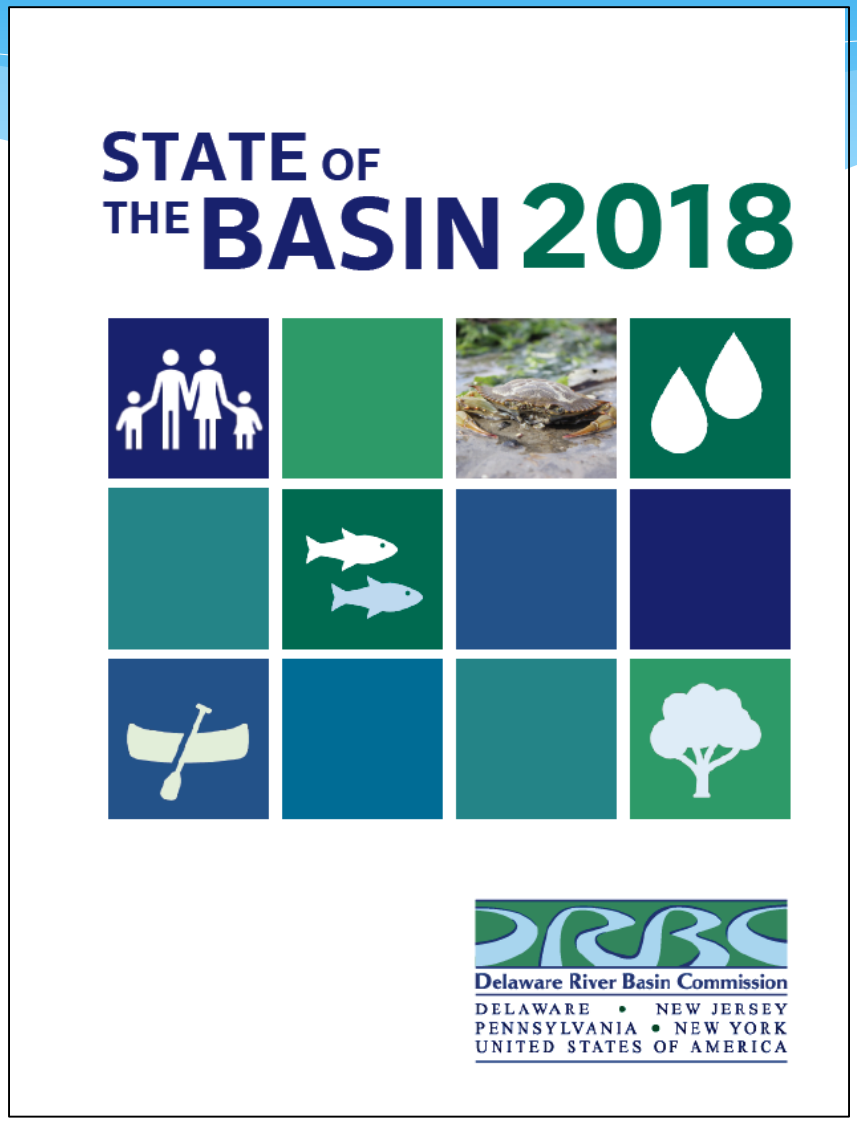
Delaware River Basin Commission

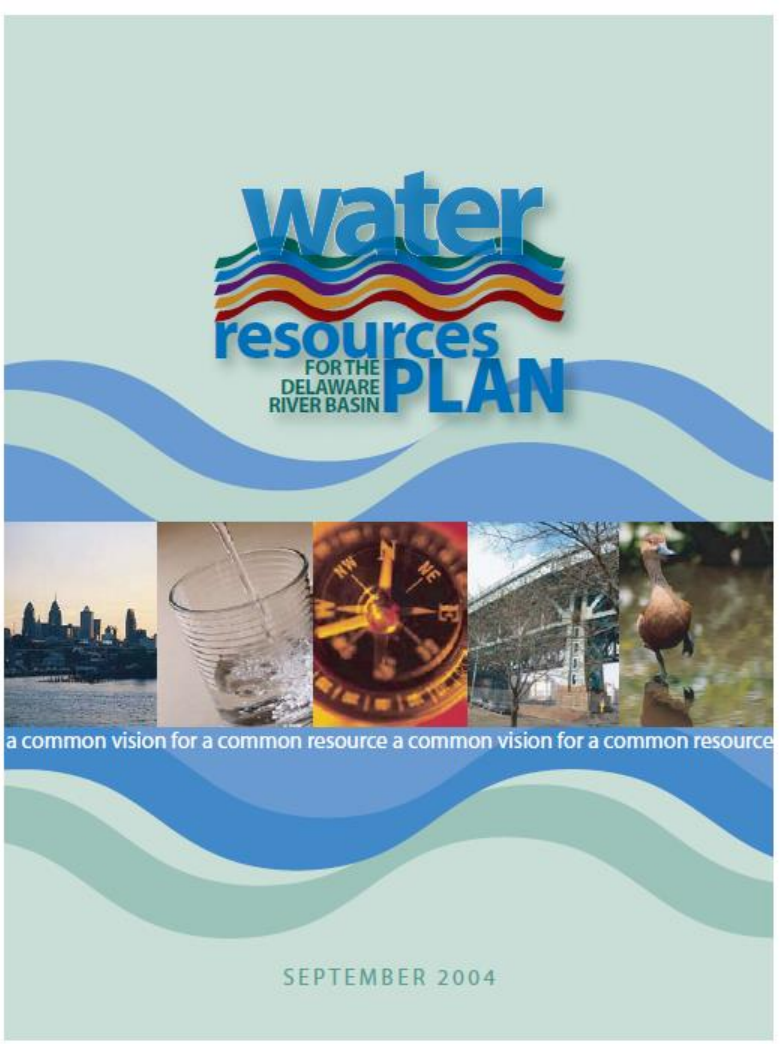
* 2018 State of the Basin Report Update
* Chad Pindar, P.E. Manager, Water Resource Planning Section
* February 21, 2019 – Water Management Advisory Committee



Background for State of the Basin

* 2004 Water Resources Plan for the DRB (The Basin Plan)

* The adopting resolution calls for a goals and indicator status report every 5 years (Resolution 2004-BP)



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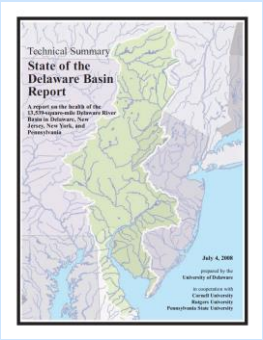
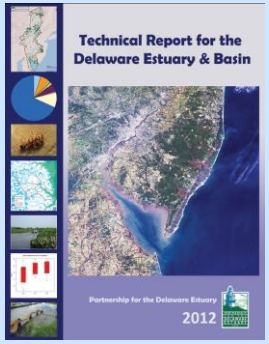
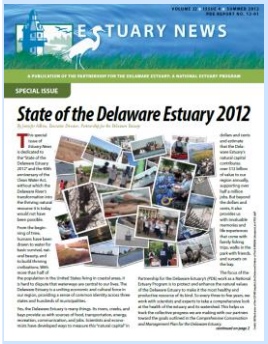
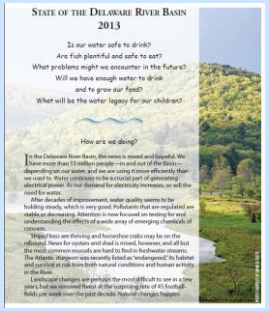
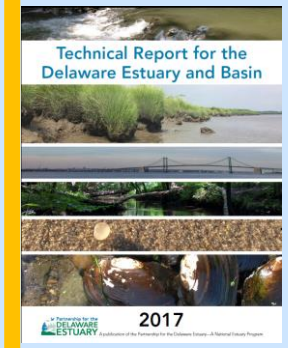
Previous Report Formats

2008 | 2012-2013

DRBC Tech Summary SotB 2008	DRBC SotB 2008	TREB 2012	State of the Estuary 2012 (PDE)	DRBC SotB 2013	TREB 2017
					
195 pp	84 pp	255 pp	27 pp	15 pp	379 pp

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2018-2020 Water Resources Program: Section 5.1 Reporting.
The next SotB report is scheduled to begin in 2018.

2018 SotB Draft Outline

Executive Summary
Introduction

1. Watersheds and Landscapes
2. Water Quantity
3. Water Quality
4. Living Resources

Acronyms & Abbreviations
List of Figures & Tables

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Target ~ 1 indicator / page
Target 30-40 pages
Utilize 2017 TREB as much as possible

Section Indicators

1. Watersheds & Landscapes

* Population
* Landcover
  - Current
  - Changes
  - Impervious Cover

2. Water Quantity

* Water Withdrawals
* Consumptive Use
* Groundwater Availability
* Current & Future Hydrology
  - Precipitation/Snow Pack
  - Flow

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Section Indicators

3. Water Quality

* Dissolved Oxygen
* Nutrients
* Contaminants
* Fish Contaminants
* Salinity
* pH
* Temperature
* Emerging Contaminants
* Whole Effluent Toxicity

4. Living Resources

* Atlantic Sturgeon
* Blue Crab
* Osprey
* White Perch
* Striped Bass
* Weakfish
* Horseshoe Crab
* American Shad
* Eastern Oyster
* Freshwater Mussels
* American Eel
* Macroinvertebrates
* Eastern Brook Trout
* Invasive Species

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Example of Draft Indicators

POPULATION

DESCRIPTION

The population quantifies the number of people living in the Delaware River Basin. The data for this indicator are from the U.S. Census, Decennial Census and American Community Survey (ACS) estimates. The number of people is important to understand the needs for water supply and impacts to water resources in the Basin. Changes in population directly affects the existing land cover and land uses in the region. Communities need to accommodate population growth with added infrastructure and development, which often comes from conversion of open space, forests, and agricultural land. Population changes result in stresses on the water resources available in the Basin.

PRESENT STATUS

According to the U.S. Census ACS data for 2016, the population in the Delaware River Basin is estimated to be 8.3 million people. Figure XXX shows the population breakdown by state in the Basin. Pennsylvania accounts for the highest population in Basin (67% of the total in-Basin population), followed by New Jersey (23% of the total in-Basin population). These two states also account for the largest land area in the Basin—PA 49.2% and NJ 23.2%.

TRENDS

Understanding the changes in population over time is essential for planning for water resource needs. From 2000 to 2016, the population in the basin has increased by more than 93,500 people, or 7%.

The population in the Basin is projected to increase from 2010 to 2030 by nearly 700,000 people. The greatest growth is expected in Kent and Sussex Counties, Delaware; and Chester, Monroe, and Montgomery Counties, Pennsylvania. However, Cape May and Salem County, New Jersey and Philadelphia County, PA are projected to experience a loss in population by 2030.

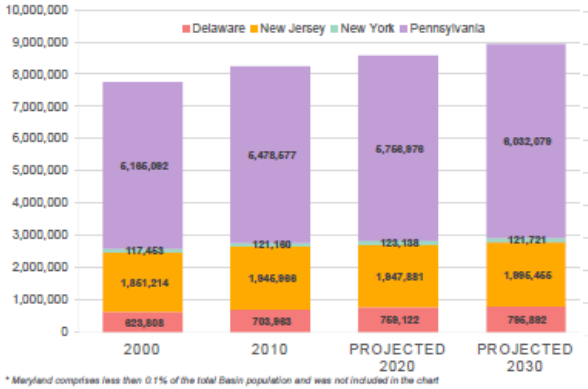
ACTIONS/NEEDS

As populations change, communities need to plan for land development and its impact to natural resources. Additional development results in higher demand for clean water and the potential for negative impacts to overall water quality and watershed health. One of the challenges is balancing the increased need for development and infrastructure with the additional stresses on water resources.

SUMMARY

There are currently 8.3 million people living in the Basin. The population is expected to grow to almost 9 million people by 2030. The highest areas of expected growth are the counties in and around Philadelphia, as well as the Central and Bayshore regions.

POPULATION PROJECTIONS, 2000-2030, STATES IN THE DELAWARE RIVER BASIN



* Maryland comprises less than 0.1% of the total Basin population and was not included in the chart

LAND COVER

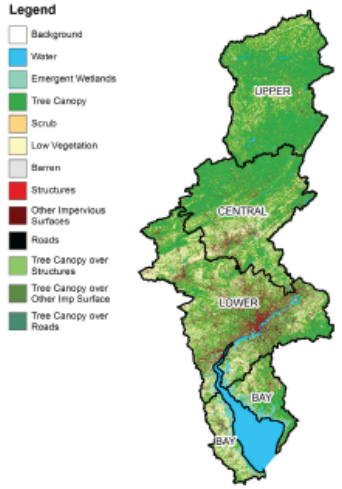
DESCRIPTION

Land use and land cover is an important characteristic of the health of the Basin and its water resources. Changes in land use and land cover reflect human impacts to natural ecosystems Basin-wide and local scale. Developed lands have been linked to negative effects to water quality and quantity compared with natural land cover categories (e.g. forests and wetlands). Forests and wetlands serve several ecosystem functions and provide natural habitat for wildlife and aquatic species. Farmland without conservation practices in place, such as cover crops or conservation tillage, may adversely impact the health of a watershed. Alteration in land use and landscapes directly impact the health of the Basin's watersheds.

PRESENT STATUS

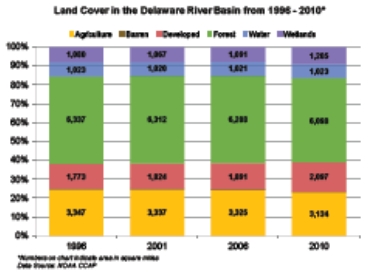
The most up-to-date land cover data has been published in 2016 by Shippensburg University's Center for Land Use and Sustainability. The high-resolution land cover dataset is 1-meter resolution, LiDAR-based, and includes 12 land cover classes. This dataset focuses on land cover over land use and incorporates information about roads, buildings, and other impervious surfaces. Figure x.x [MAP] displays the Shippensburg high-resolution dataset for the Delaware River Basin. As with population, the geographic distribution of land cover is not uniform across the Basin. The Upper and Central Regions are primarily Tree Canopy with some Low Vegetation, while the Lower Region has the highest concentration of developed categories, such as Structures and Tree Canopy over developed areas.

The most recent NOAA CCAP dataset for 2010 shows broader land cover categories for the Basin (see Figure X.X). Similar to the Shippensburg high-resolution data, the NOAA CCAP data indicates that the Basin is predominately forested (48%), followed by farmland (24%), and developed lands (16%). Similar to the 2016 Shippensburg data, the Upper Region is primarily forested, while urbanized areas and farmland increases southward in the Basin. The Lower Region, which includes the City of Philadelphia, has the greatest amount of developed land of all the regions.



TRENDS

As land cover changes over, it is possible to identify areas under development pressure. The change in land cover from 1996 to 2010 is shown in Figure X.X using the NOAA CCAP data. During this time, urbanization has resulted in a loss of forested and agricultural lands. The greatest loss of forests and farmland is in the Lower Region, hence the largest increase in developed area. Following the Lower Region, the Central Region saw a large amount of growth with the loss of forested land. Most of the Basin regions have also experienced a loss in wetlands from 1996 to 2010.



ACTIONS/NEEDS

New development occurs with conversion of forested and agricultural land. As the trends indicate increased urbanization in parts of the Basin, state and local agencies will need to work together to manage the growth of development. The loss of forests to development may result in negative impacts to watershed health, water resources, and aquatic habitat. Conservation efforts to protect and restore lands impacted by development can mitigate some of the harmful effects associated with urbanization.

In addition, Basin-wide, high-resolution land cover data for multiple years is important to identify changes in land cover over time. Tracking these land cover changes will be useful for prioritizing areas for protection and restoration of water resources.

SUMMARY

Urbanization occurs with the loss of forested and agricultural lands. Many of these forests protect critical water resources and aquatic habitat in the Basin. Management of growth and development will help mitigate the negative impacts to source waters, water quality, and aquatic life.

Current Schedule

* Winter – Spring 2019: Internal Draft Circulating for Comments
* Spring – Summer 2019: Review by Commissioners
* Fall 2019: Expected Publication & Public Release