NJ Water Supply Plan, 2017-2022, DRAFT
Authority

The 1981 New Jersey Water Supply Management Act (N.J.S.A. 58:1A-1 et. seq.) directs the NJDEP to develop and periodically revise the New Jersey Statewide Water Supply Plan (NJSWSP or Plan) in order to improve the management and protection of the State’s water supplies.
Requirements

➢ Identify surface and ground water sources, current demands
➢ Make demand projections for duration of the plan
➢ Identify land purchased for water supply facilities but not yet used
➢ Recommend:
  ▪ Improvements, new construction, and interconnections
  ▪ Diversions for aquaculture
  ▪ Legislative and administrative actions to protect watershed areas
  ▪ Identification and purchase of land for water supply facilities
  ▪ Administrative actions to protect surface and ground water supplies
2017 – 2022 Plan

➢ Emphasizes the need to balance traditional water use with water resource protection, and outlines a range of policy options to achieve that balance amid an array of competing interests and issues.

➢ Differs from preceding plans as it is designed to allow for continuous technical and policy updates, as ongoing water resource evaluations, water use data, and more refined water demand projections become available. “Living Plan”

➢ The intention is for these, and future releases of the NJSWSP updates to be made available through the DEP’s web site.

➢ Serves as a tool to guide the management, regulation, conservation, and development of the State’s water resources for the foreseeable future.
Water Use Trends: Key Findings
Withdrawals by Source
Water Use Trends: Key Findings:
Withdrawals by Use Group

- Total freshwater withdrawals peaked about 1.1 trillion gallons in early 2000’s.
- Excludes saline diversions
- Major fluctuations in power generation.
  - There are approximately 10 large power generation sources in NJ using ~200-400 bgy:
    - Highly non-consumptive water use
    - Hides trends in other water use sectors
Water Use Trends: Key Findings
Withdrawals by Use Group

➢ Annual withdrawals for all other uses peaked about 650 bgy in late 1990’s.

➢ Now around 500 bgy.
“Consumptive loss” is the portion of the water used which is lost to evaporation, transpiration or incorporation in a product. This water is not discharged to any location and is not available for a downstream use.
As much as one-third of all potable water is lost to evaporation to the water cycle in any given peak season month (with considerably higher losses during daily and weekly periods).

Significantly strain on water availability when supplies are most scarce and the need for plentiful, high quality water is greatest.
Water Use Trends: Key Findings

➢ Per capita potable water use in NJ decreased from about 155 to 125 gpd between 1990 and 2015, due in part to diminished indoor usage associated with more efficient plumbing fixtures.

➢ Consumptive water loss, on average annual basis, is between 11 and 19 gpd per capita.

➢ Average annual basis, not seasonal.
Water Availability: Key Objectives

➢ **Calculate: (chapter 3)**
   - consumptive losses *(evapo-transpiration)*
   - depletive losses *(water or wastewater transfers out of the watershed)*
   - accretive gains *(water transferred in)*
   - net losses and gains

➢ **Develop: (chapter 3)**
   - water budgets for each of the 151 HUC11 watersheds and confined aquifer planning areas
   - determine which areas have exceeded or are in danger of exceeding planning thresholds
   - Total Resource Availability
Water Availability: Key Findings

➢ Average annual precipitation in range of 38 to 51 inches per year.

➢ NJ typically has ample average precipitation and the State’s geology allows the storage of large quantities of groundwater and supports large reservoirs.
Water Supply: 3 ‘buckets’

- Confined Aquifers
- Surface Water & Unconfined Aquifers
- Reservoirs

Image sources: Cliparts Zone
Bucket #1: Reservoirs

Safe Yield

The amount of water the reservoir can supply in a repeat of the worst drought on record.
Bucket #2. Confined aquifers
Bucket #3. Surface water – unconfined aquifer system
Water Availability: Key Findings

Total unconfined groundwater and surface water availability for depletive and consumptive use: 25% of low flow margin
Water Availability: Key Findings

How much water is being taken from bucket #3?

HUC11 unconfined aquifer and stream flow net loss or gain for peak use rates

primary cause of peak loss
Water Availability: Key Findings

Peak use rates, 1997-2008

Full allocation

HUC11 unconfined aquifer and stream flow remaining availability for peak demand period.

How much water is left in bucket #3?
### Water Availability: Key Findings

- **Total Resource Availability**: 3 ‘buckets of water’ vs current and future demands.
- With this evaluation criteria, water availability in New Jersey is about 1,520 million gallons per day (mgd) while 211 mgd remains unused. (Tables 3.2 and 3.3)

<table>
<thead>
<tr>
<th>WMA#</th>
<th>WMA Name</th>
<th>Natural Resource Availability (mgd)</th>
<th>Avg Demand (mgd)</th>
<th>Remaining Availability (mgd)</th>
<th>Estimated increase in potable use by 2030 (mgd)</th>
<th>Estimated remaining water availability in 2020 (mgd)</th>
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**Water Availability: Key Findings**

- A water-budget approach to withdrawals from reservoirs, confined aquifers, and the surface water/un-confined aquifer system.
- Balances human needs with ecological functions.
- Four of the State’s 20 watershed management areas are currently stressed and eleven more would become stressed if pumped at volumes authorized under existing permits.
- New withdrawals in stressed water-sheds must be thoroughly evaluated.

**Total Resource Availability**
Finished Water: Key Objectives & Findings

- Determine whether existing approved (allocated) resources and developed water supply infrastructure (firm capacity) can accommodate anticipated growth (Chapters 3 and 7);

Figure 3.11. Areas of NJ with surplus or deficit supplies in relation to currently approved potable supply
Estimate future residential water demands based on population projections (Chapter 3; Appendix D);

- Potable water trends flat despite increasing population
- Much of new demand appears concentrated in lower per capita regions
- Rutgers study underway to develop range of population projections to 2040 and a detailed analysis of per capita use rates due 2017
Planning & Policy: Key Objectives

➢ Identify and quantify the location of potential supplemental sources of supply, including future infrastructure needs, to ensure future demands are satisfied (Chapter 3, 7, 8 and Appendix A)

➢ Define overarching water supply policies (Chapters 6 and 7)

➢ Provide a support tool to inform and assist local, regional and State planning decisions. (Watershed Management Area (WMA) summaries are included as Appendix A)
Planning & Policy: Key Findings

- **Water availability** is a function of all water resources available to a specific area and of site-specific resource limitations.

- **Imports** of water may be a significant source.

- **Exports** of water may be a significant demand.

- **Seasonal consumptive water losses** are a significant stressor but provide an opportunity for increased efficiency.
Generally, NJ has **sufficient water available** to meet needs into the foreseeable future provided we **effectively manage** the state’s water resources.

**Region-specific sustainability thresholds** affects water availability:
- Highlands & Pinelands
- watershed-specific water quality and ecological concerns

**10 specific recommendations**
Policies for Improving Water Supply

1. Promote the efficient use of the State’s freshwater resource
   - enhancing water conservation initiatives
   - encouraging reductions in outdoor water use
   - match highly consumptive non-potable uses with non-potable water sources.

2. Improve New Jersey’s drought management capabilities and water system resilience.

3. Promote optimized use of existing water supplies through
   - interconnections
   - conjunctive use
   - aquifer storage and recovery (ASR)
Policies for Improving Water Supply

4. **Encourage**:
   - new and expanded sources of supply
   - innovative technologies

5. **Evaluate** the impact of new or increased allocations for **highly consumptive non-potable** uses.

6. **Coordinate sustainable water supply policies** with
   - Highlands Regional Master Plan
   - Pinelands Comprehensive Management Plan
Policies for Improving Water Supply

7. Support **detailed hydrologic regional assessments** to assess:
   - status and sustainability of the resource
   - feasible water supply alternatives

8. **Coordinate with the agricultural community** to more accurately assess future agricultural water demands

9. Continue to **assist water systems** in ensuring **adequate financial investment** to improve, repair, rehabilitate, replace and/or update water supply infrastructure.
10. **Maintain** NJ’s extensive surface water, groundwater and drought monitoring systems and assessment tools. Information obtained from these networks is critical to planning for our future.
SUMMARY

Use Water Wisely

Proper Asset Management

Sufficient Monitoring & Assessment
What’s Next

➢ 2014 and 2015 water use data updates.

➢ Update water availability analysis.
  ▪ Reservoirs
  ▪ Confined aquifers
  ▪ Unconfined aquifers and streams (HUC11)

➢ Incorporate updated data and availability results.

➢ Address comments.
Using the Stream Low Flow Margin Method to Assess Water Availability in New Jersey’s Water-Table-Aquifer Systems

Digital Geodata Series
DGS10-3 New Jersey Water Transfer Model Withdrawal, Use, and Return Data Summaries

DOWNLOAD 85.6 MB (6-25-2015)

Digital Geodata Series
DGS14-1 Computer Workbook Investigating Water Availability in New Jersey on a Watershed Management Area Basis

DOWNLOAD
Public Meetings

➢ Central – Tuesday, July 11, 2017
  ▪ 401 East State St, Trenton, 1:00
  ▪ USGS, Lawrenceville, 6:00

➢ North - Wednesday, July 12, 2017, 3:00
  ▪ Millburn Public Library, Millburn,

➢ South - Thursday, July 13, 1:00
  ▪ Stockton University, Board of Trustees Room, Campus Center

➢ Written comments submitted until July 21st at watersupply@dep.nj.gov

➢ Plan available at http://www.nj.gov/dep/watersupply/wsp.html
Thank You.

watersupply@dep.nj.gov