

Natural Gas Well Activity in the Basin



November 12, 2008

Niagara Falls, ON, Canada



Susquehanna River Basin

The Basin

- 27,510-square-mile watershed
- Comprises 43 percent of the Chesapeake Bay watershed
- 4.2 million population
- 60 percent forested
- 32,000+ miles of waterways

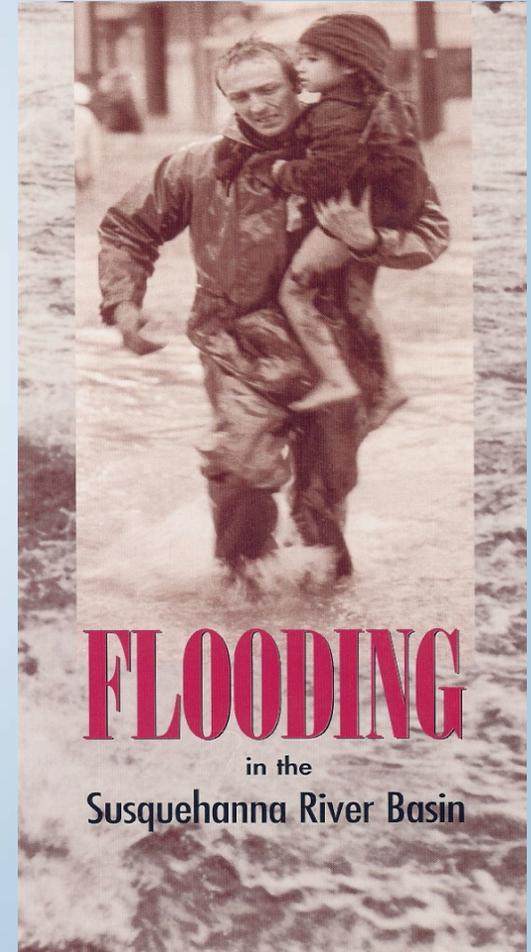


The Susquehanna River

- 444 miles, largest tributary to the Chesapeake Bay
- Supplies 18 million gallons a minute to the Bay

Commission Programs

- Flood Forecast and Warning System
- Monitoring and Assessment
- Public Education and Outreach
- Water Resources Planning
- Drought Coordination
- Regulatory Program



Commission Regulation

- Consumptive water use definition (§806.3)
 - The loss of water transferred through a manmade conveyance system or any integral part thereof (including such water that is purveyed through a public water supply system), due to transpiration by vegetation, incorporation into products during their manufacture, evaporation, *injection of water or wastewater into a subsurface formation from which it would not reasonably be available for future use in the basin*, diversion from the basin, or other process by which the water is not returned to the waters of the basin undiminished in quantity.

Commission Regulations

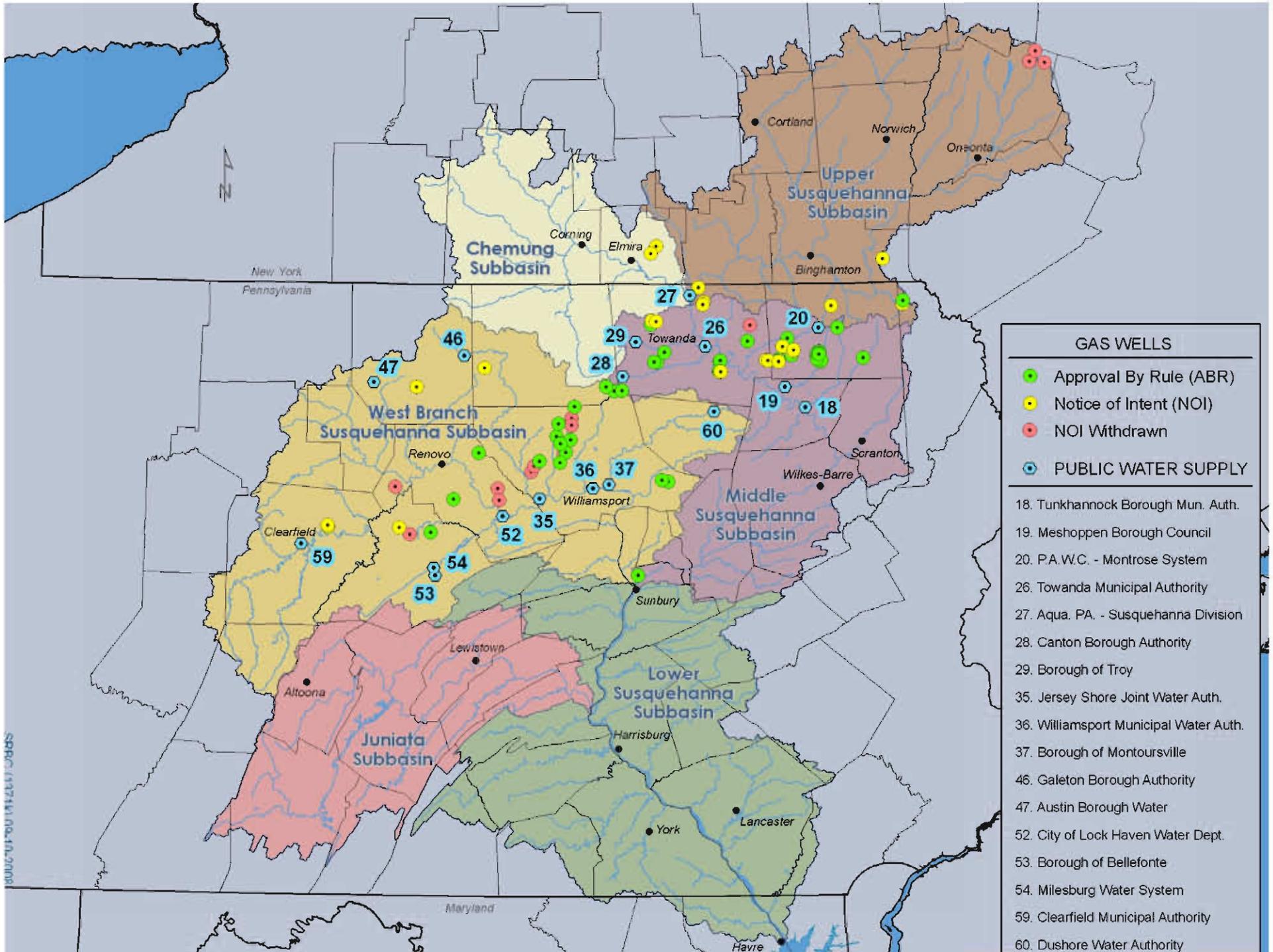
- Projects requiring review and approval
 - Consumptive water use §806.4(a)(1)
 - 20,000 gpd/30-day average (600,000 gallons)
 - Approval by Rule §806.22(e)(i) public water supply
 - Water withdrawals §806.4(a)(2)(iii)
 - 100,000 gpd/30-day average (3,000,000 gallons)
 - Any project which involves a withdrawal from a groundwater or surface water source and which is subject to the requirements of §806.4(a)(1) regarding consumptive use.

Commission Regulation (cont'd)

Approval by rule for consumptive uses.

-Consumptive water use §806.22(e)

Any project whose **sole source of water for consumptive use is a public water supply** withdrawal, may be approved under this paragraph (e) in accordance with the following, unless the Commission determines that the project cannot be adequately regulated under this approval by rule.



Proposed Rulemaking

- Natural gas well development projects would be regulated on a drilling pad basis.
- All consumptive use approvals would occur pursuant to an Approval by Rule process.
- The new Approval by Rule process would be applicable to all water sources utilized for consumptive use, not just public water supply systems.
- It would allow for the use of wastewater discharge, mine pool water and other lesser quality waters, as well as other approved sources.
- Project sponsors would file a Notice of Intent with copies to the host state, county and municipality, and publish notice locally.

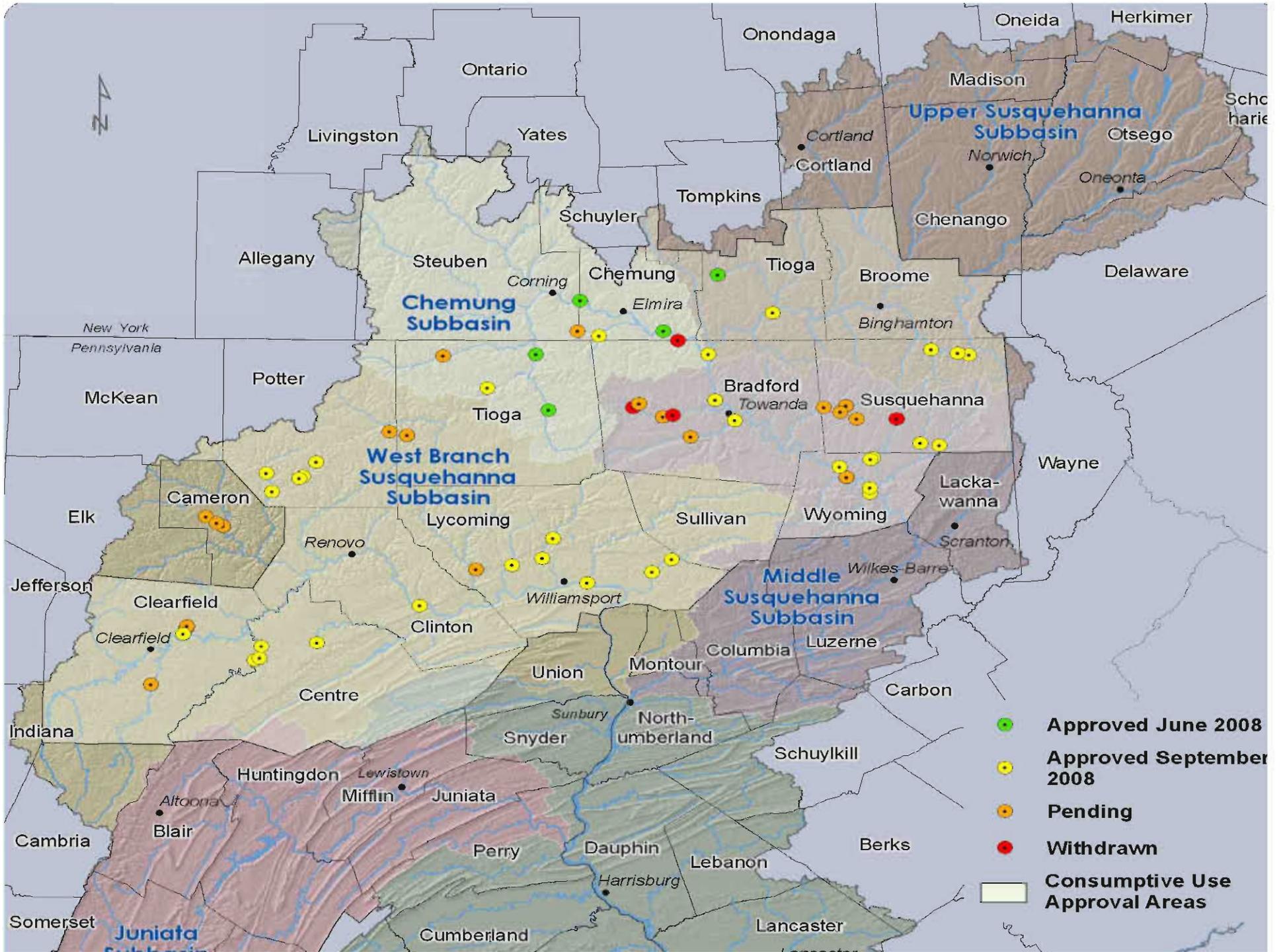
Proposed Rulemaking

- Approvals would require metering, daily use monitoring and quarterly reporting, and must comply with the Commission's consumptive use mitigation requirements.
- Production fluids and brines utilized for subsequent fracs would have to be accounted for, but not included in the consumptive use calculation so as to incentivize re-use.
- Projects would be required to demonstrate compliance with state and/or federal law for the treatment and disposal of flow-back or produced fluids.
- Any withdrawal approval issued by the Commission after issuance of the ABR could be added as a source for the project.
- Approvals would have a term of five (5) years and be nontransferable.

Commission Regulation

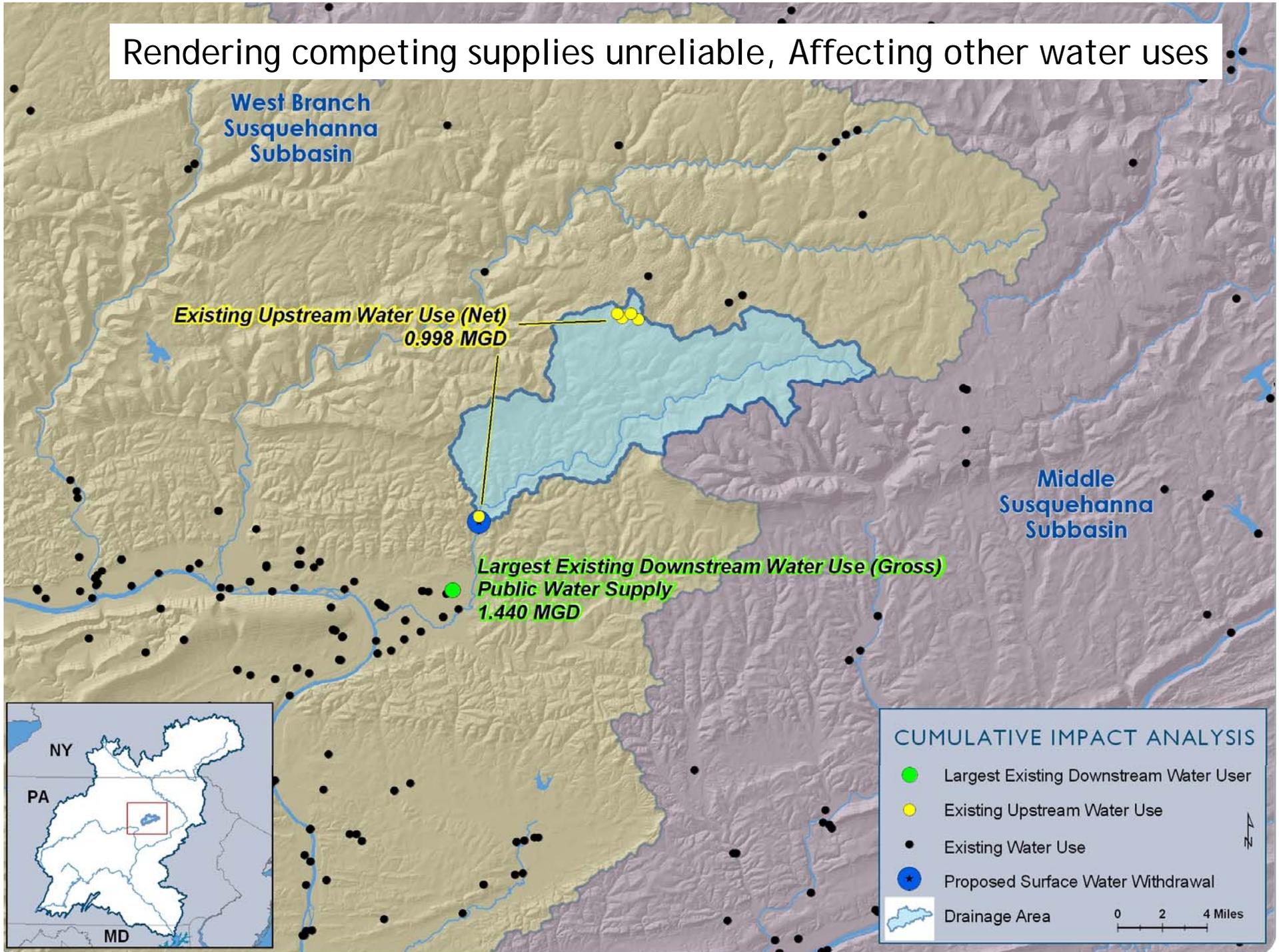
Water withdrawals §806.4(a)(2)(iii)

(2) The Commission may deny an application, limit or condition an approval to ensure that the withdrawal will not cause significant adverse impacts to the water resources of the basin. The Commission may consider, without imitation, the following in its consideration of adverse impacts: **Lowering of groundwater or stream flow levels; rendering competing supplies unreliable; affecting other water uses**; causing water quality degradation that may be injurious to any existing or potential water use; **affecting fish, wildlife or other living resources or their habitat**; causing permanent loss of aquifer storage capacity; or **affecting low flow of perennial or intermittent streams**.



Map showing water rights approval status by county and subbasin in Pennsylvania. The map is color-coded by subbasin: Upper Susquehanna (brown), Chemung (light green), West Branch Susquehanna (light yellow), Middle Susquehanna (light purple), and Juniata (light red). Colored dots indicate approval status: green for June 2008, yellow for September 2008, orange for pending, and red for withdrawn. Light yellow shaded areas indicate consumptive use approval areas. Major cities and counties are labeled throughout the state.

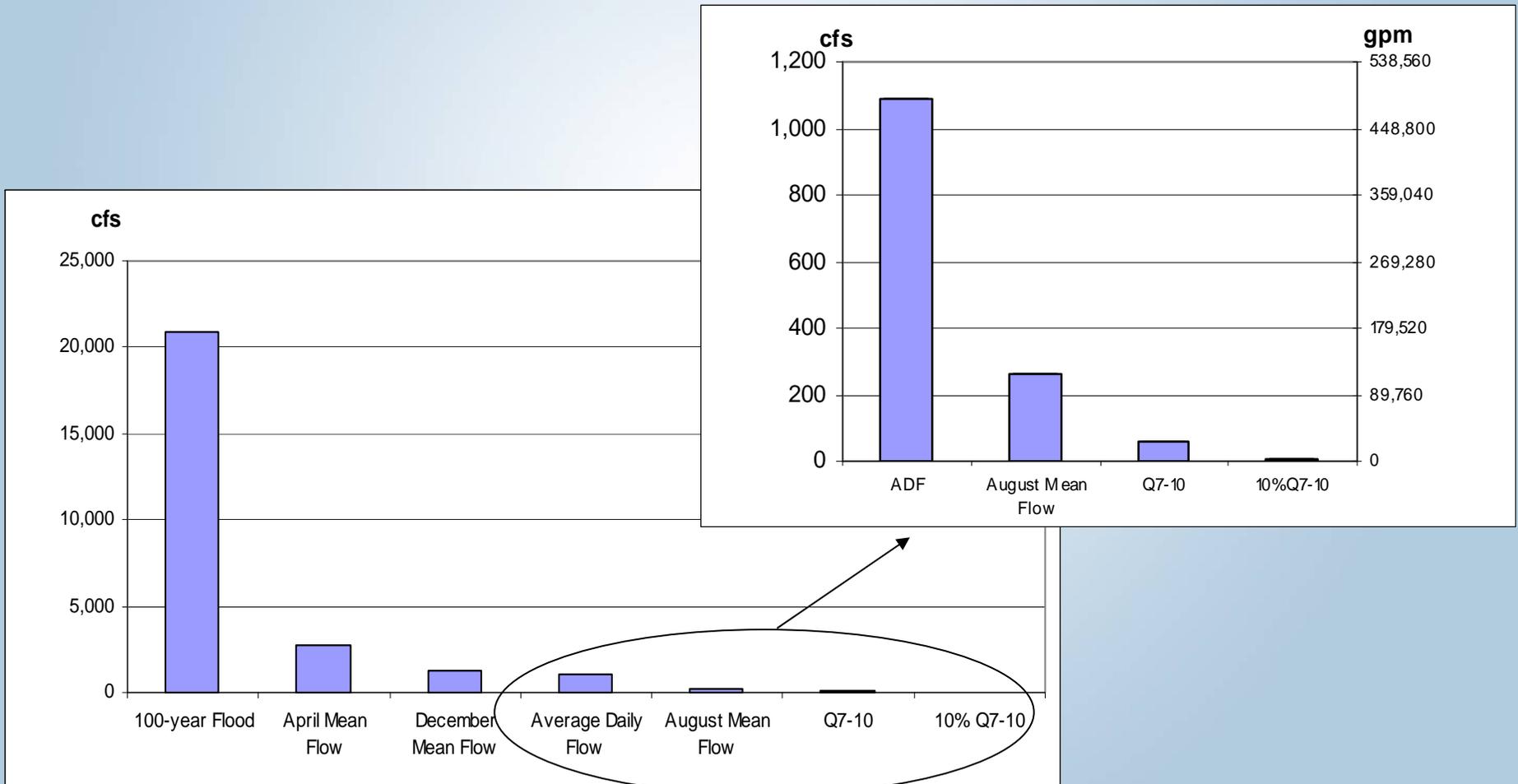
Rendering competing supplies unreliable, Affecting other water uses



Affecting fish, wildlife or other living resources or their habitat

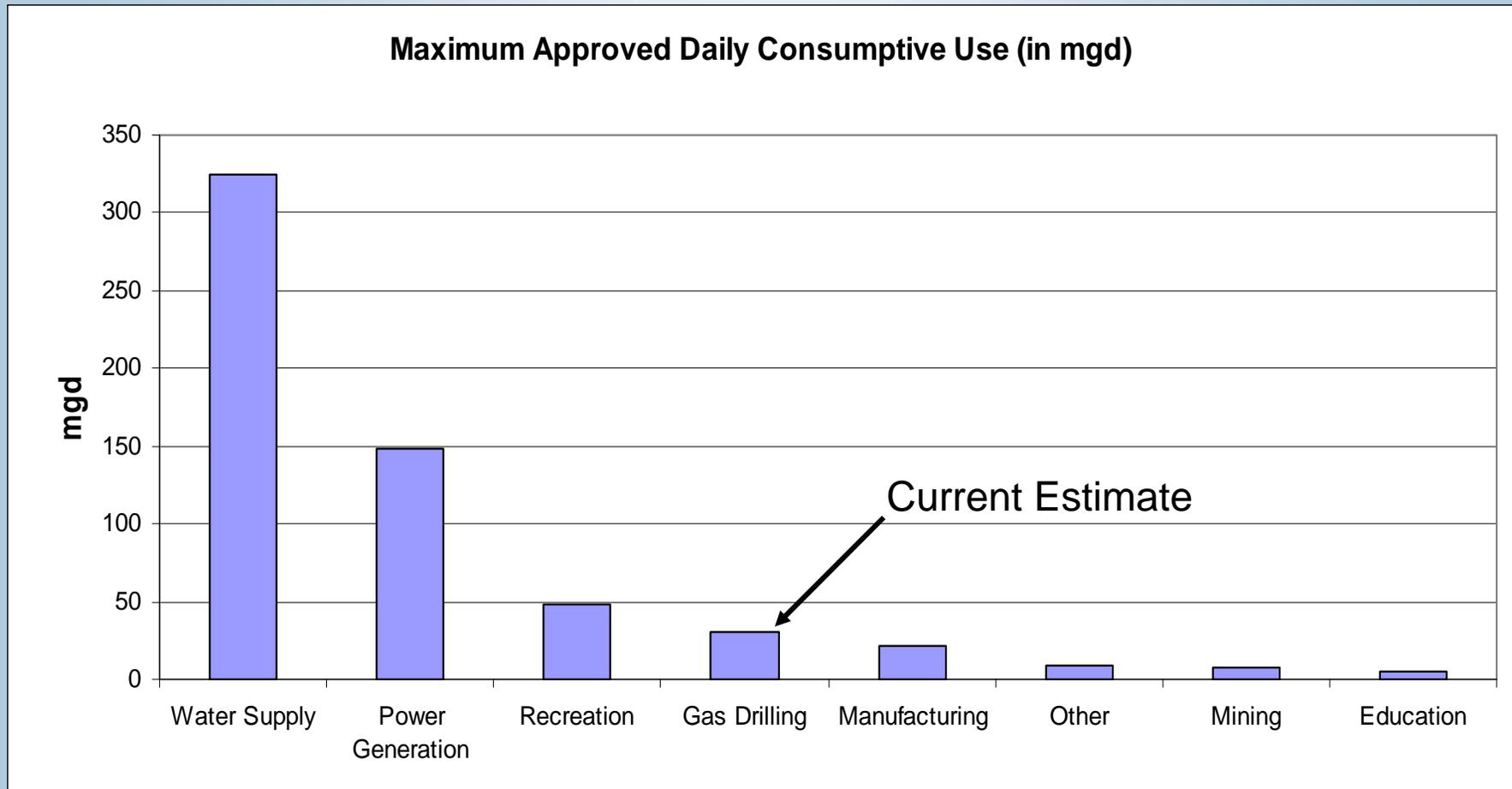


Affecting low flow of perennial or intermittent streams

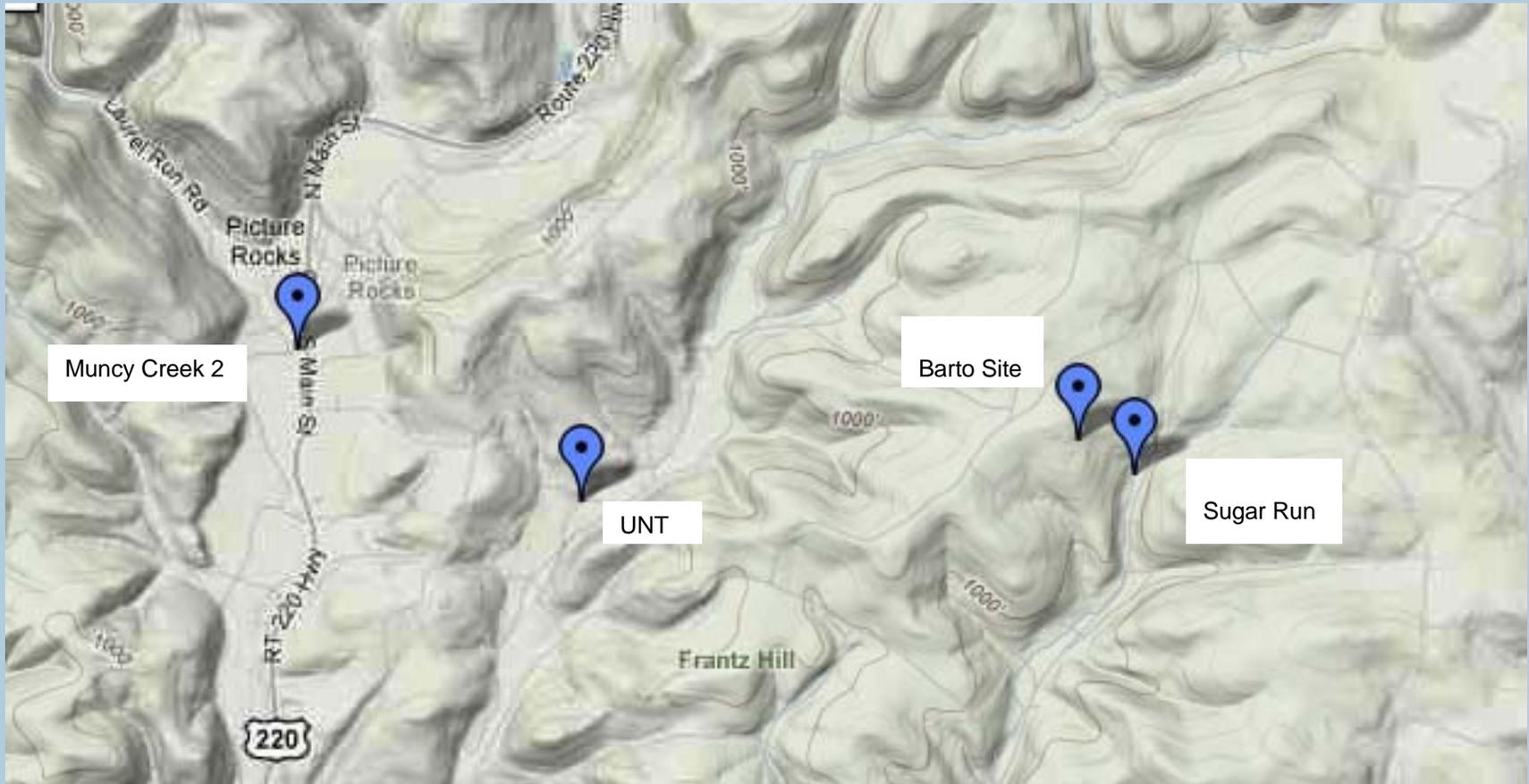




Maximum Daily Consumptive Use







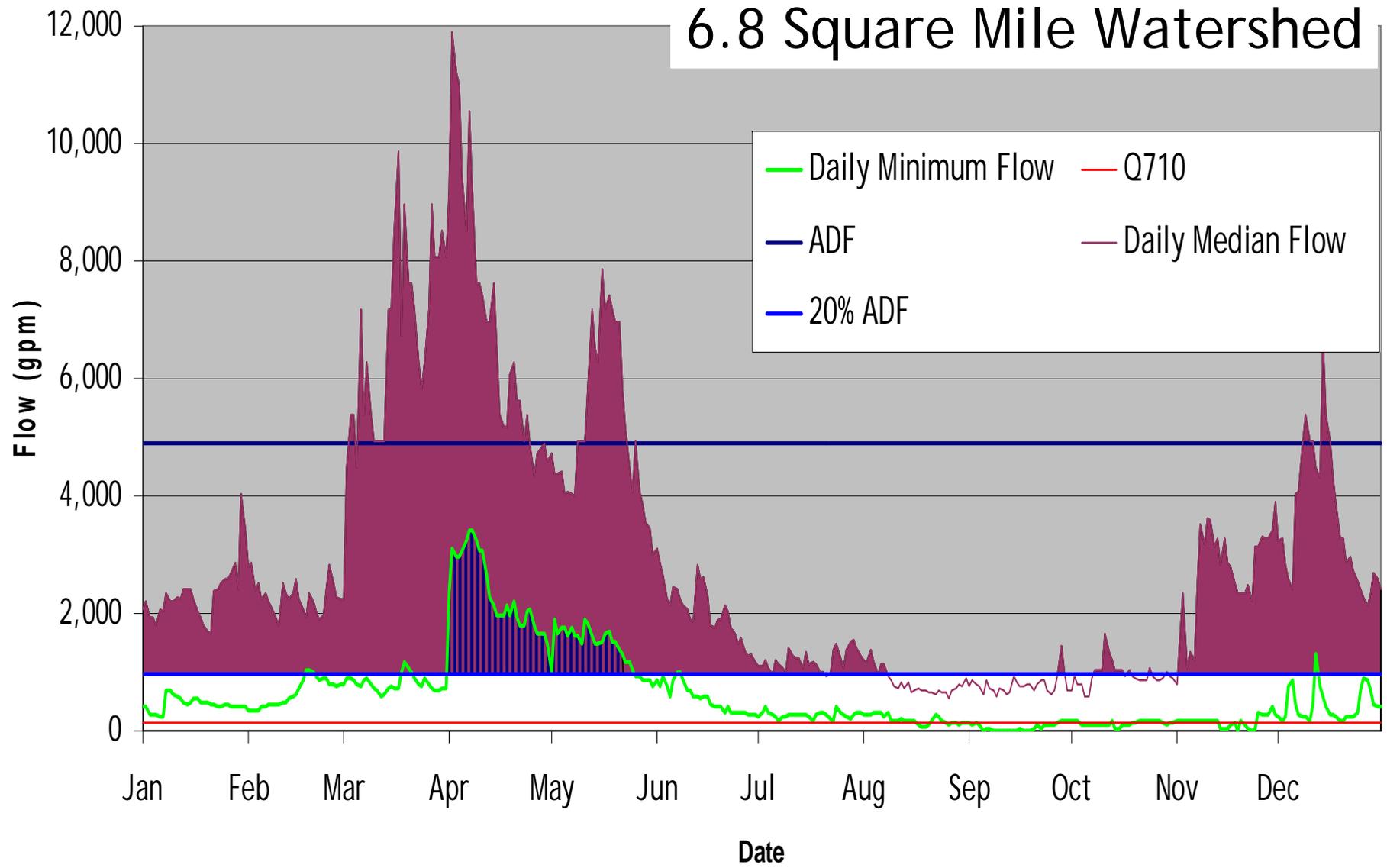
5.7 miles



1.4 miles



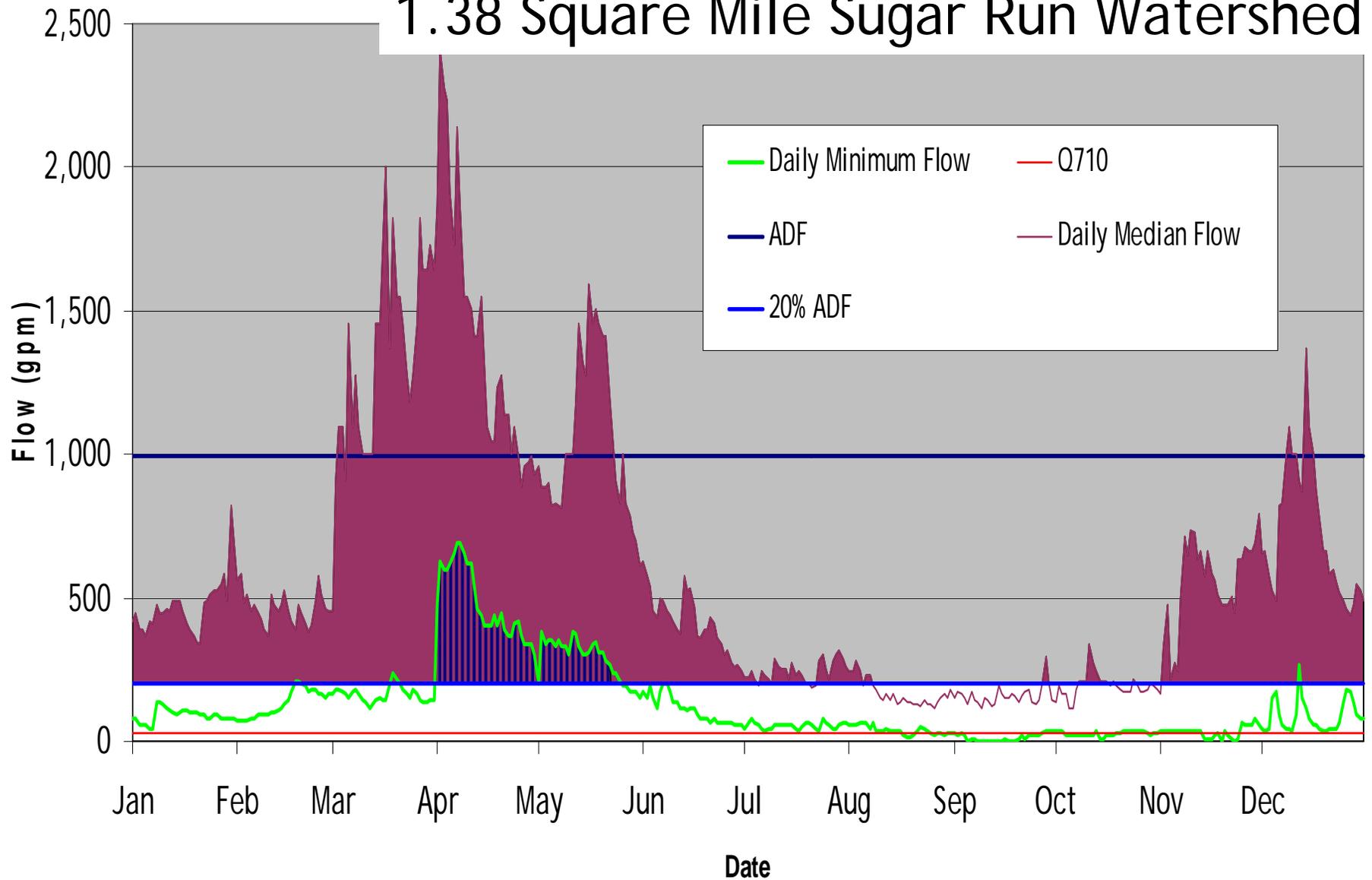
6.8 Square Mile Watershed



0.5 miles



1.38 Square Mile Sugar Run Watershed





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