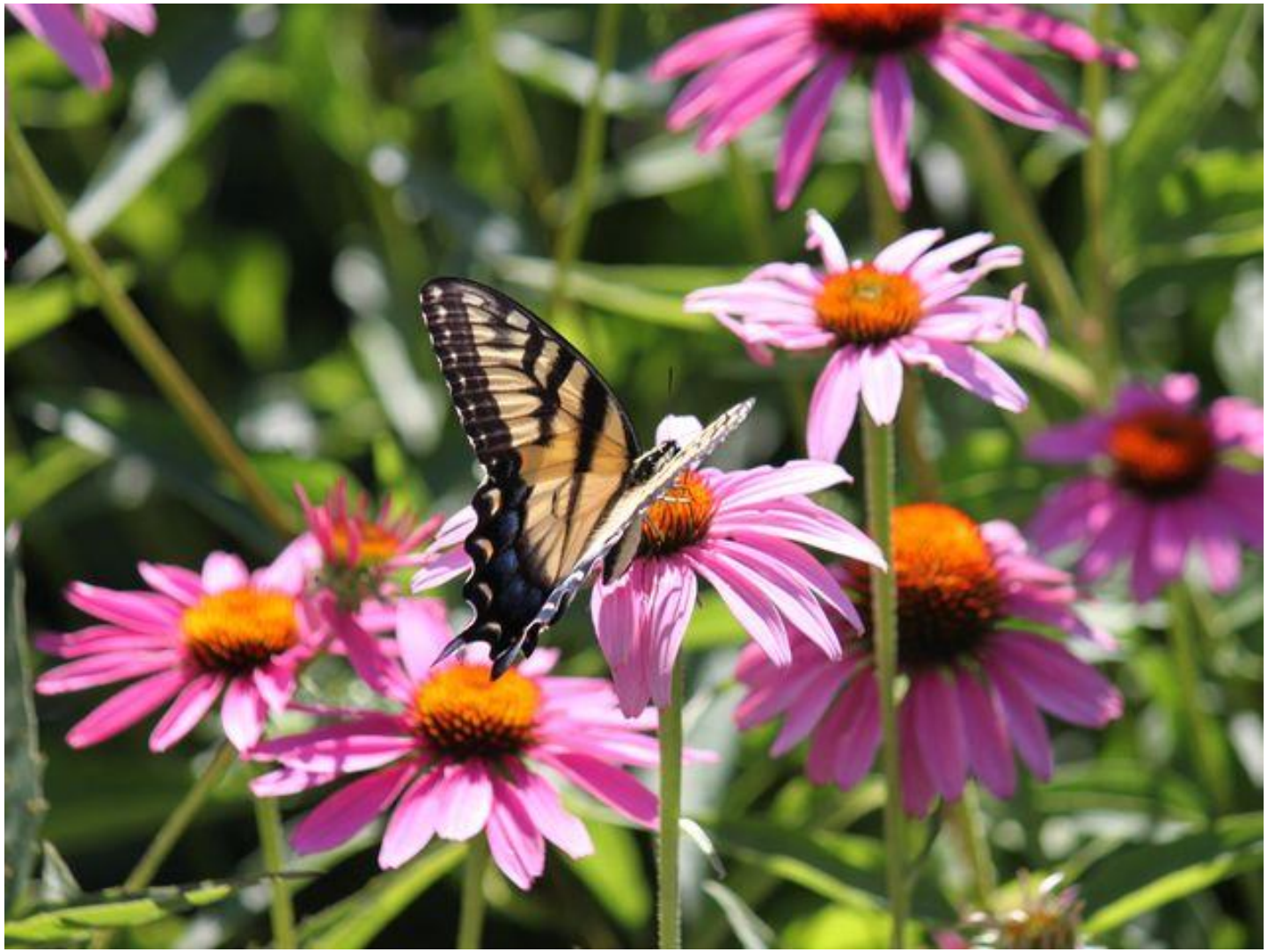
USGS STATION ID	DESCRIPTION	CBP Type
01626000	South River near Waynesboro, VA	Secondary
02011500	Back Cr. near Mountain Grove, VA	Secondary
02041000	Deep Cr. near Mannboro, VA	Secondary
02031000	Mechums River near White Hall, VA	Secondary
02024000	Maury River Near Buena Vista, VA	Secondary
01665500	Rapidan R. Rt. 29, VA	Secondary
01666500	Robinson River near Locust Dale, VA	Secondary
01671100	Little River near Doswell, VA	Secondary
01673800	Po River near Spotsylvania, VA	Secondary
02015700	Bullpasture River at Williamsville, VA	Secondary
02020500	Calfpasture River above Mill Cr. At Goshen, VA	Secondary



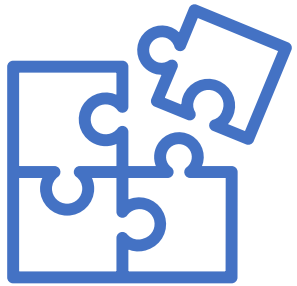
What's Missing?

Information not contained in the 117e SOW and award documents (examples, there are more gaps than listed here):

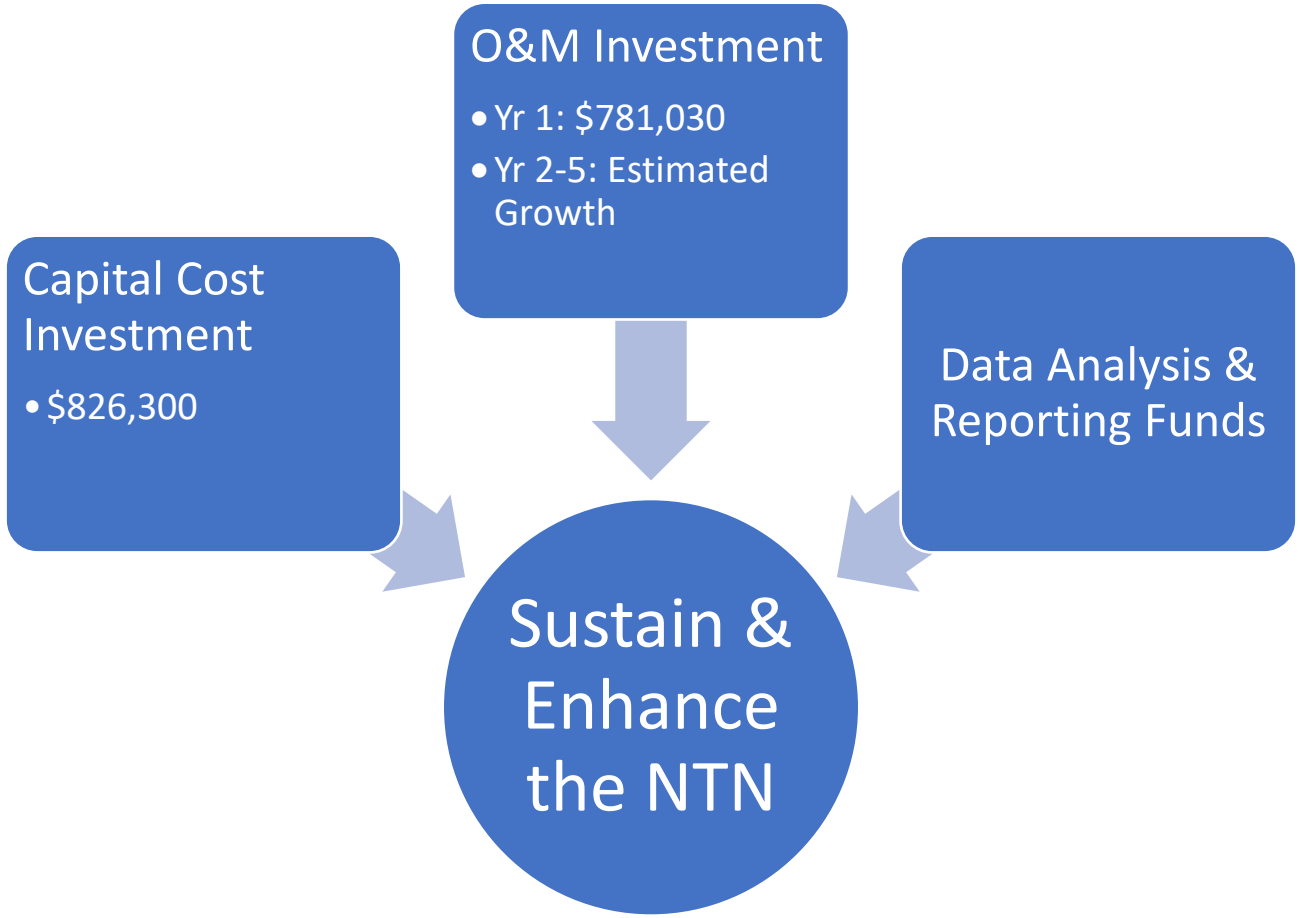
- States match contributions to the 117e agreements
- We don't know on a per station basis how much match is provided by the states
  - Maybe we'll never be able to tease this out. Might be possible to produce an estimate?
- 117e agreements don't track sub-allocation amounts. For instance, how much does PA DEP pay SRBC to maintain stations. Does SRBC contribute match?
- Do unrealized match opportunities exist?
- We'd like to work with the States to obtain as much of this type of missing information as possible



Monitoring Recommendations



Monitoring Report Recommendations



New Monitoring Investments Provide Value-Add Information

CBP NETWORK	Project	CATEGORY	Award Entity	FUNDING				
				Year 1	*Year 2*	*Year 3*	*Year 4*	*Year 5*
NTN	6 Unique Projects	Operation & Maintenance	USGS, PA DEP	$503,460	$702,360	$485,191	$502,724	$520,990
Funder				EPA, PA DEP	EPA, PA DEP	EPA	EPA	EPA
NTN	7 RIM Con-Mon sensor packages completes RIM	Infrastructure	USGS IA- MD	$325,000				
Funder				EPA				
NTN	5 new Small Watershed ConMon locations. 6 sensor instrument	Infrastructure	USGS IA	$375,000				
Funder				EPA				
NTN	3 Lower Susquehanna Reservoir input ConMons *PA USGS cost basis*	Infrastructure	NA	$126,300				
Funder				PA DEP				

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				Year 1	*Year 2*	*Year 3*	*Year 4*	*Year 5*
NTN	6 Unique Projects	Operation & Maintenance	USGS, PA DEP	Maintain Current Network O&M Funds				
Funder								
NTN	7 RIM Con-Mon sensor packages completes RIM	Infrastructure	USGS IA- MD	$325,000				
Funder				EPA				
NTN	5 new Small Watershed ConMon locations. 6 sensor instrument	Infrastructure	USGS IA	$375,000				
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Funder				PA DEP				

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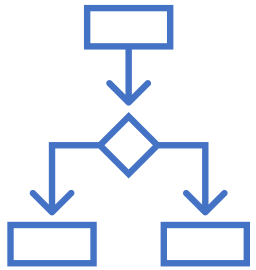
				Year 1	*Year 2*	*Year 3*	*Year 4*	*Year 5*
NTN	6 Unique Projects	Operation & Maintenance	USGS, PA DEP	Maintain Current Network O&M Funds				
Funder								
NTN	7 RIM Con-Mon sensor packages completes RIM	Infrastructure	USGS IA- MD	Enhance Datasets for Load & Trends Infrastructure Funds				
Funder								
NTN	5 new Small Watershed ConMon locations. 6 sensor instrument	Infrastructure	USGS IA					
Funder								
NTN	3 Lower Susquehanna Reservoir input ConMons *PA USGS cost basis*	Infrastructure	NA					
Funder								

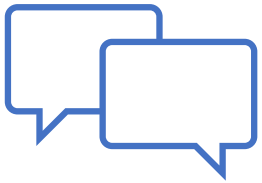
Other Outcomes



This Level of Monitoring Network Analysis...

- Builds transparent information for stakeholders
- Provides tools to sustain and grow support for desired outcomes
- Allows for leveraging and integrating resources to their full potential
- Communicates the value of collaboration
- Supports data-driven decision making
- Maintains and enhances (and sustains) the networks

Discussion



Discussion Questions

- Are any of the technical aspects of the recommendations unclear?
- Is there something else about the current funding you'd like to better understand?
- Which recommendations is your agency willing to partner on supporting? (Jamboard)
- Which CBP outcomes does your agency have interest in better coordinating monitoring or addressing other needs? (Jamboard)
- How can we sustain the networks when the infrastructure money goes away in 2025?
- Short discussion on ideas for next steps

JAMBOARD LINK

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- We don't know on a per station basis how much match is provided by the states
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