DELAWARE CENTER FOR THE
INLAND BAYS
Research. Educate. Restore.

# 2021 State of the Bays

# Review of Draft Nutrient Pollution Indicators

STAC Meeting
04/13/2022

# Agenda

- Overview of Nutrient Pollution indicator status and meeting purpose
- Nutrient Pollution indicators
  - Analytical methods
  - Results
  - Messaging
  - Status Bar and Trend
- Feedback

# Point Sources

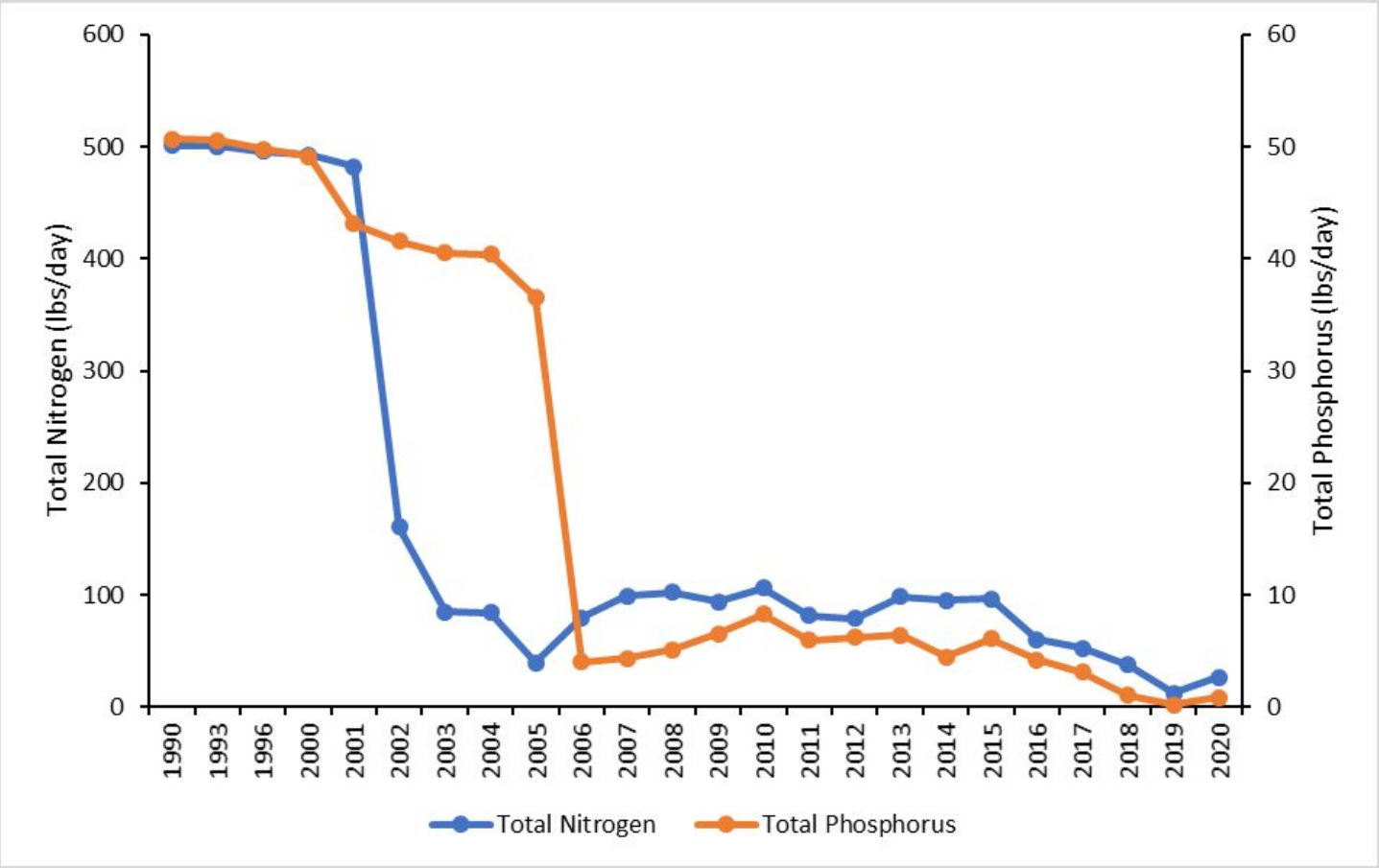
- Data obtained from Surface Water Discharges Section of DNREC
- Monthly discharges averaged separately for each source for each year
- Average discharges of each source then summed for each year
- Lewes discharge is only 2.5% of total discharge
- Rehoboth went offline in May 2018, no discharges from that month were included

# Point Sources

- In 2020 only a total of 26 lbs/day of Total Nitrogen and 0.85 lbs/day of Total Phosphorus were delivered to the bays

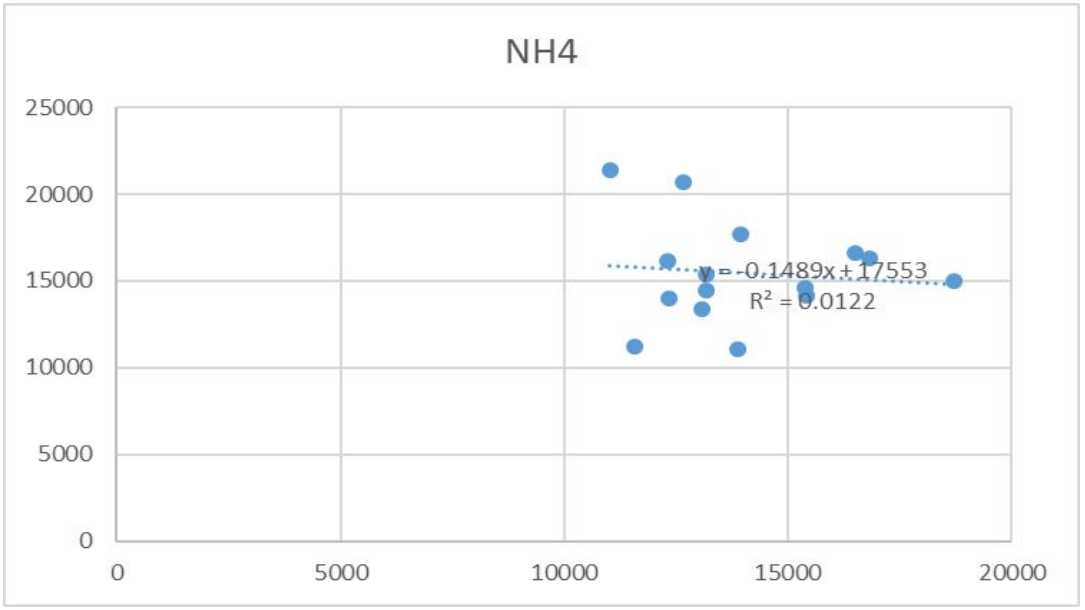
- Lewes, Allen Harim remain, but mitigated

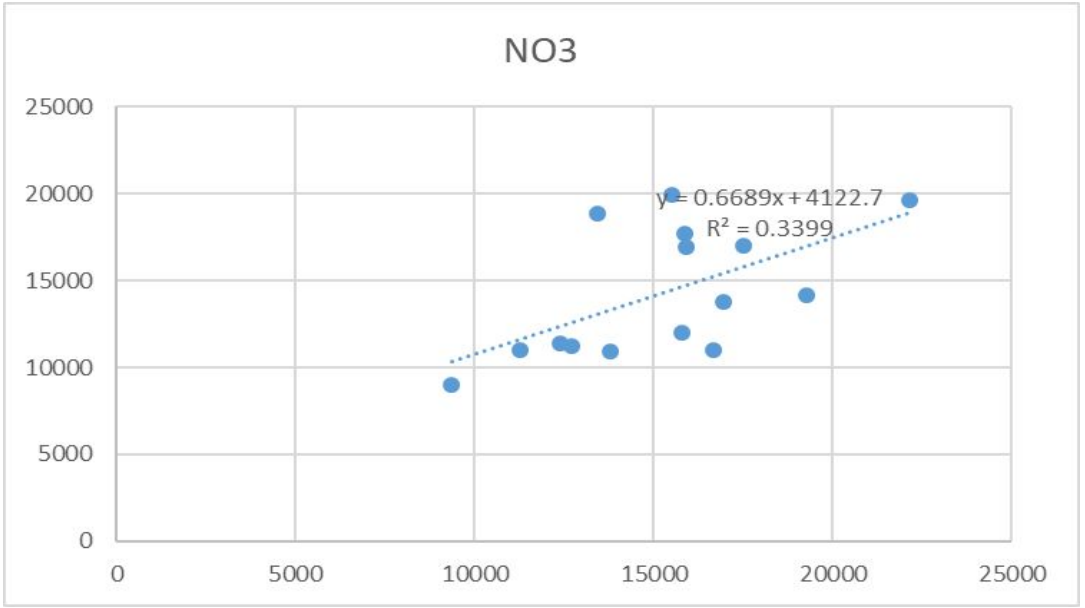
| Status | Trend |
|---|---|
| Very Good/Good | Improving |



# Atmospheric Deposition

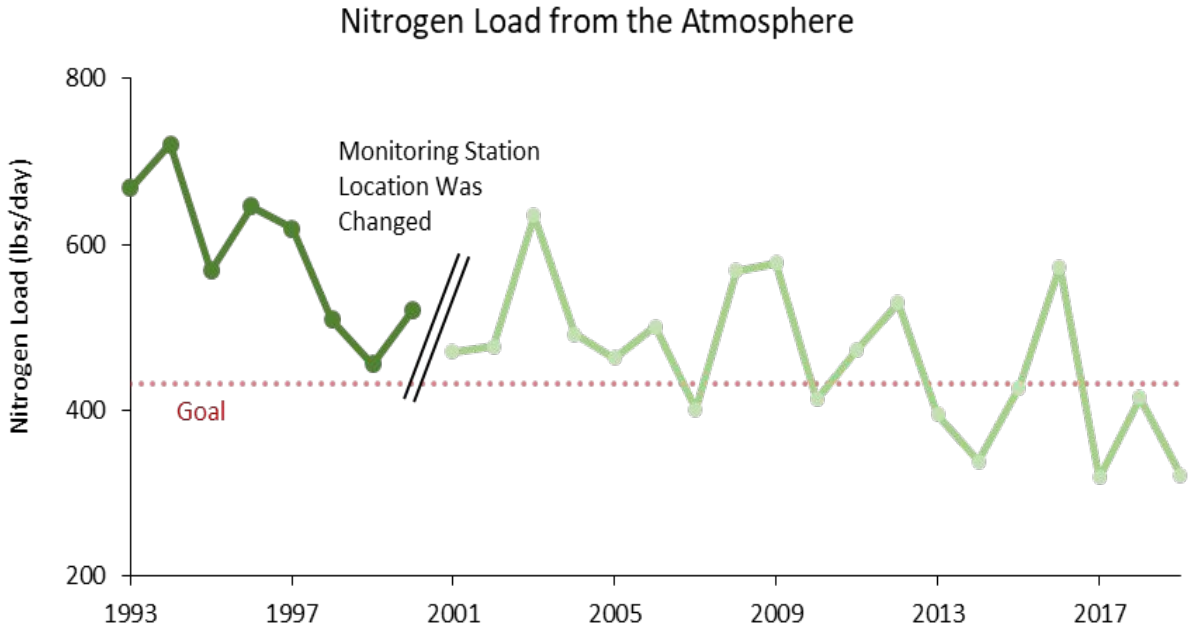
- Lewes station went offline in 2017. Nitrogen deposition taken from Assateague Island for current reporting period
- Phosphorus not taken at Assateague, only available for 2016 from Lewes. Only year of new data in current report
- Andrew noted that ammonium correlation between 2001-2015 for Lewes and Assateague was poor, but Nitrate was pretty good.



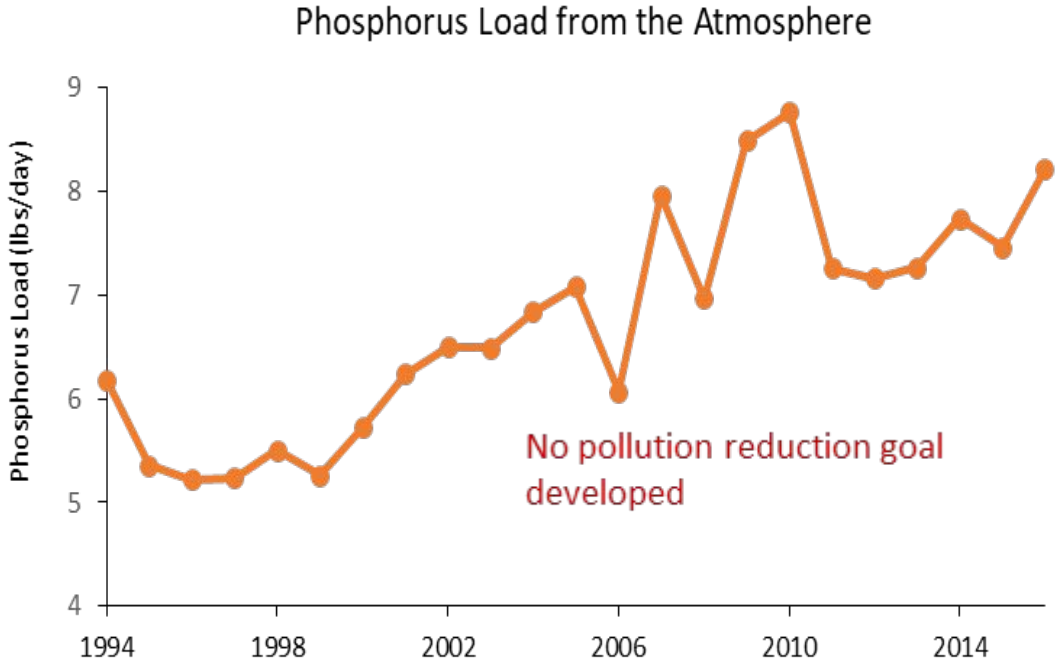



# Atmospheric Deposition

- Atmospheric Nitrogen continued to decrease and was below goal for the last three years
- Phosphorus only had one more data point, which continued to increase




| Status | Trend |
|---|---|
| Good | no trend |




| Status | Trend |
|---|---|
| ? | degrading |

# Nonpoint Source Loads

- Continued lack of progress on Nitrogen
- With respect to P, Indian River and Little Assawoman have exceeded the TMDL in almost every year since 2013, while Rehoboth Bay is typically at or below the TMDL.
- TP in Little Assawoman Bay is also significantly increasing over the time series (tau = 0.562, p = 0.004)

# Nonpoint Source Loads

- Issues with lack of granularity for non point source data

- LAB data based on one water quality monitoring station (Beaverdam Ditch) and one USGS stream gauge station and are then extrapolated to the entire bay according to the drainage area of each stream draining to the bay. Thus, the entire load to the bay is dictated by the changes in nutrient concentrations from one stream.

- In IRB and RB there are a few more nutrient stations, but still only one flow gauge

- Flow is MUCH more impactful to trends

# Nonpoint Source Loads

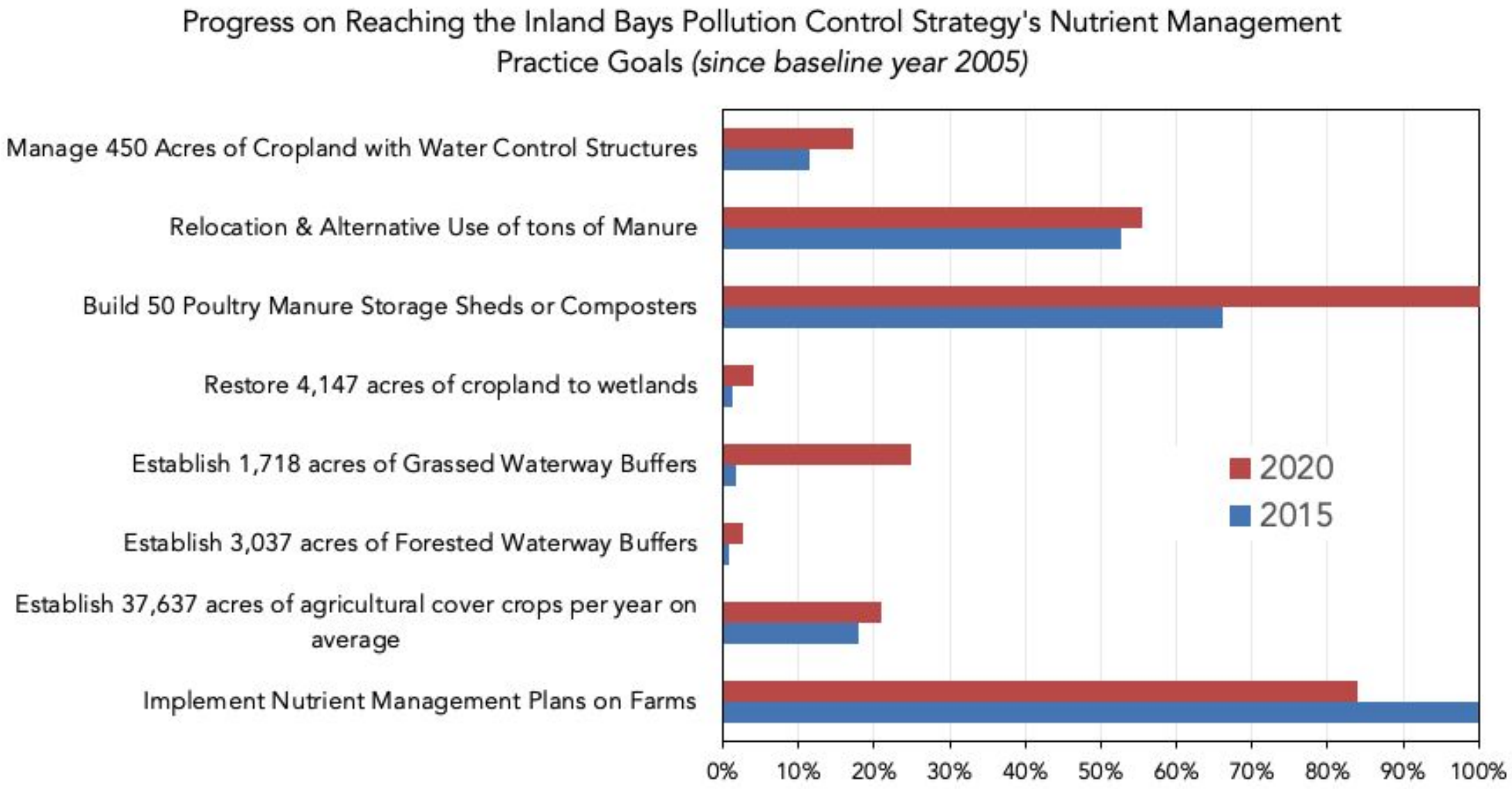
## Nitrogen

| Status | Trend |
|---|---|
| Very Poor | no trend |

## Phosphorus

| Status | Trend |
|---|---|
| Good/Fair | degrading? |

# Agricultural Nutrient Management Practices



# Agricultural Nutrient Management Practices

**STATUS - FAIR**

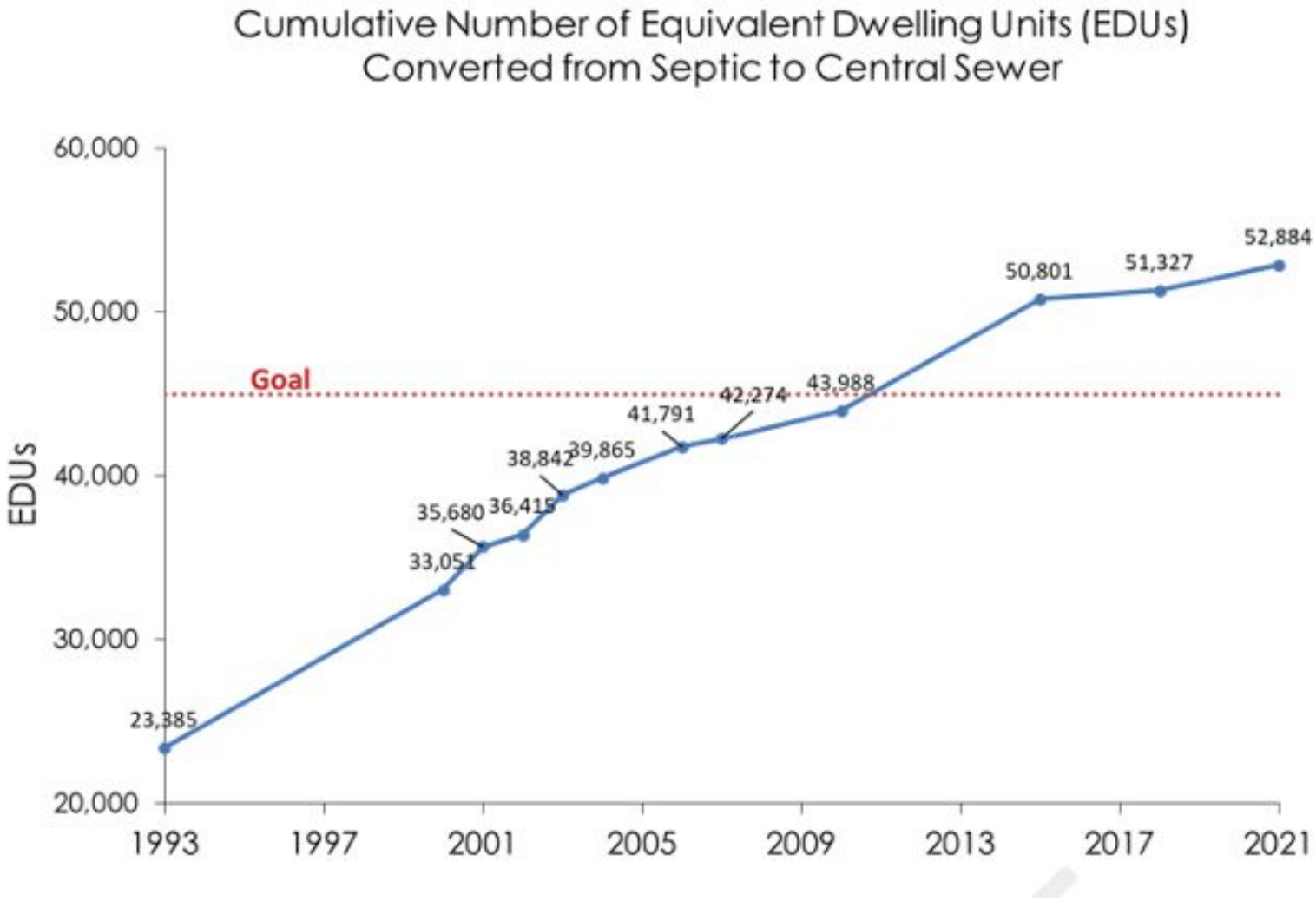
- Have met goals on NM plans, poultry manure sheds
- Decent progress on manure relocation
- Progress limited on other goals

**TREND - IMPROVING**

- 2020 progress generally exceeds that of 2016

# Septic System Conversion to Sewer

- Central sewer provides higher level of treatment than onsite systems
- Since 1970s, Sussex Co. has facilitated conversion with new sewer districts
- PCS goal:
  43,988 EDU's converted
- Goal exceeded by >20%



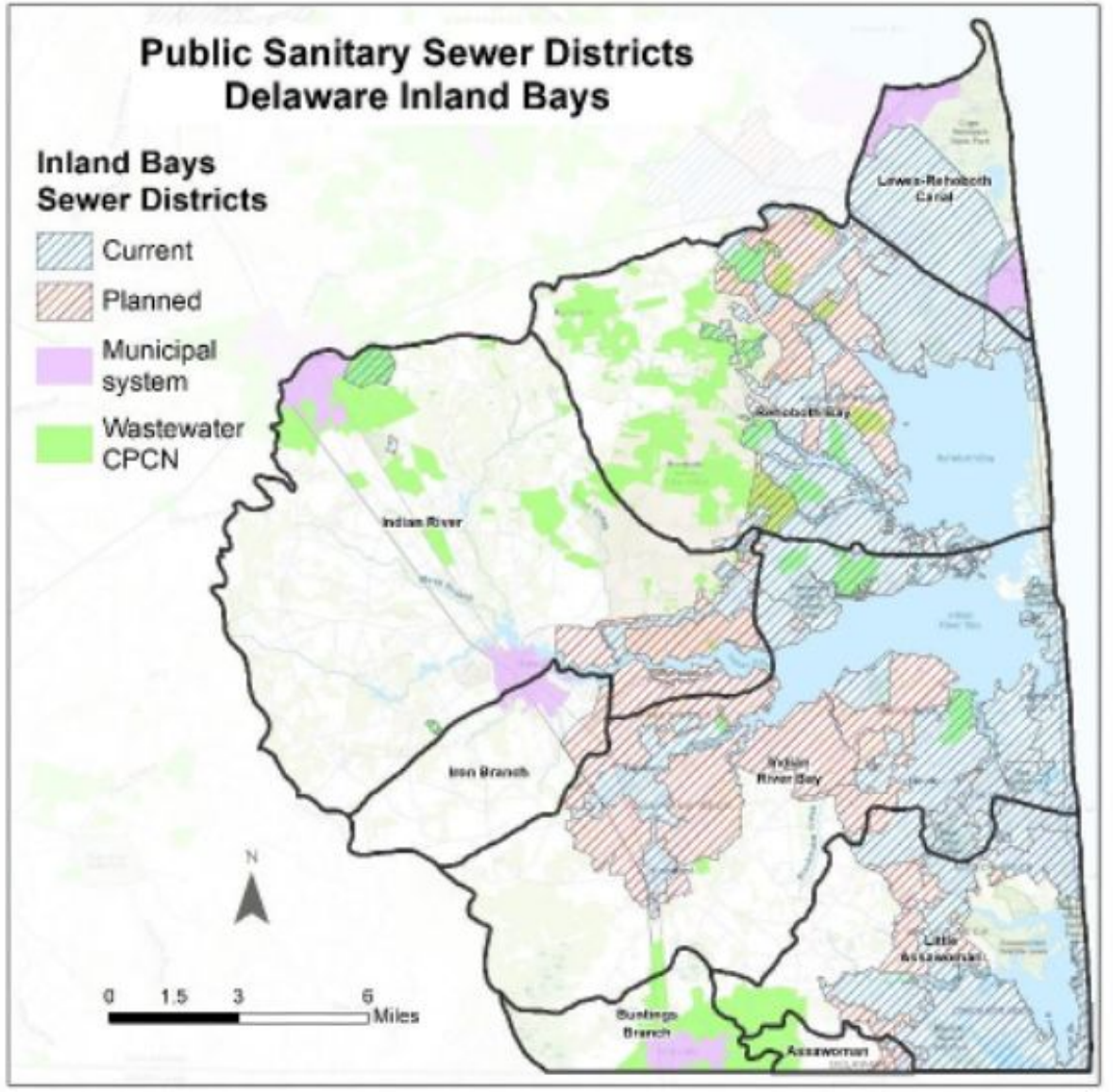
# Septic System Conversion to Sewer

**STATUS - VERY GOOD**

- PCS goal met ten years ago
- 56% of parcels in the watershed now served by Sussex County

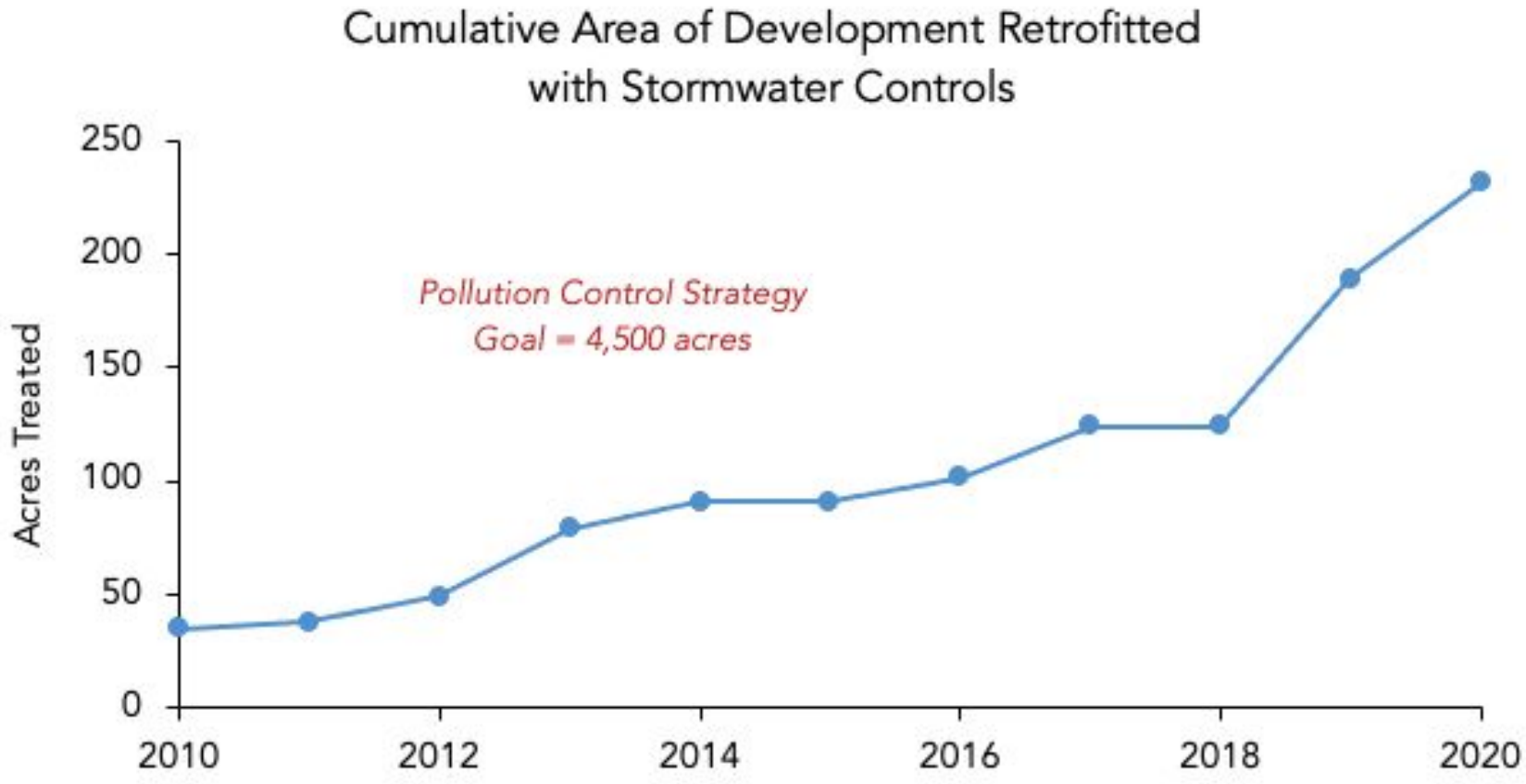
**TREND - IMPROVING**

- County continues to implement new sewer districts and expand capacity



# Stormwater Retrofits

- Assesses progress in achieving goal of the PCS for retrofit of pre-1990 development (4,500 acres)



# Stormwater Retrofits

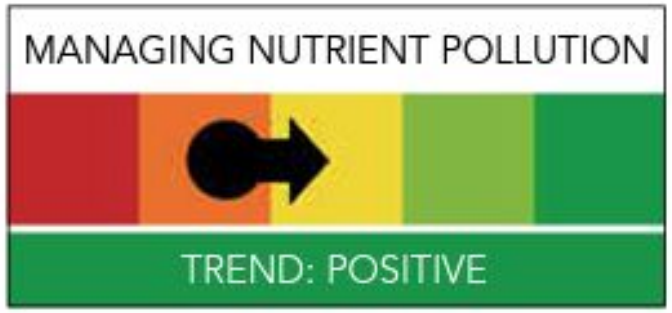
**STATUS - POOR**

- 231.5 acres, 0.05% of goal (which may be unrealistic)
- Little incentive or funding for retrofits, no MS4

**TREND - IMPROVING**

- Nearly all of the BMP implementation was managed by the CIB
- Flooding and resiliency concerns may drive future retrofits

# Overall Status and Trend - Nutrient Pollution Management, 2016




The remaining two point sources of nutrients should soon be removed from the Bays. Nonpoint source pollution remains above healthy limits. Septic conversions to central sewer have exceeded goals set in the Pollution Control Strategy, but other management progress has stagnated since 2011.

# Overall Status and Trend - Nutrient Pollution Management, 2021

| Indicator | Status | Long-Term Trend |
|---|---|---|
| Point Source Loads | Very Good/Good | Improving |
| Atmospheric Deposition Nitrogen | Good | Improving |
| Atmospheric Deposition Phosphorus | ? | Degrading |
| Nonpoint Source Loads Nitrogen | Very Poor | No Trend |
| Nonpoint Source Loads Phosphorus | Fair/Good | Degrading |
| Ag Practices | Fair | Improving |
| Septic Conversion | Very Good | Improving |
| Stormwater Retrofits | Poor | Improving |