Cape Cod Water Supply and Aquifer Protection

Falmouth Water Stewards

OCTOBER 28, 2026

CAPE COD COMMISSION

CAPE COD REGIONAL POLICY PLAN 2025



CAPE COD COMMISSION

GOALS & OBJECTIVES

Water Resources

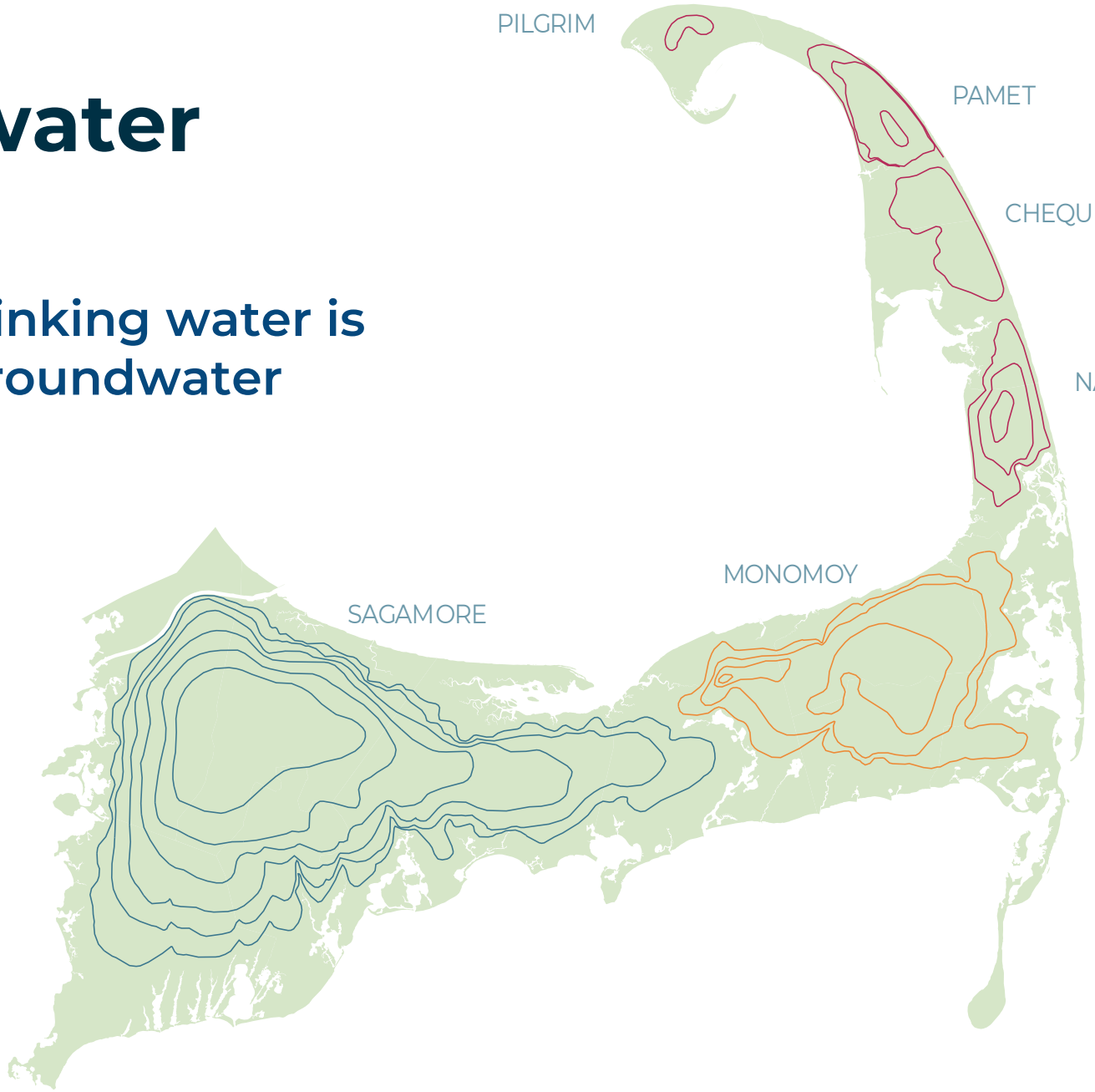
Goal: To maintain a sustainable supply of high quality drinking water and protect, preserve, or restore the ecological integrity of Cape Cod's fresh and marine surface water resources.

Objectives:

- Protect and preserve groundwater quality
- Protect, preserve or restore fresh water resources
- Protect, preserve or restore marine water resources
- Manage and treat stormwater to protect and preserve water quality
- Manage groundwater withdrawals and discharges to maintain hydrologic balance and protect surface and groundwater resources

Groundwater Lenses

Cape Cod's drinking water is supplied by groundwater lenses



Outer Cape Lenses

Eastham, Wellfleet, Truro, Provincetown

Sagamore Lens

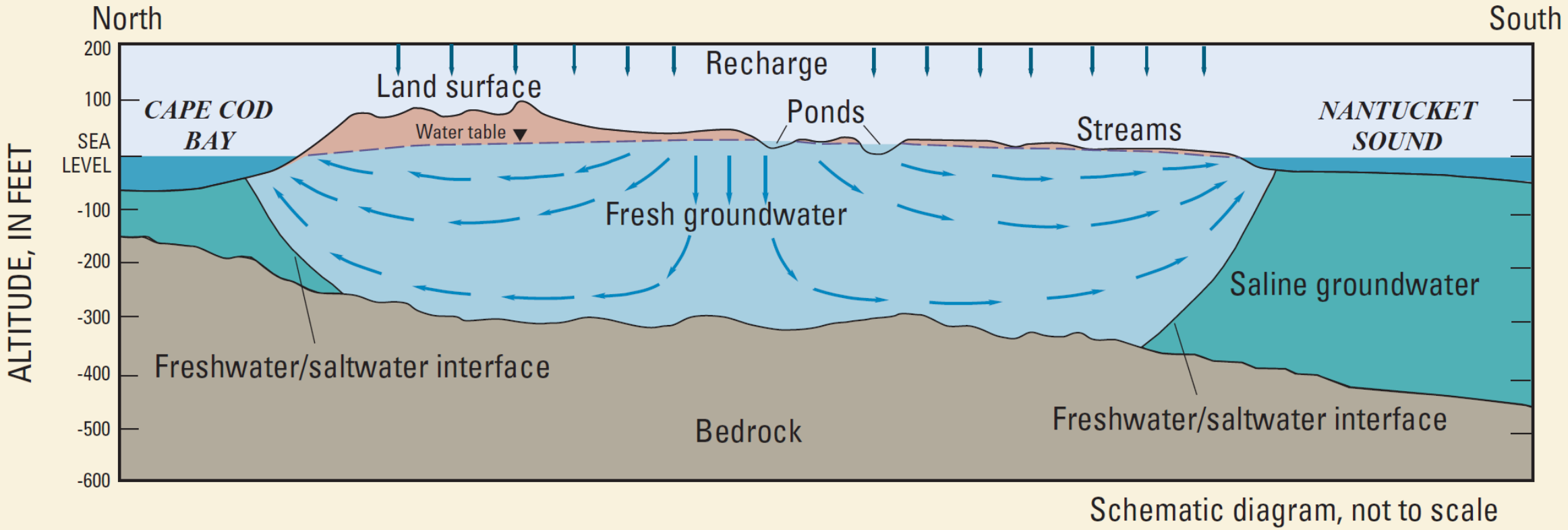
Bourne, Falmouth, Sandwich, Mashpee, Barnstable, Yarmouth

Monomoy Lens

Dennis, Chatham, Harwich, Brewster, Orleans

What is an aquifer?

The Cape Cod aquifer is an underground layer of rock and sandy soil that is porous enough to hold water. The water, referred to as groundwater, is always moving through the sand and gravel towards the coast.



How much water goes into the aquifer?

The Cape Cod aquifer is replenished solely by precipitation. Approximately **450 million gallons of water enter the aquifer daily** or about 164 billion gallons a year.

What happens to the water in the aquifer?

Of the annual 164 billion gallons per year:



69% flows to the coast



24% discharges to streams



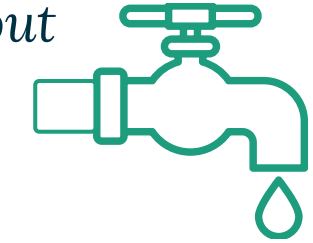
7% withdrawn by public supply wells

Water pumping volumes governed by the Water Management Act

Public water supply wells are permitted through the Water Management Act. MassDEP considers safe aquifer yield, impacts to surface water resources, and determines when water use restrictions are required during the permitting process.

Water suppliers pump about

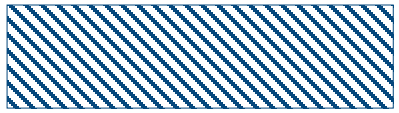
11 ***Billion gallons*** *of water per year*



Overall pumping will often fluctuate from year to year depending largely on precipitation and water restrictions, but average annual pumping remains relatively constant.

Not a water quantity issue

The amount of water pumped by public water supplies remains well below permitted amounts.



13.6 *billion gallons per year*

PERMITTED TO BE PUMPED

(estimated: permitted volumes may be more)



11 *billion gallons per year*

PUMPED ON AVERAGE

CAPE COD WATER SUPPLY | PEAK DEMAND

Approximately 45% of water demand occurs from July - September

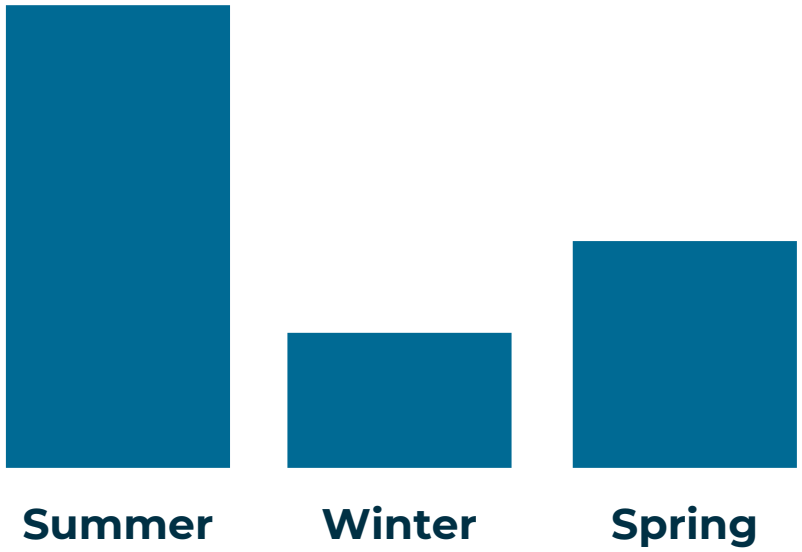
JAN	FEB	MAR
APR	MAY	JUN
JUL	**AUG**	**SEP**
OCT	NOV	DEC

Peak daily demand for water exceeds 3x the average daily demand in some water district areas

Overall water demand during peak season (July – September) is:

3-4x
winter demand

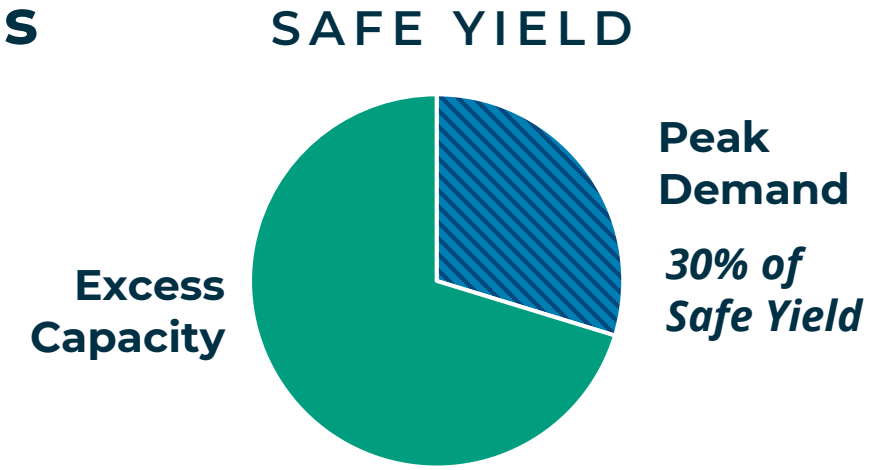
1.5-2x
demand in late spring (April – June)



Safe Yield for Cape Cod basin far exceeds permitted volumes and peak daily demand

Average Recharge
450 million
gallons per day

Safe Yield
266 million
gallons per day



If peak daily demands for all water supplies coincided on the same day, pumping would total about 30% of safe yield (~79 million gallons)

Pumping Limitations

Daily pumping of individual wells is limited by permit

Daily pumping can also be limited by physical constraints

Conservation and responsible management remains critically important to:

- Prevent water supply operations from impacting surface water resources (ponds, streams, wetlands)
- Maintain operational flexibility in the event of source water contamination (e.g. PFAS) or equipment failure
- Minimize drawdown during drought conditions
- Minimize stress on water system and infrastructure
- Preserve capacity for fire response and emergency operations
- Ensure essential needs are met, such as drinking water, wildlife habitats

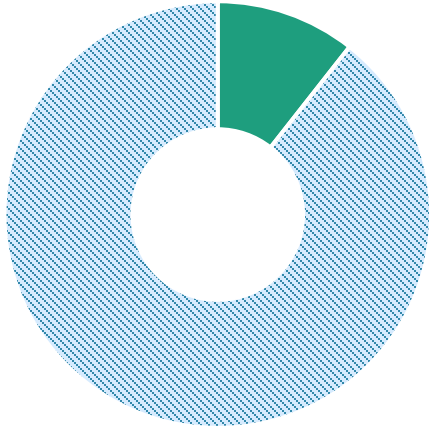
Accessing the aquifer is the main challenge facing public water suppliers

Wells have daily permitted withdrawal limits and physical limits on the amount that can be pumped in the short-term. These short-term limits can constrain a supplier's ability to meet peak summer demand, particularly when things like fire response or equipment failure reduce the number of wells a supplier has available to draw from.

Futureproofing the water supply system

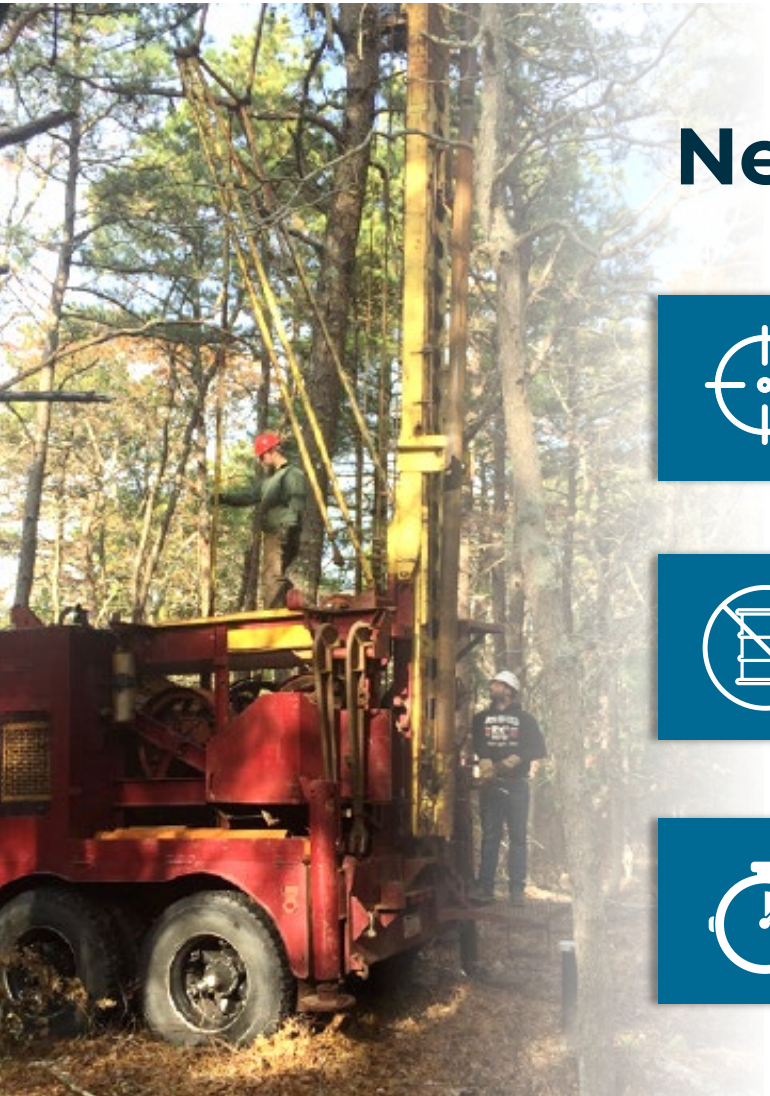
Existing permit and physical limitations are why new or additional wells may be needed to provide flexibility and redundancy even when existing wells can adequately supply demand.

A 2025 mapping analysis of Potential Public Water Supply Areas on Cape Cod indicates that:



less than **11%** *of land area could be considered suitable for water supply development*

Can’t we just drill more wells?

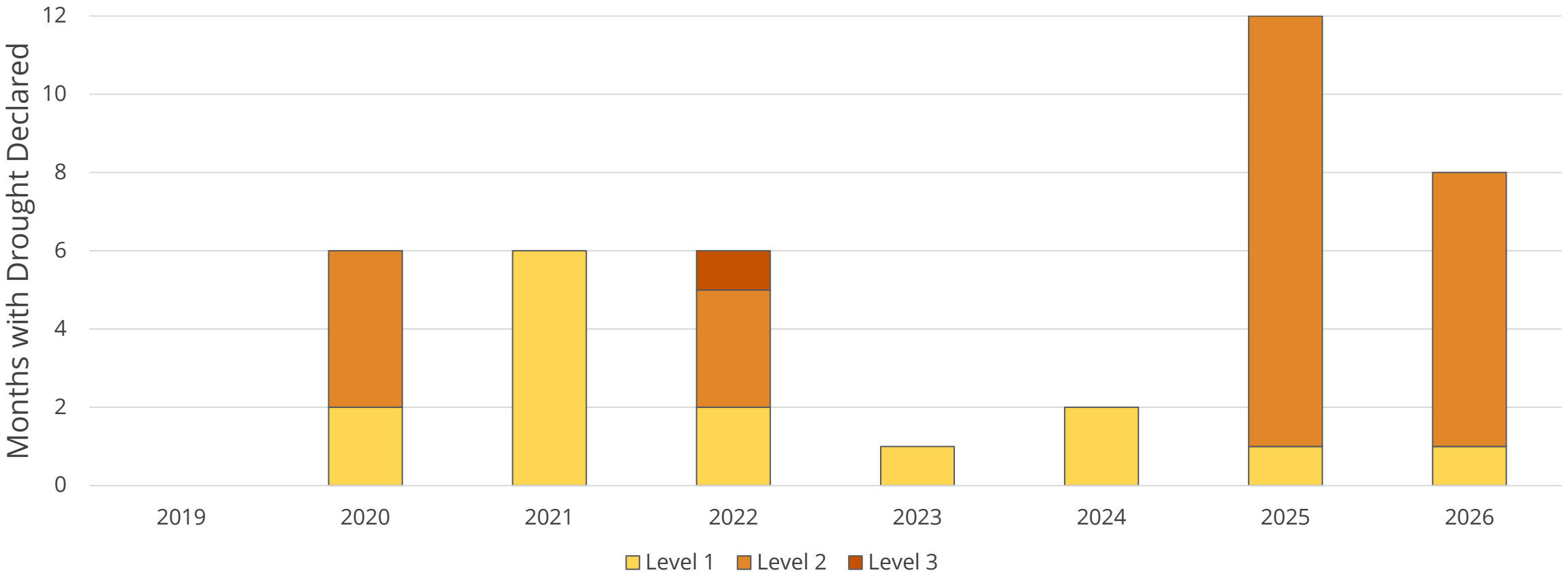


New Wells Need

- **400-foot Zone I radius**
- **No incompatible land uses**
- **Time**



Months with Drought Declarations
MASSACHUSETTS 2019-2026



REGIONAL POLICY PLAN

Water Resources Goal

To maintain a sustainable supply of high quality drinking water and protect, preserve, or restore the ecological integrity of Cape Cod's fresh and marine surface water resources.



RECOMMENDATION

Develop An Advanced Dynamic Groundwater Model

To support local and regional efforts to better understand groundwater flow under changing environmental conditions and the impacts of water withdrawals and inputs...



RECOMMENDATION

Advance Aquifer Protection Planning

To examine the health and capacity of the Cape's sole source aquifer to provide for the region's drinking water needs while ensuring that access and use of new supplies will not adversely impact the region's freshwater resources...