

State of the Bays 2021 - Indicators

WATERSHED CONDITION			
Indicator	Responsible Party	Milestone	Notes
Human Population Growth	WRA - Andrew Homsey	March 2021	
Land Use Change	WRA - Andrew Homsey & Intern (Bridgette Kegelman)	January 2021	Complete - report in prep
Impervious Surface Coverage	WRA - Andrew Homsey & Intern (Bridgette Kegelman)	January 2021	Complete - report in prep
Water Quality Buffer Width	WRA - Andrew Homsey & Intern (Bridgette Kegelman)	March 2021	In progress
Salt Marsh Acreage & Condition	Andrew Homsey, Andrew McGowan, & Sea Grant Intern (Katherine Warner)	January 2021	Nearly complete. Possible call-out box to be prepared by CIB from coastal marsh migration model work.
Natural Habitat Protection & Restoration	CIB - Michelle Schmidt & Marianne Walch	March 2021	In progress - most or all will data come from EPA NEPORT database.
Indian River Inlet Flushing	Fengyen Shi, UD	May 2021	In progress. Existing nearshore community model for the Inland Bays, NearCoM, will be re-validated against the recent tidal data measured at three USGS stations in 2020. Tidal prism will be calculated using the incoming/outgoing tidal fluxes through the inlet. Model uses recent bay bathymetry and inlet geometry.

MANAGING NUTRIENT POLLUTION			
Indicator	Responsible Party	Milestone	Notes
Loads from Point Sources	Data from DNREC. May need to request reports from individual sources	January 2021	Need to be able to show change with elimination of Rehoboth WWTP outfall.
Loads from Nonpoint Sources	Data from Xia Xie, DNREC	January 2021	Data provided through 2019; 2020 data status: Monitoring data usually not available until 2-3 months after collection. This year is a little bit late. Once data available, doesn't take much time. Xia will keep an eye on 2020's IB monitoring data, and if the data are available before February, will process it immediately and provide to CIB.
Atmospheric Loads	Andrew Wozniak, UD	May 2021	In progress; Lewes station discontinued; suggests using Assateague station, but does not measure phosphorus. Question for STAC - does this need to be added to the monitoring plan?
Agricultural Nutrient Practices	CIB - Michelle Schmidt	March 2021	Will need to coordinate with DNREC DWS and DDA.
Septic Conversion to Central Sewer	CIB, Andrew Homsey, WRA	April 2021	Data from Sussex County
Stormwater Retrofits (Acres)	CIB - Michelle Schmidt	March 2021	Will need to coordinate with DNREC DWS on Mudtracker data.
Groundwater Discharges (Possible New Indicator)	Scott Andres, data from DNREC, permit reports	May 2021	Need to follow up with Scott.

WATER QUALITY			
Indicator	Responsible Party	Milestone	Notes
Algae Concentration (Chl a)	IAN, Data from DNREC and CMP.	May 2021	Subaward setup in progress
DIN and DIP	IAN, Data from DNREC and CMP.	May 2021	Subaward setup in progress
Water Clarity (Secchi Depth)	IAN, Data from DNREC and CMP.	May 2021	Subaward setup in progress
WQ Index	IAN, Data from DNREC and CMP.	May 2021	Subaward setup in progress
Dissolved Oxygen Concentration	IAN, Data from DNREC and CMP.	May 2021	Subaward setup in progress
Seaweed Abundance	CIB - Zach Garmoe	February 2021	Data collection complete. Report in progress
Potential New Groundwater Indicator?	STAC - Scott Andres, Judy Denver	May 2021	Need to follow up won this
Continuous WQ Data from upper Indian River	CIB - Andrew McGowan and Marianne Walch	April 2021	Call out box to discuss the importance of high-frequency data. Can demonstrate a connection between an extended low DO event and a corresponding fish kill that was reported.

LIVING RESOURCES			
Indicator	Responsible Party	Milestone	Notes
Bay Grasses	CIB - Andrew McGowan	June 2021	SAV survey of Indian River Bay areas begun in 2020. RB will not be complete, but we can at least map known beds in RB. CIB will map known beds in tributaries using volunteers.
Eagle & Osprey Nesting	DNREC DFW (Jordan Terrell); CIB for update of osprey nesting	May 2021	Eagle data acquired (2018 last survey). CIB to do a volunteer survey of osprey nesting in spring.
Hard Clam Landings	DNREC Fisheries	April 2021	Request from DFW in spring.
Winter Waterfowl Counts	Data from DNREC DFW, available on Open Data Portal	March 2021	Data through January 2020 downloaded. Unsure when 2021 data available-need to check with Justyn Foth.
Blue Crab Abundance	DNREC Fisheries (trawl survey data)	April 2021	Request from DFW in spring
Fish Abundance	DNREC Fisheries (trawl survey)	April 2021	Request from DFW in spring
Fish Kills	DNREC Fisheries, Bruce Cole	February 2021	Request data this winter
Recreational Fishing Stats	DNREC Fisheries/NOAA	March 2021	Request from DFW in spring
<i>Shellfish Farming Indicator (Potential new indicator - acres farmed, #oysters/clams produced)</i>	DNREC DFW - annual report	May 2021	Data for 2019 acquired. Awaiting 2020 data. Can we attach a clearance rate to this using PDE data?
<i>Potential New - Forage Fish Index</i>	CIB - Andrew McGowan	March 2021	LT trends developed for paper, just need to present in a public-friendly way.

<p><i>HSC Survey Trends or Tagging Data - New Indicator or Box?</i></p>	<p>CIB - Andrew McGowan/Zach Garmoe</p>	<p>March 2021</p>	<p>Tagging data box. Possible presentation of sex ratio status, but can't do trend yet. Number of spawning crabs, but no trends.</p>
<p>HUMAN HEALTH RISKS</p>			
<p>Indicator</p>	<p>Responsible Party</p>	<p>Milestone</p>	<p>Notes</p>
<p>Enterococcus Bacteria</p>	<p>CIB - Andrew McGowan; CMP - Ed Whereat; DNREC DWS - Mike Bott</p>	<p>March 2021</p>	<p>Meeting to discuss held in December. Apply secondary contact standard as well as primary contact standard?</p>
<p>Approved Shellfish Growing Waters</p>	<p>DNREC DFW - Mike Bott</p>	<p>March 2021</p>	<p>Transition to fecal coliform standard. Outfall removal from canal may change approved area in RB slightly, but not much.</p>
<p>Fish Consumption Advisories</p>	<p>DNREC DFW</p>	<p>January 2021</p>	<p>Most recent update in 2018. No change from 2016. Can we include higher resolution data such as toxin concentrations in fish?</p>

CLIMATE			
Indicator	Responsible Party	Milestone	Notes
CO₂ Concentration (Mauna Loa)	CI-Marianne Walch	March 2021	data available online
Air Temperature	DEOS	May 2021	Data, indicator needs discussed with Kevin Brinson in November.
Sea Level Rise	DEOS	May 2021	“
Growing Season Length	DEOS	May 2021	“
Precipitation	DEOS	May 2021	“
<i>Coastal Storm Climatology (Potential New Indicator)</i>	DEOS	May 2021	Project WiCCED supporting an intern to update the DE Storm Climatology and Storm Damage Database this spring. May provide data for an indicator.
<i>Local Flooding Potential (Potential New Indicator)</i>	DEOS	May 2021	Discussed with Kevin Brinson. Tide gauge levels associated with certain roads flooding. Possible indicator - # days that level is exceeded.
<i>Delaware Carbon Emissions (Potential New Indicator)</i>	Jenn Volk	May 2021	Report in progress.
<i>Water Temperature (Potential New Indicator)</i>	CIB	May 2021	Grab sample data not usable. Can look at Massey's Ditch sonde data. Cathy Wazniak has used satellite data to assess water temperature.
<i>Estuary Acidification (Potential New Indicator)?</i>	Kari St. Laurent	May 2021	Will work with CIB to see if this is possible with existing pH data, but unlikely. Must make sure we have good review.

