

NJ Water Supply Plan, 2017-2022, DRAFT



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.
- “Living Plan”: Future **technical and policy updates** will be continuous and made available through DEP’s website
- Serves as a **tool** to guide the **management, regulation, conservation, and development** of the State’s water resources for the foreseeable future.

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

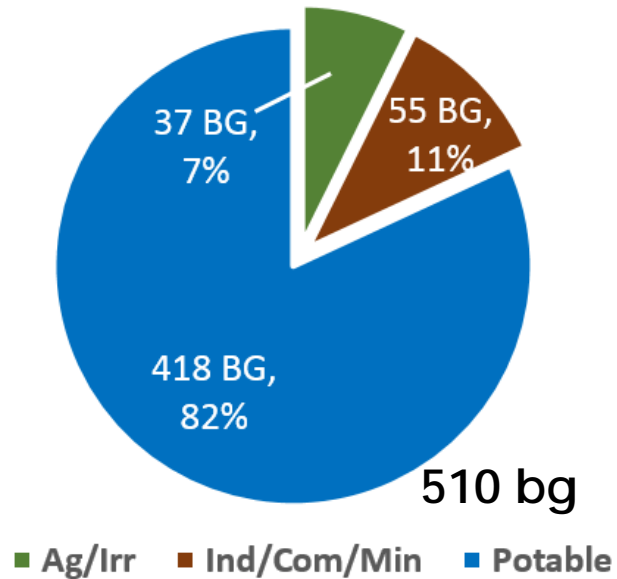
➤ Develop: (chapter 3)

- 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

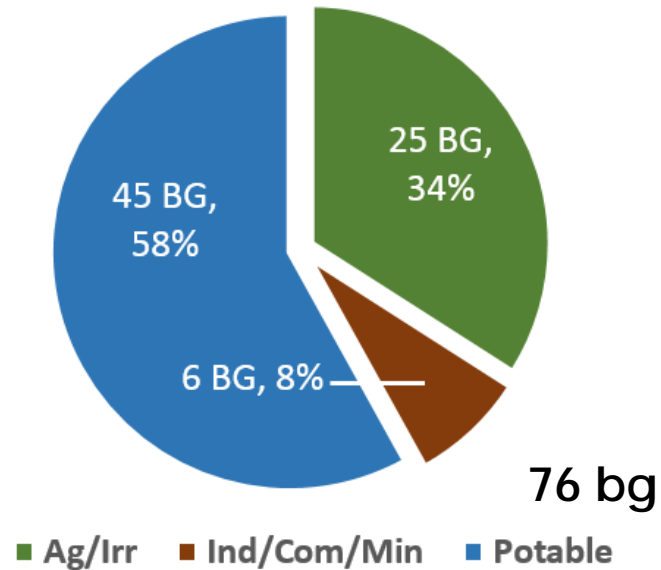
Water Use Trends: Key Findings

Total Withdrawals and Consumptive Losses

2011-2015 Average Total Water Use,
by Sector
(billions of gallons and % of total)



2011-2015 Average Consumptive
Losses, by Sector
(billions of gallons and % of total)



“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.

Water Supply: 3 'buckets'

Reservoirs



Confined
Aquifers

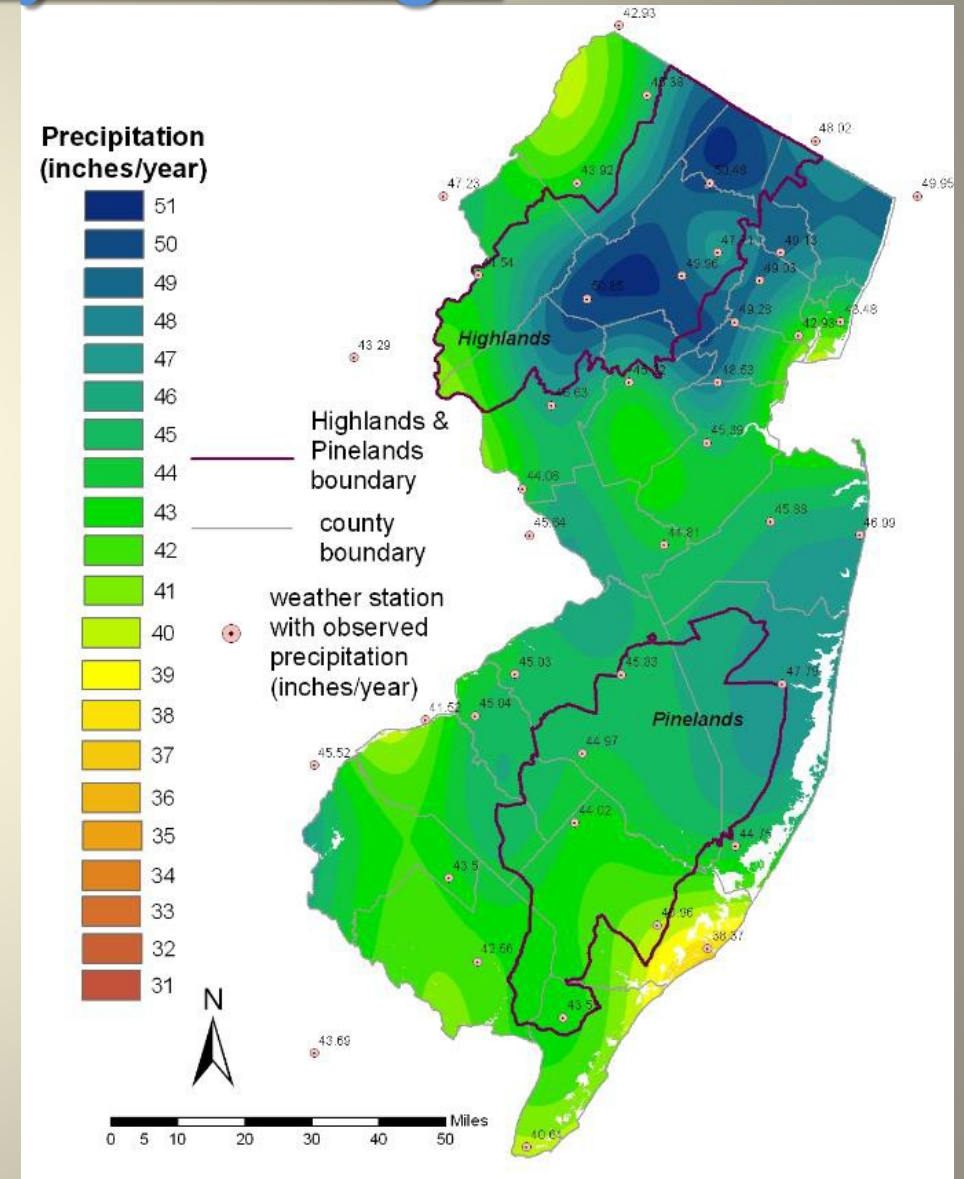


Surface
Water &
Unconfined
Aquifers



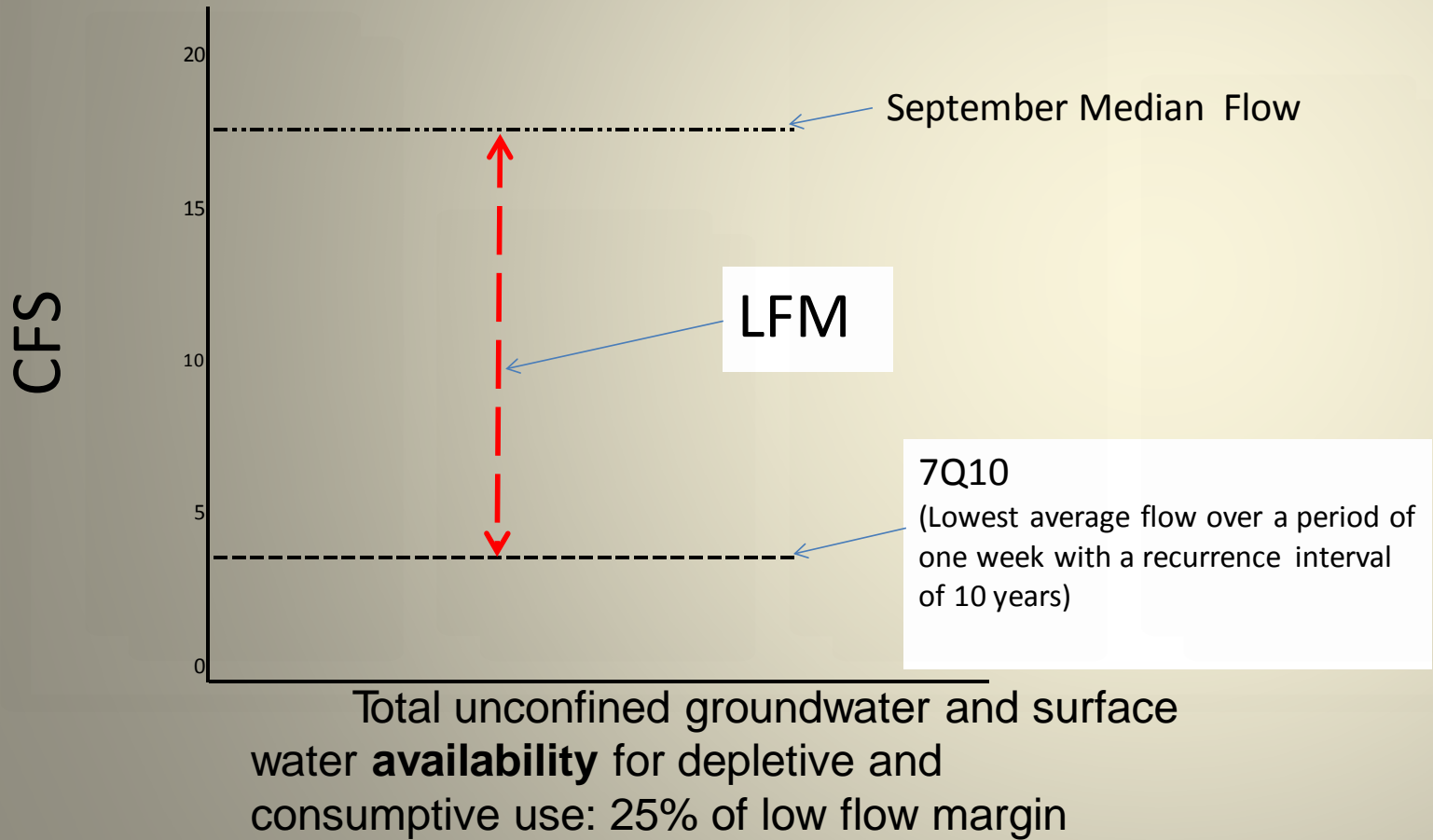
Water Availability: Key Findings

- Average annual precipitation in range of 38 to 51 inches per year.
- Average annual rainfall in the Pinelands Area ranges from ~47" in Northeast to ~40" in Southeast
- NJ typically has ample average precipitation and the State's geology allows the storage of large quantities of groundwater and supports large reservoirs.

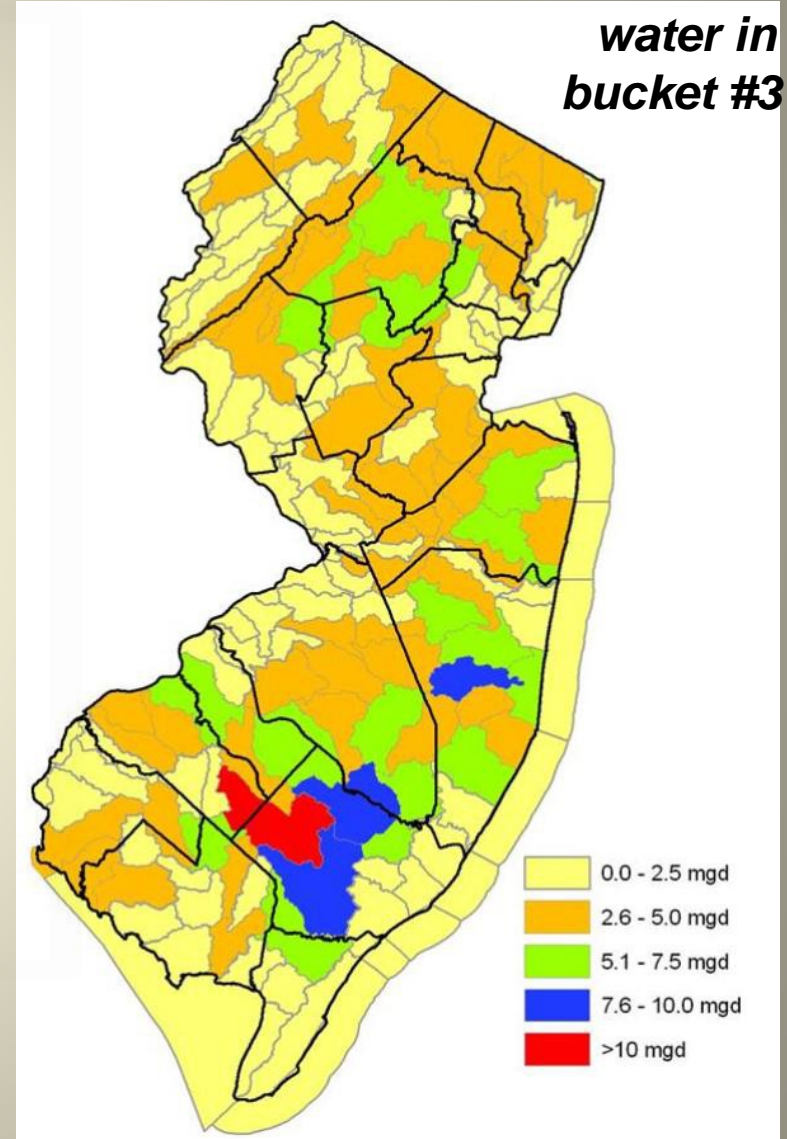


Water Availability: Key Findings

Low-Flow Margin



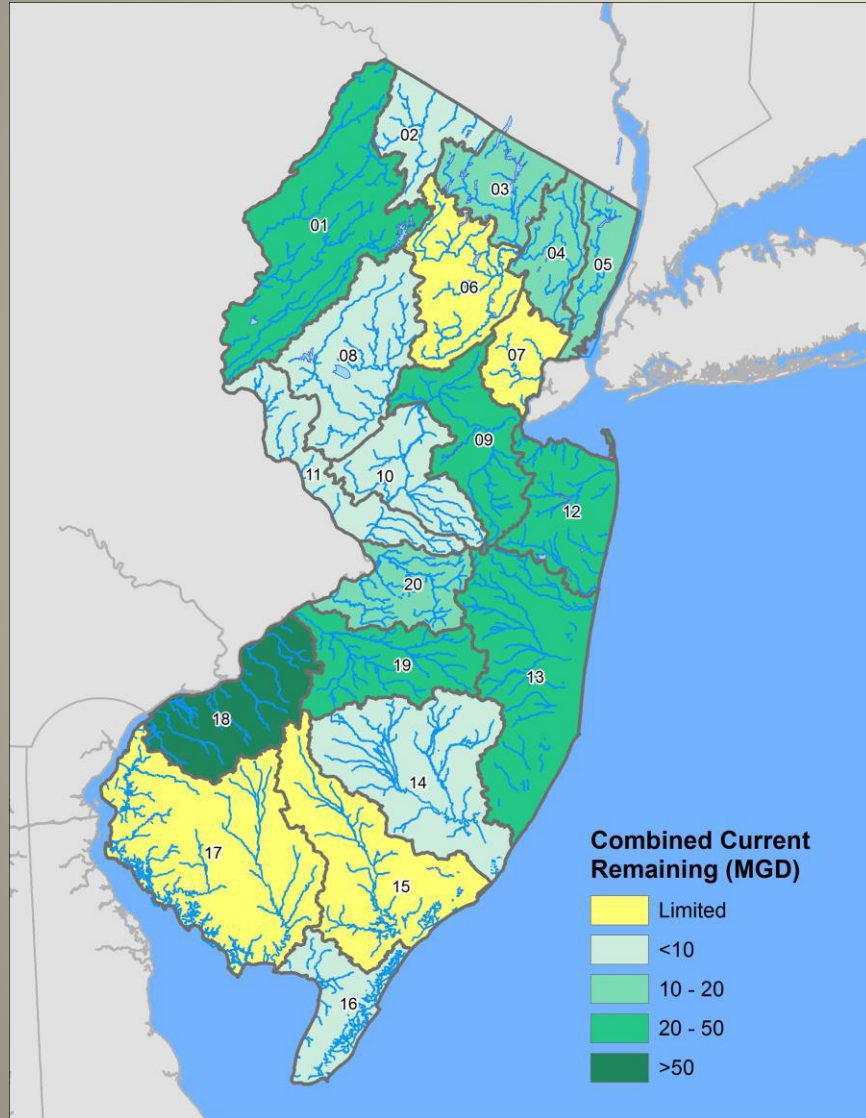
How much water in bucket #3?



Water Availability: Key Findings

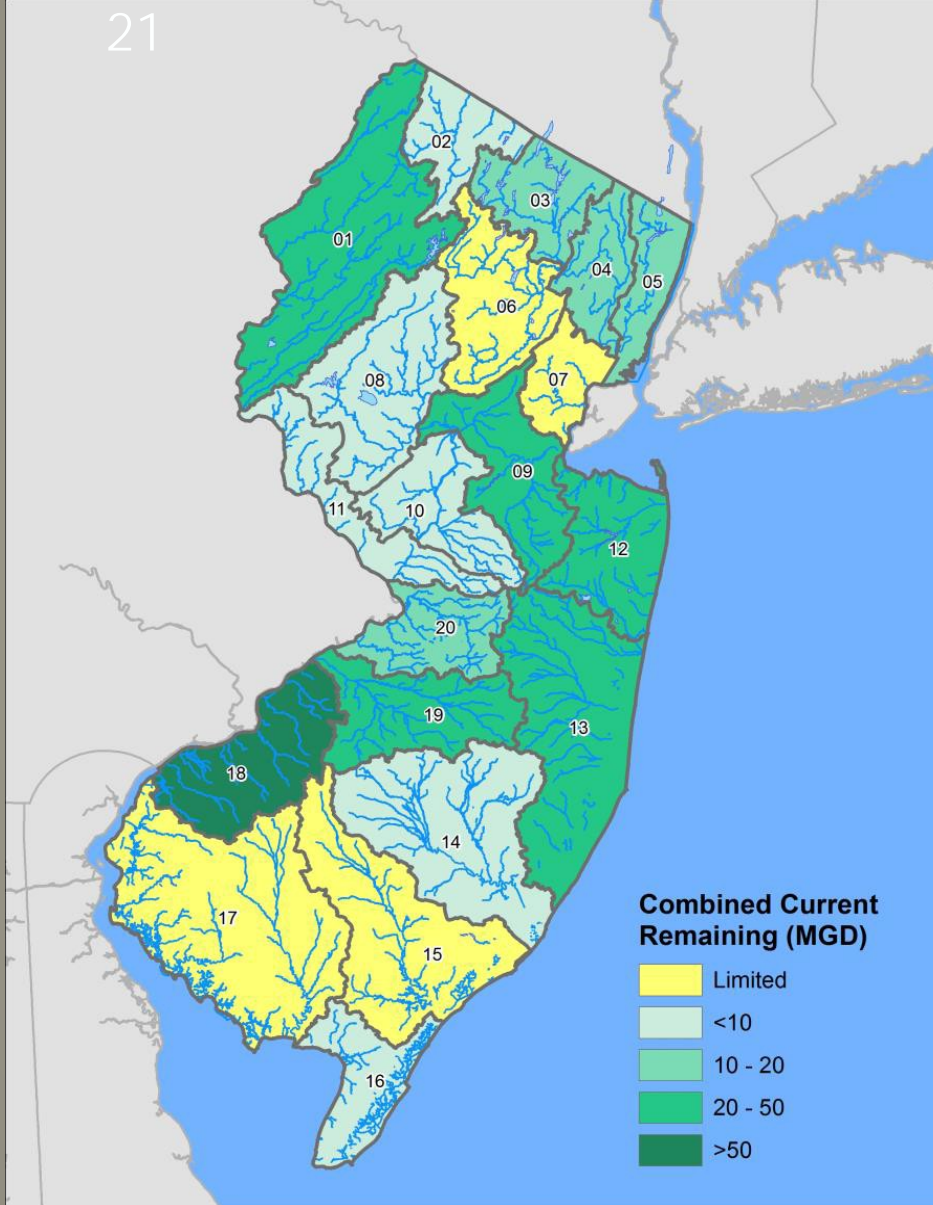
Total Resource Availability

- A water-budget approach to withdrawals from reservoirs, confined aquifers, and the surface water/unconfined 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 watersheds must be thoroughly evaluated.



Water Availability: Key Findings

21



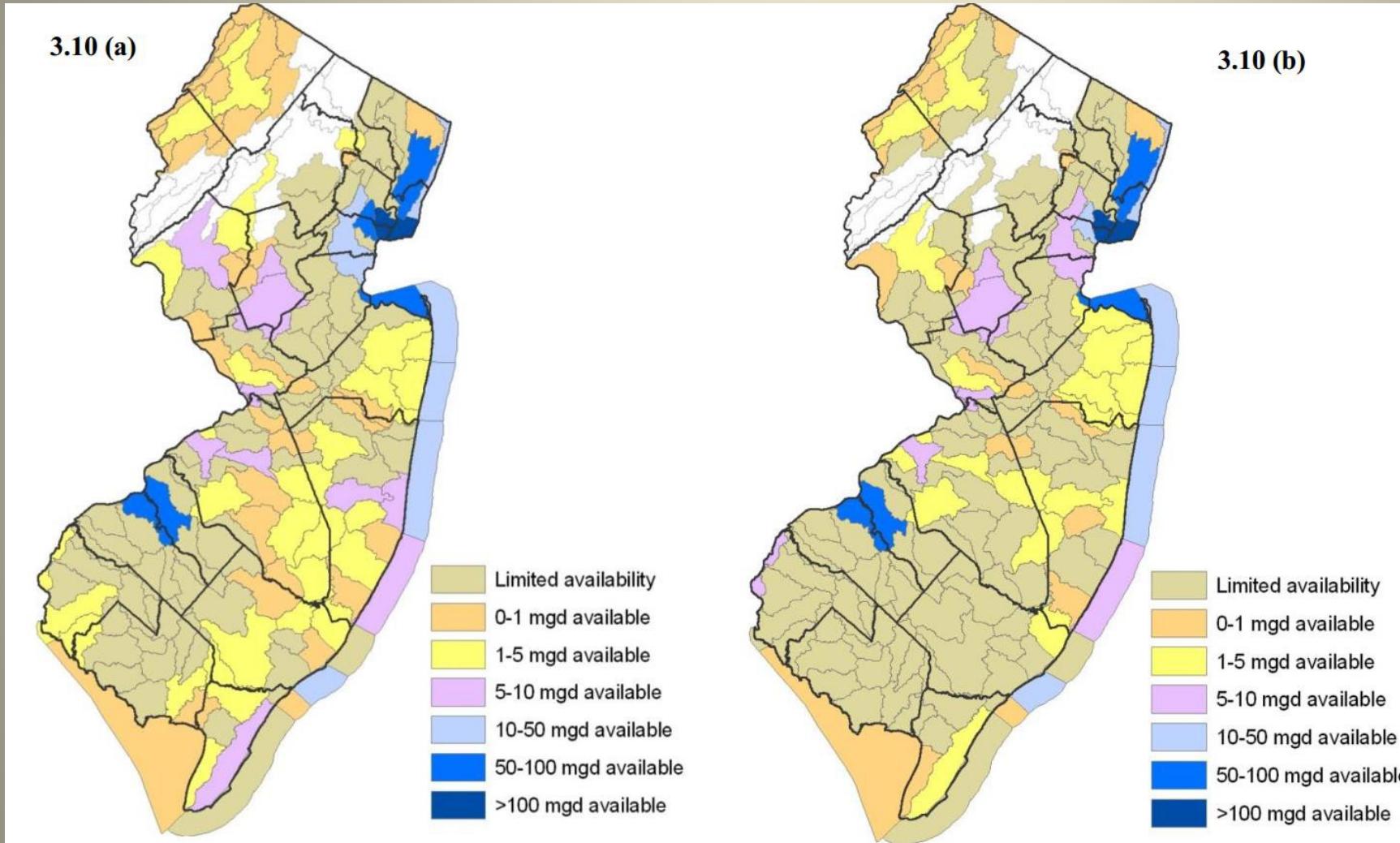
Water Availability by Watershed Management Area

WMA	WMA Name	Stressed ⁽¹⁾ at Current Pumping Rates	Would be Stressed ⁽¹⁾ if Pumped at Currently Permitted Allocation Rates
1	Upper Delaware		
2	Wallkill		X
3	Pompton, Pequannock, Wanaque, & Ramapo		X
4	Lower Passaic & Saddle		X
5	Hackensack, Hudson & Pascack		
6	Upper & Middle Passaic, Wjippany & Rockaway	X	X
7	Arthur Kill	X	X
8	North & South Branch Raritan		X
9	Lower Raritan, South & Lawrence		X
10	Millstone		X
11	Central Delaware		
12	Monmouth		
13	Barnegat Bay ⁽²⁾		X
14	Mullica ⁽²⁾		X
15	Great Egg Harbor ⁽²⁾	X	X
16	Cape May ⁽²⁾		X
17	Maurice, Salem & Cohansey ⁽²⁾	X	X
18	Lower Delaware ⁽²⁾		
19	Rancocas		X
20	Assiscunk, Crosswicks & Doctors ⁽²⁾		X

⁽¹⁾ A WMA is "stressed" if it contains at least one HUC 11 watershed that is being pumped at a volume that is greater than 25% of the Low Flow Margin - (i.e. Current demand exceeds sustainable thresholds at 25% LFM is used.

⁽²⁾ WMA's with at least a portion of the WMA within the Pinelands Area

Water Availability: Key Findings



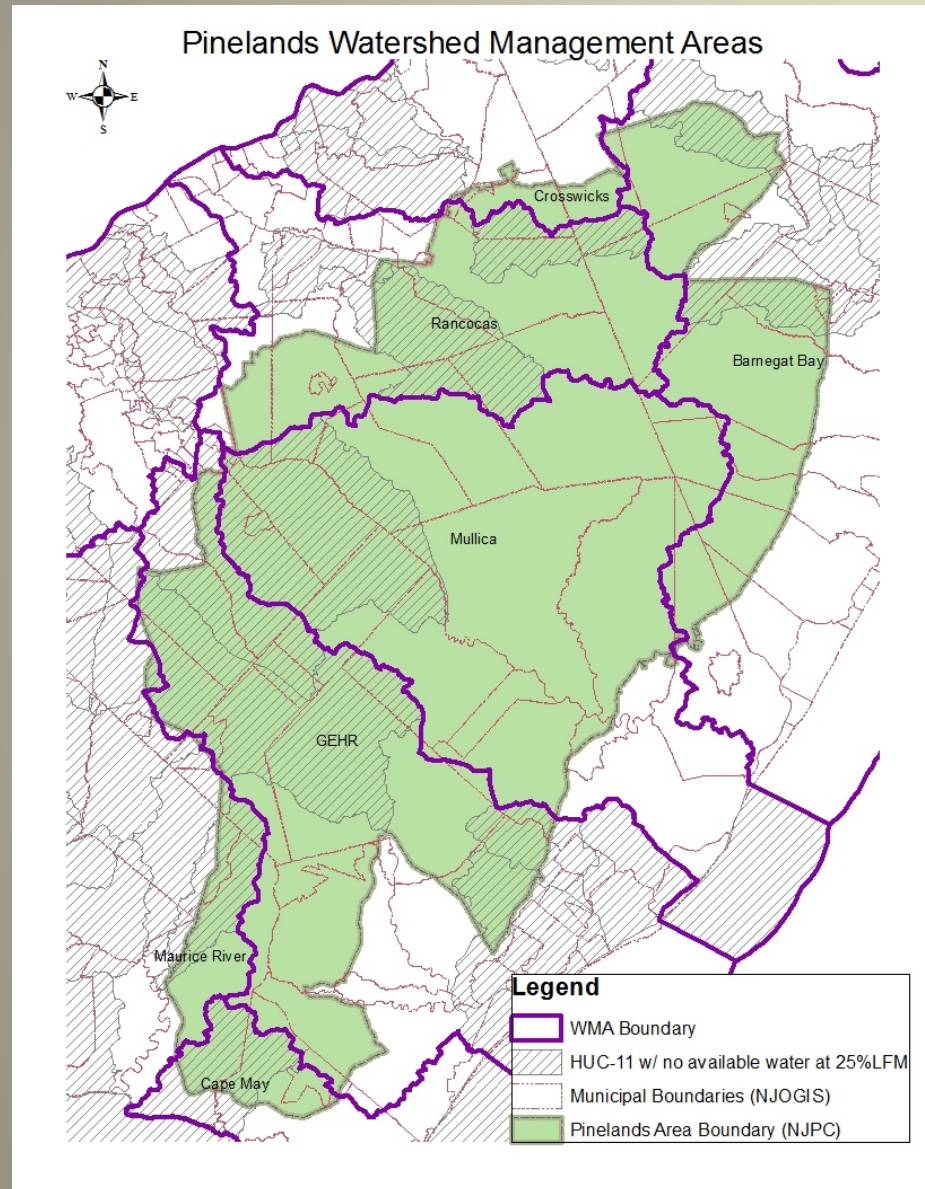
Peak use rates,
1997-2008

Full allocation

*How much
water is left
in bucket
#3?*

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

Pinelands Status



- **Total Resource Availability**

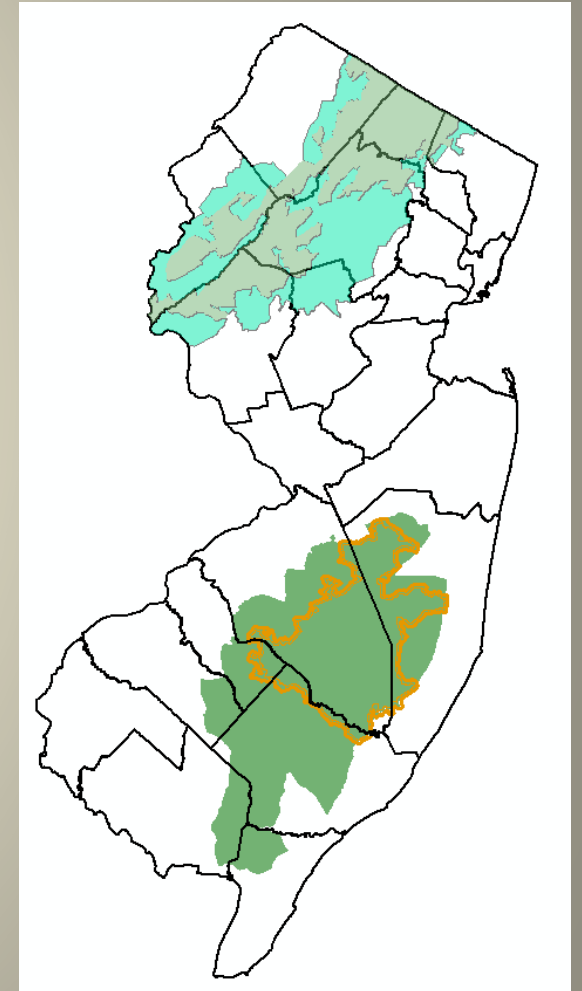
- A water-budget approach to withdrawals from the surface water/un- confined aquifer system.
- New withdrawals in stressed watersheds must be thoroughly evaluated.

Water Supply 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**.

Water Supply Planning & Policy: Key Findings

- 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



WSP 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)

WSP Policies for Improving Water Supply

4. **Encourage:**

- new and expanded sources of supply
- innovative technologies
- Asset management

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

- Preserve potable supplies for potable uses
- Re-use encouraged for non-potable needs
- Not applicable to agricultural diversions

5. **Coordinate sustainable water supply policies** with

- Highlands Regional Master Plan
- Pinelands Comprehensive Management Plan

WSP Policies for Improving Water Supply

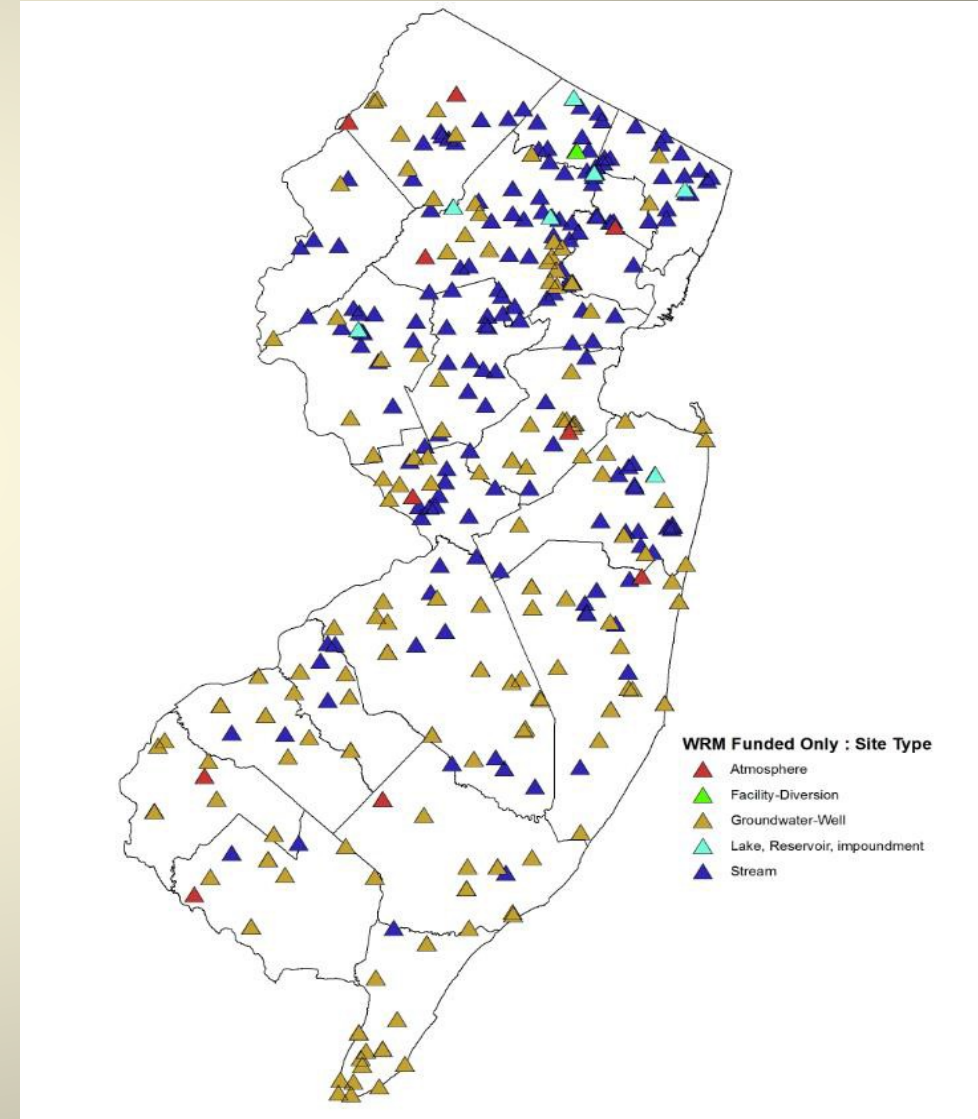
7. Support **detailed hydrologic regional assessments** to assess:
 - status and sustainability of the resource
 - feasible water supply alternatives

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 (NJEIT/Drinking Water State Revolving Fund)

WSP Policies for Improving Water Supply

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 for the NJ Water Supply Plan?

- 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.
- Four public hearings were held
- Consulted with several agencies, as required
- Address comments (received 100)
- Getting ready to produce final Plan

Pinelands Commission Comments

- Kirkwood Cohansey Studies
- Implementation Challenges
- Climate Variability

1) Kirkwood Cohansey Studies

- Water Supply Plan should note coordinated work that has been done for the Kirkwood- Cohansey and should list areas where DEP will coordinate with the Commission to provide additional assistance.
- K/C studies suggest these areas for additional coordination
 - identifying the tool/method for assessing **local impacts** to wetlands
 - developing additional scientific support for the **use of the Low Flow Margin** method in the Pinelands, and
 - creating specific attainable options for **mitigating future and past overuse** in HUC 11 watersheds

2) Implementation Challenges

- Recharge of treated effluent and beneficial re-use
- Alternative water supplies in stressed basins – The Water Supply Plan could go further in identifying alternative sources of water in stressed basins
- Local impacts – In the Kirkwood-Cohansey studies, local impacts were considered where future wells might result in adverse impact to wetlands or to other wells. The Plan might suggest further research methodologies and standards for evaluating and mitigating local impacts.

Challenges (continued)

- Allocation assignments – The draft Water Supply Plan makes it clear that unused agricultural allocation presents challenges to water supply planning.
- Enhance Recharge of stormwater
- Audit and fix leaky water supply systems
- Conservation – via additional guidance on rate systems that would encourage less water use or on the means to replace old, wasteful devices (appliances and plumbing) with EPA certified devices

3) Climate Variability

- Revise Chapter 4 of Water Supply Plan to discuss
 - Effects of larger storms and/or storm frequency on recharge
 - Change in evapotranspiration rates
 - Identify areas where water supply most vulnerable to those variations from lower recharge or higher E/T rates
 - Higher/lower water tables in areas of private wells

Commission Staff Approach

- Manage regional stream impacts (LFM in HUC-11 watersheds)
- Manage local wetlands impacts (MOD-Flow)
- Address constrained/stressed HUC-11 watersheds
- Seize water saving opportunities

Pinelands Commission Next Steps

- Low Flow Margin (25%, 20%, individual to HUC-11 watershed)
- Identify best model to assess local impacts (Mod Flow model)
- Identify source alternatives for constrained/stressed basins
- Maximize usage alternatives
 - Leaks
 - Efficient devices
- Revisions to section 7:50-6.86