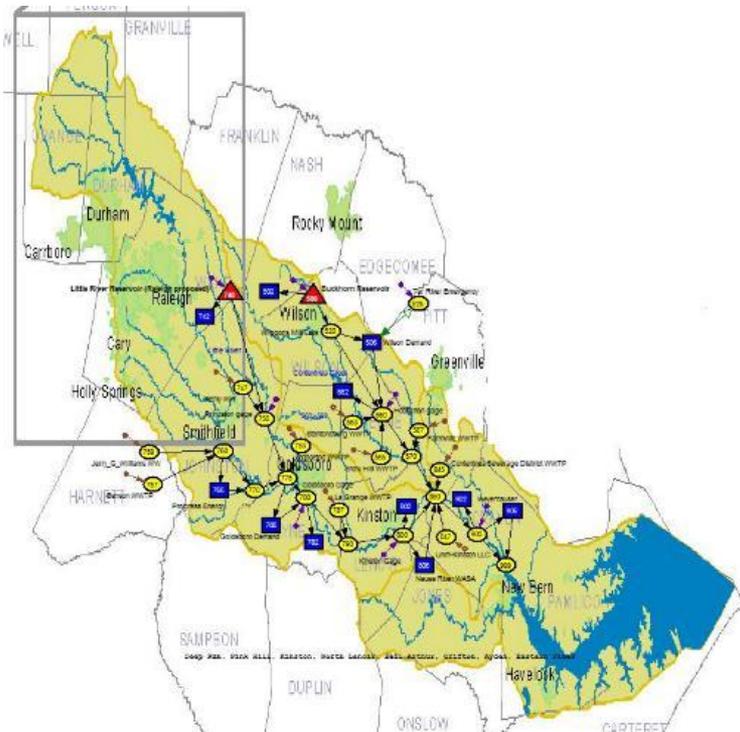




City of Raleigh Water Supply Planning Update

**Environmental Management Commission
Water Allocation Committee
May 13, 2015**



Greek Mythology for 2015

▪ Who was Sisyphus?

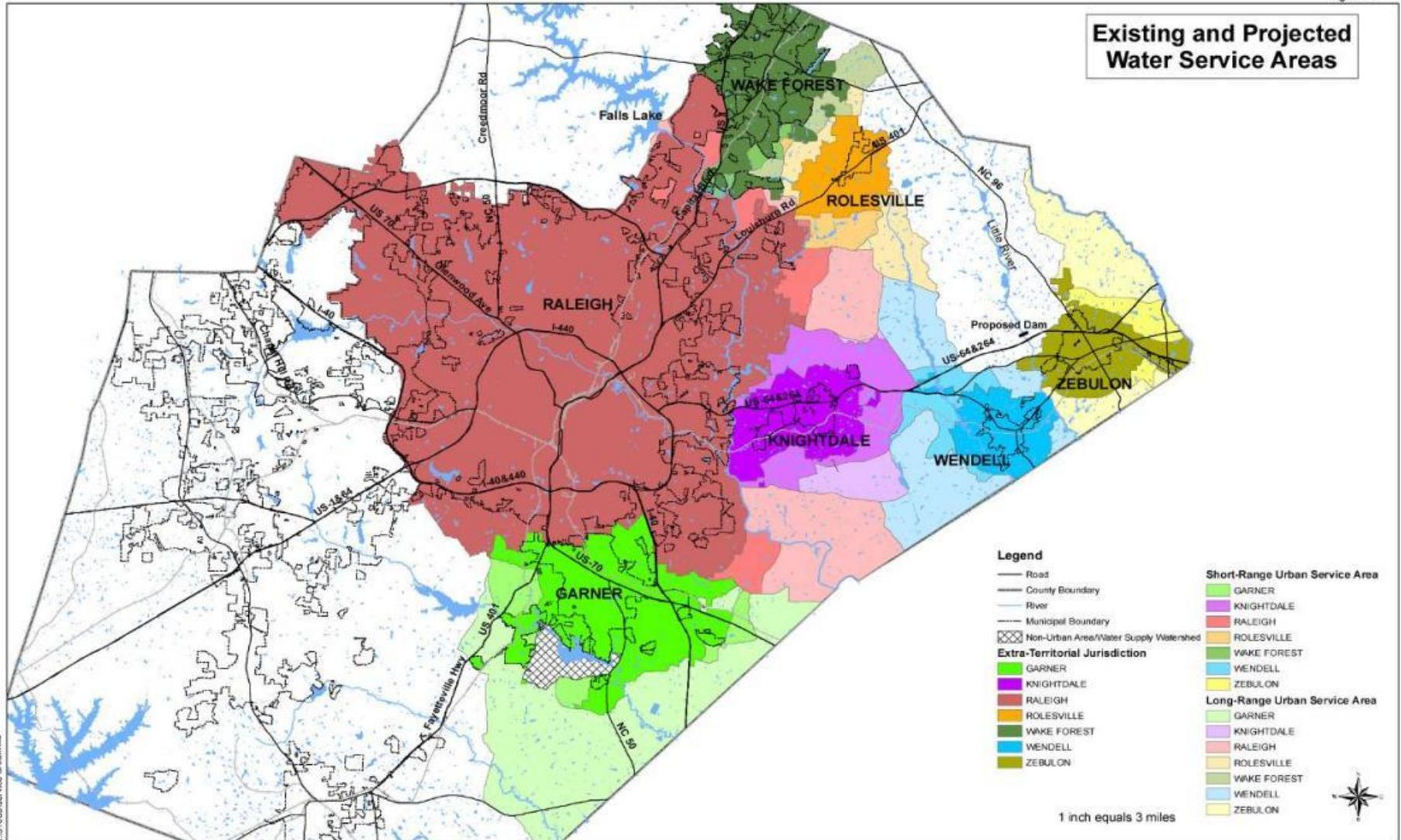
- The first king of Cornith, who was so clever, he tricked the gods into his return from Hades.
- Zeus designed his punishment as an eternity of useless efforts and unending frustration.
- Punishment: Push large stone uphill in Hades, but before cresting the summit, the stone always rolls back down.

- *Sisyphus* (1548-1549) by [Titian](#),
- [Prado Museum](#), [Madrid](#), [Spain](#)



Water Supply Planning Area

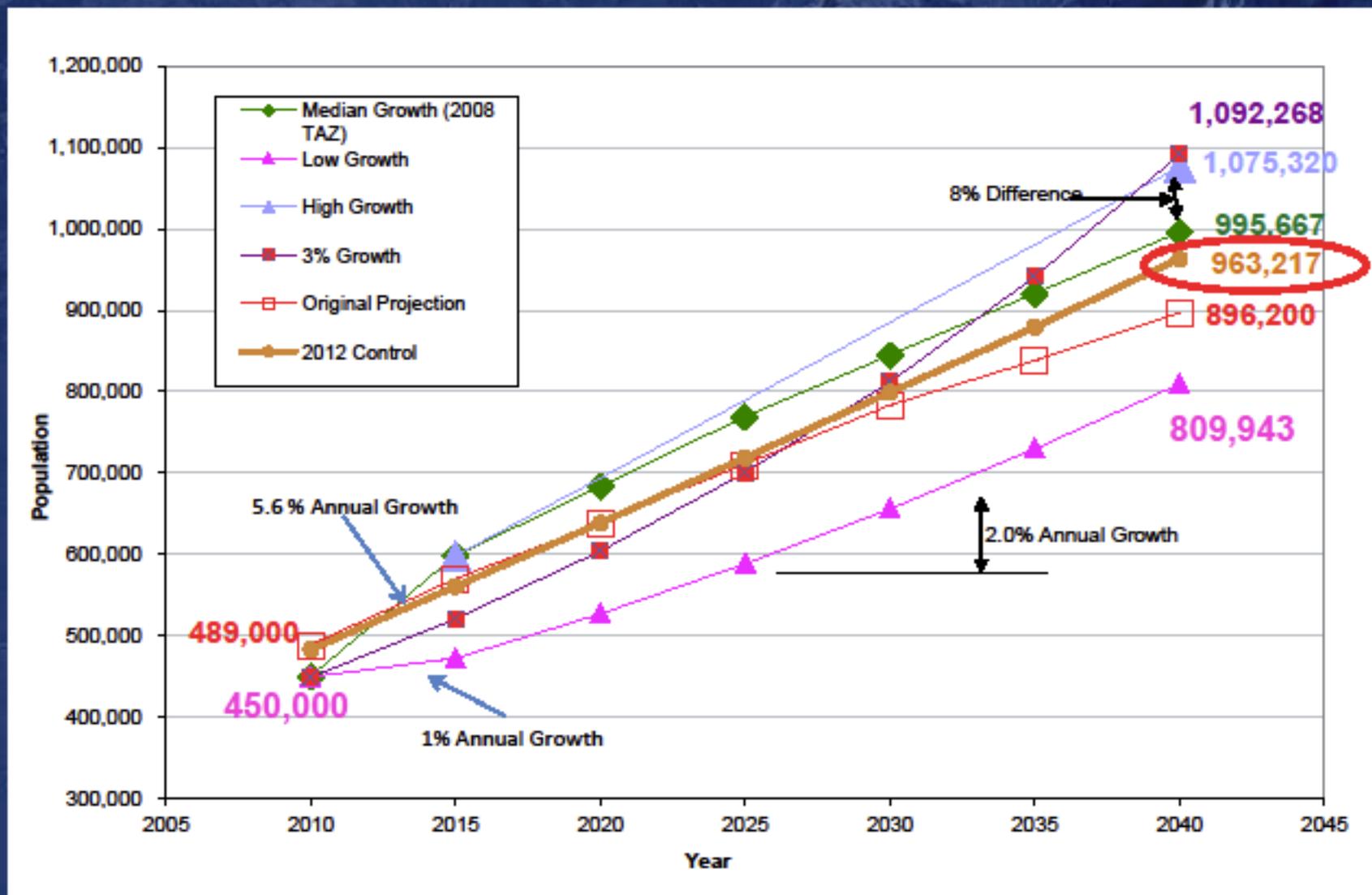
Figure 1



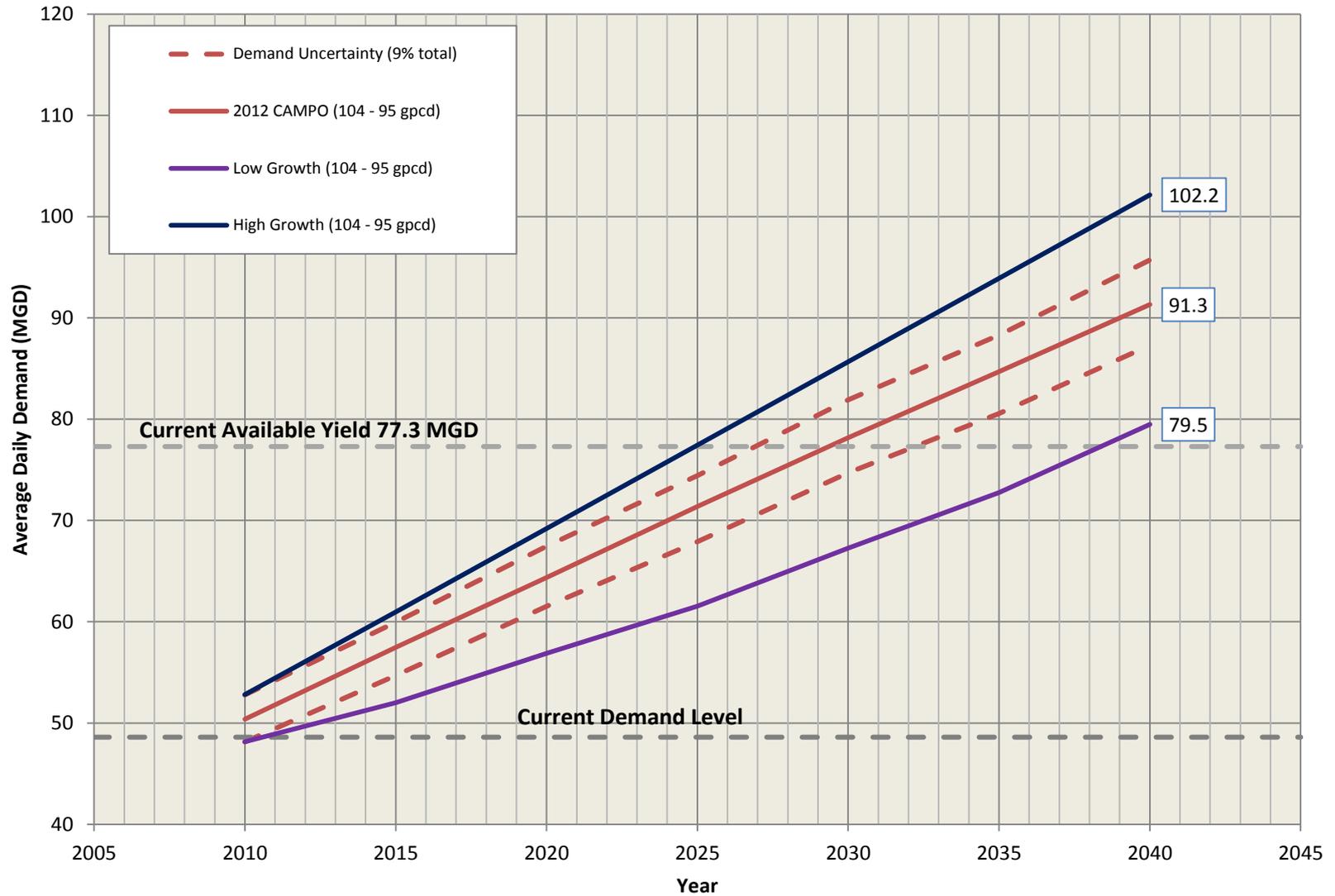
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Source: Wake County GIS, and NCDOT

Potential Range of Population Projections



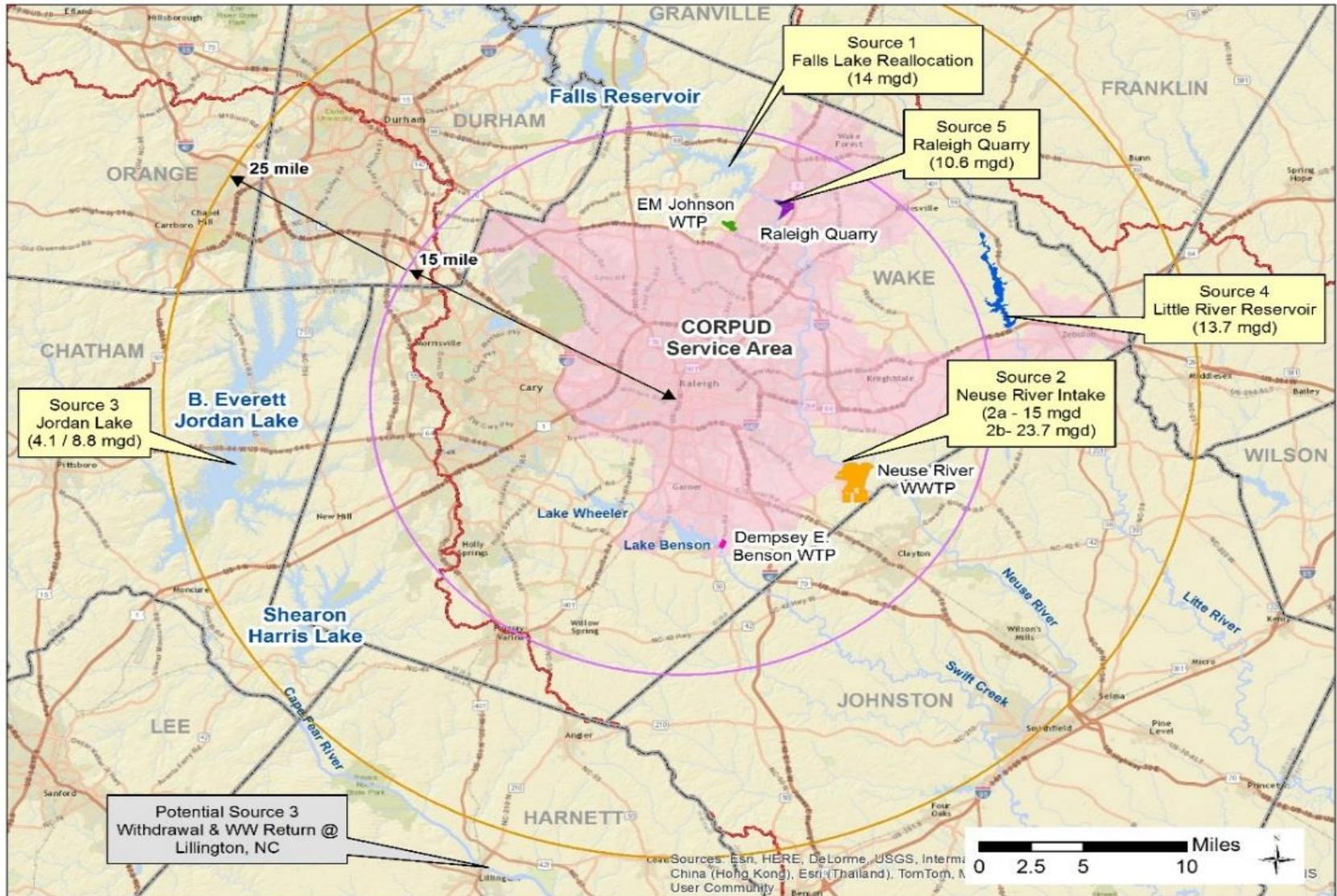
Demand Projections



Historic Water Resource Planning

- 1971 Identified as a possible site for water supply reservoir by Moore/Gardner, Edwards, Piatt and Wooten Engineers Task Force;
- 1986 Evaluated for drinking water in "East Wake County Water Supply Alternatives and Analysis" by Peirson and Whitman, Inc.;
- 1987 Watershed zoned for water supply purposes;
- 1988 EMC reclassified watershed to today's WS-II classification
- 1989 *Phase I Preliminary Engineering Services Report for the Proposed Little River Reservoir;*
- 1990 *Environmental Assessment Phase 1 Report;*
- 1993 *Draft Environmental Assessment* prepared to evaluate project feasibility;
- 1995 Wake County began reservoir property acquisition;
- 2000-2006 Raleigh and other Wake County Municipalities merge utilities;
- **2006-2015 Raleigh undertakes new water resource development though Federal and State permitting processes.**

Water, Water Everywhere....?



Processes, Challenges and Hurdles

■ Federal

- Clean Water Act
- The National Environmental Policy Act
- The Endangered Species Act
- EPA Region 4 Guidelines on Water Efficiency Measures for Water Supply Projects
- National Case Law
- Well Established Opposition or Guidance Groups

■ State

- State Delegation of Components of the Clean Water Act
- Interbasin Transfer Law & Rule
- L&S Water Power v. Piedmont Triad Rural Water Authority decision
- Ecological Flows and the EFSAB Recommendations
- Well Established Opposition or Guidance Groups

Clean Water Act

- **An issue that crosses Federal and State boundaries through the 404 (dredge and fill) and 401 (water quality) requirements of almost any water resource project.**
- **Source of the required “Least Environmentally Damaging Practicable Alternative” language.**
- **“Generally, as the scope/cost of a project increases, the level of analysis should also increase.” –EPA Guidance Document**

Clean Water Act

Water Quality Models for Lakes and Streams

- For a Falls Lake Reallocation, it is a revisit of the EFDC model used for the Falls Rules;
- For a Little River Reservoir, it could be newly created models with years of monitoring to support the conclusions.

Instream Flows Studies

- For the Little River Reservoir it was a potential \$2 million multiple year study of 70 stream miles below the proposed reservoir.

Mitigation for Wetland and Stream Impacts

- Potential exists for any project, for the Little River Reservoir, 573 acres of wetlands and 38,000 LF of streams.

National Environmental Policy Act (NEPA)

- **Also an issue that can cross Federal and State Boundaries insomuch as North Carolina has a State Environmental Policy Act (SEPA).**
- **Sets up the process for all federal agencies to prepare environmental assessments and environmental impact statements.**
- **Again: “Generally, as the scope/cost of a project increases, the level of analysis should also increase.” –EPA Guidance Document**

Endangered Species Act

- **Federal issue (the State does list species of concern), the Act was designed to protect critically imperiled species from extinction as a "consequence of economic growth and development untempered by adequate concern and conservation."**
- **The U.S. Supreme Court found that "the plain intent of Congress in enacting" the ESA "was to halt and reverse the trend toward species extinction, whatever the cost".**

Endangered Species Act



Snail Darter

Tellico Dam



Endangered Species Act

Currently Listed

Dwarf Wedgemussel, *Alasmidonta heterodon*

Tar River spiny mussel, *Elliptio steinstansana*

Atlantic Sturgeon, *Acipenser oxyrinchus*

Petitioned for Listing*

Yellow lance, *Elliptio lanceolata*

Green floater, *Lasmigona subviridis*

Atlantic pigtoe, *Fusconaia masoni*

Carolina madtom, *Noturus furiosus*

Neuse river waterdog, *Necturus lewisi*

*plus 69 other species found or historically found in NC waters

Processes, Challenges and Hurdles

- **EPA Region 4 Guidelines on Water Efficiency Measures for Water Supply Projects.**
- **National Case Law**
 - 25-year Tri-State “Water Wars” of Georgia, Alabama and Florida.
- **Well Established Opposition or Guidance Groups**
 - American Rivers, Center for Biological Diversity, Southern Environmental Law Center, Riverkeepers Alliance, Environmental Defense Fund, upstream and down stream users including Cities, agriculture etc...

Processes, Challenges and Hurdles

- **L&S Water Power v. Piedmont Triad Rural Water Authority decision**
 - The case treated riparian flow as an ownership right;
 - Reduction flow = taking part of real property.
 - Established Potable Water Use subservient to riparian water rights... the end of new reservoirs in North Carolina?
- ***Randleman Reservoir: 35 years of strife and litigation with L&S Water Power only the latest of hurdles...**

Processes, Challenges and Hurdles

- 
- **Interbasin Transfer Law & Rule**
 - **Ecological Flows and the EFSAB Recommendations**

Most Difficult Challenge and Hurdle?

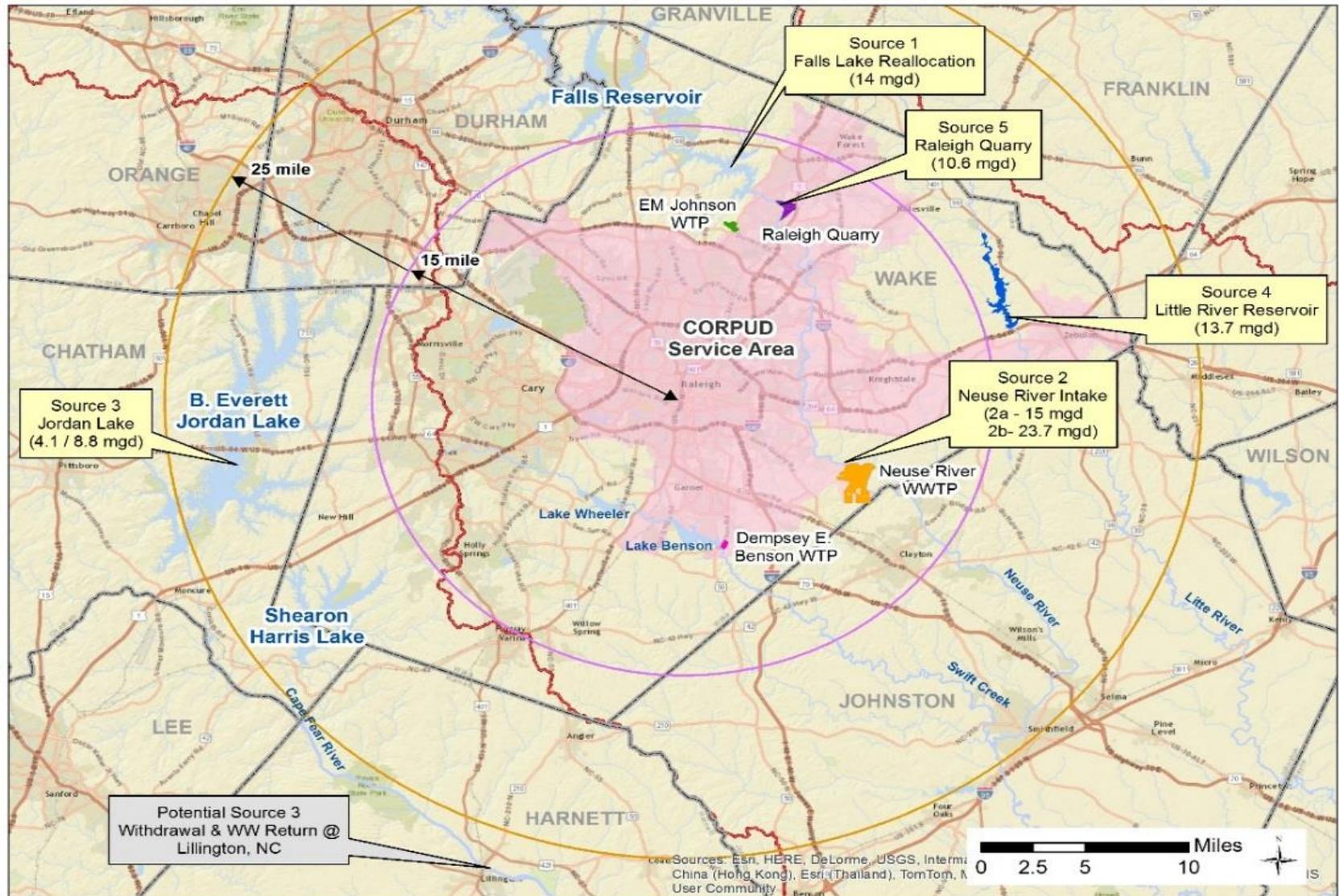
■ Complexity!

- Complexity brings grid lock, accidental or intentional;
- Complexity brings confusion for decision makers and the public;
- Complexity brings “Analysis Paralysis”;
- Complexity brings opportunity for opponents to derail projects that society would otherwise consider reasonable;
- It brings uncertainly...

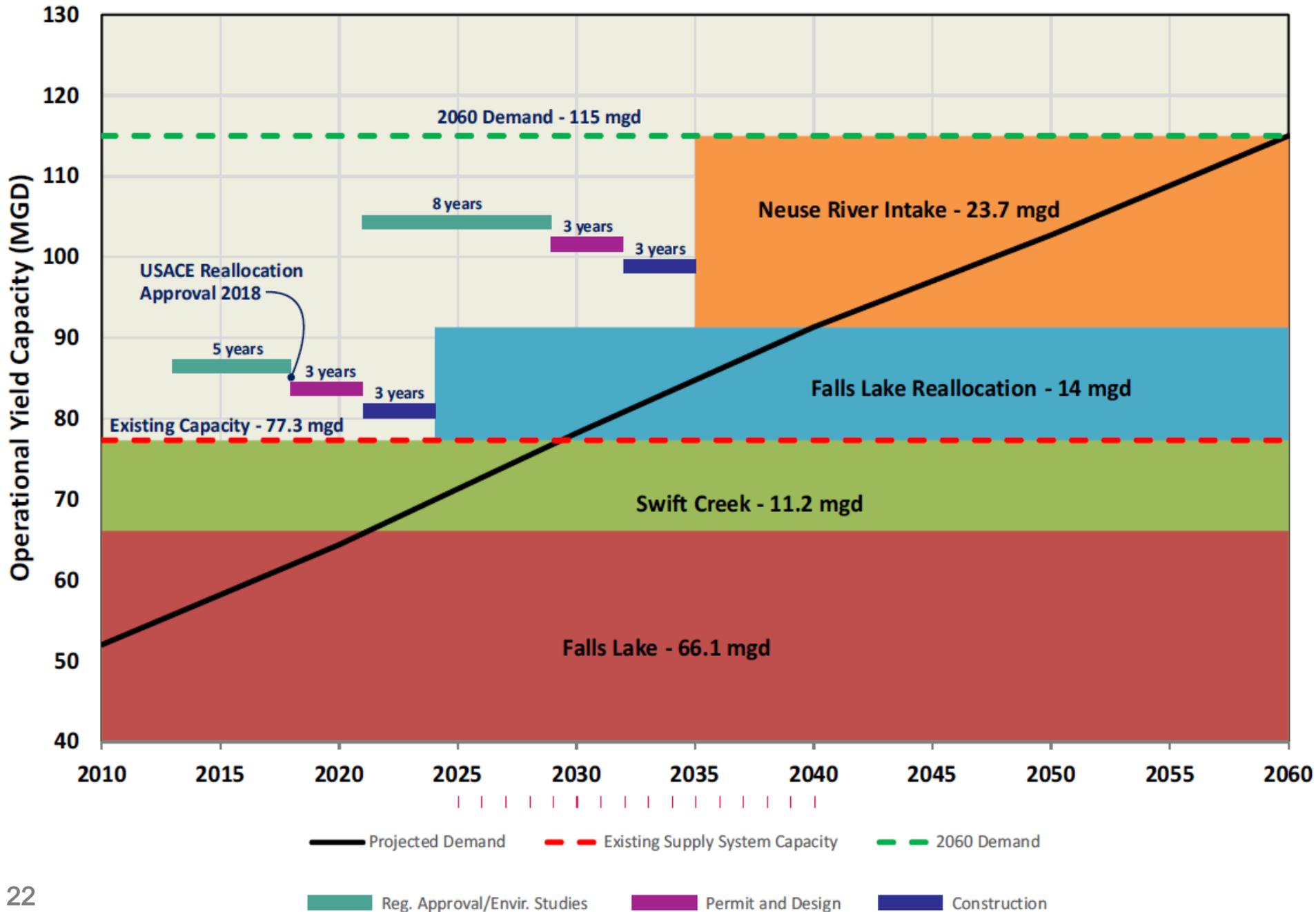
Projected Water Resource Needs

	2011	2020	2030	2040	2050	2060
Surface Water Supply, mgd	77.3	77.3	77.3	77.3	77.3	77.3
Reduced Demand, mgd	--	1.9	4.5	8.7	14.4	15.2
Service Area Demand, mgd	51.9	64.4	78.2	91.3	102.7	115.00
Future Need, mgd	--	0.0	13.8	14	25.4	37.7

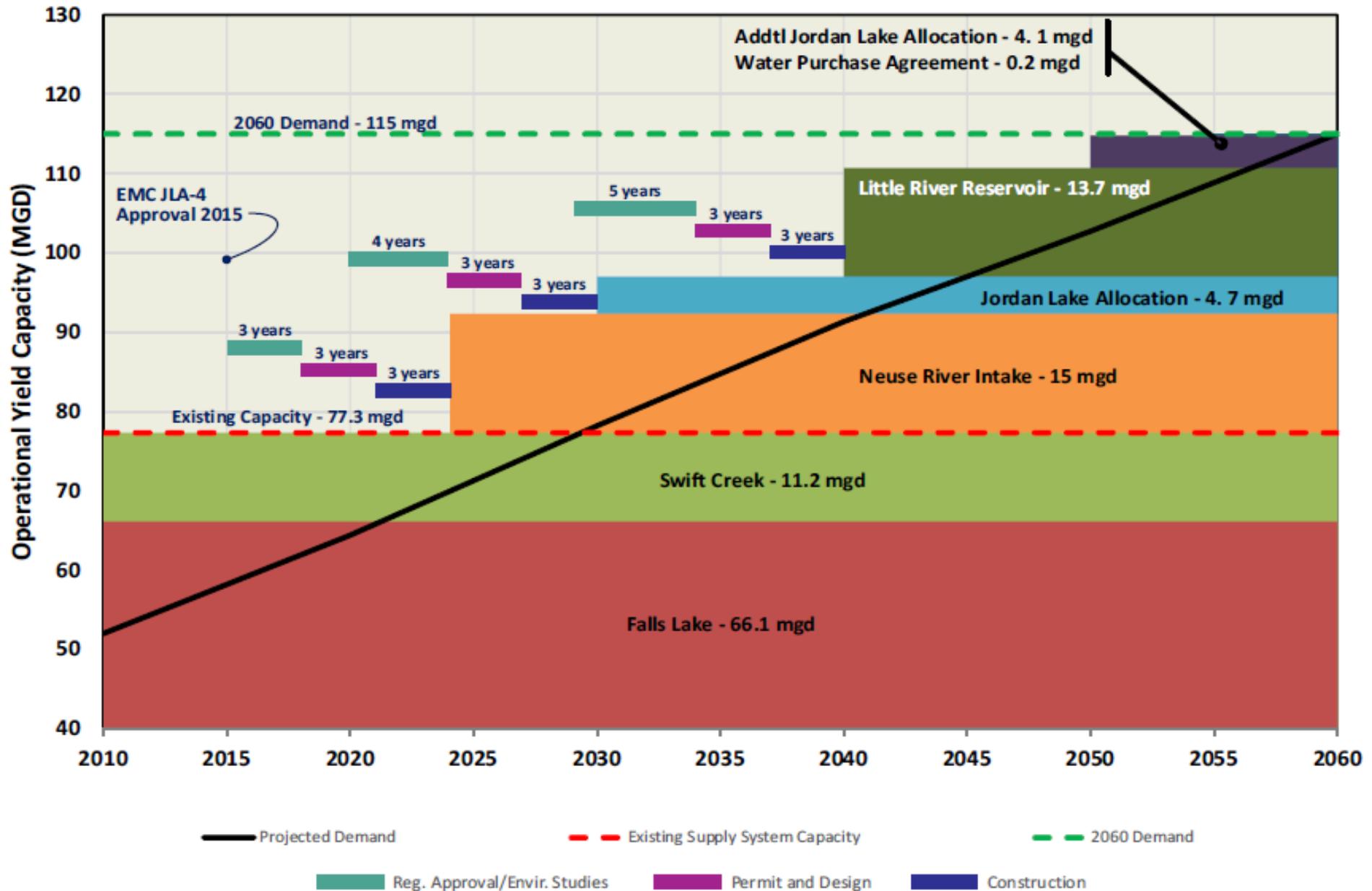
Water, Water Everywhere... and what does Complexity Mean



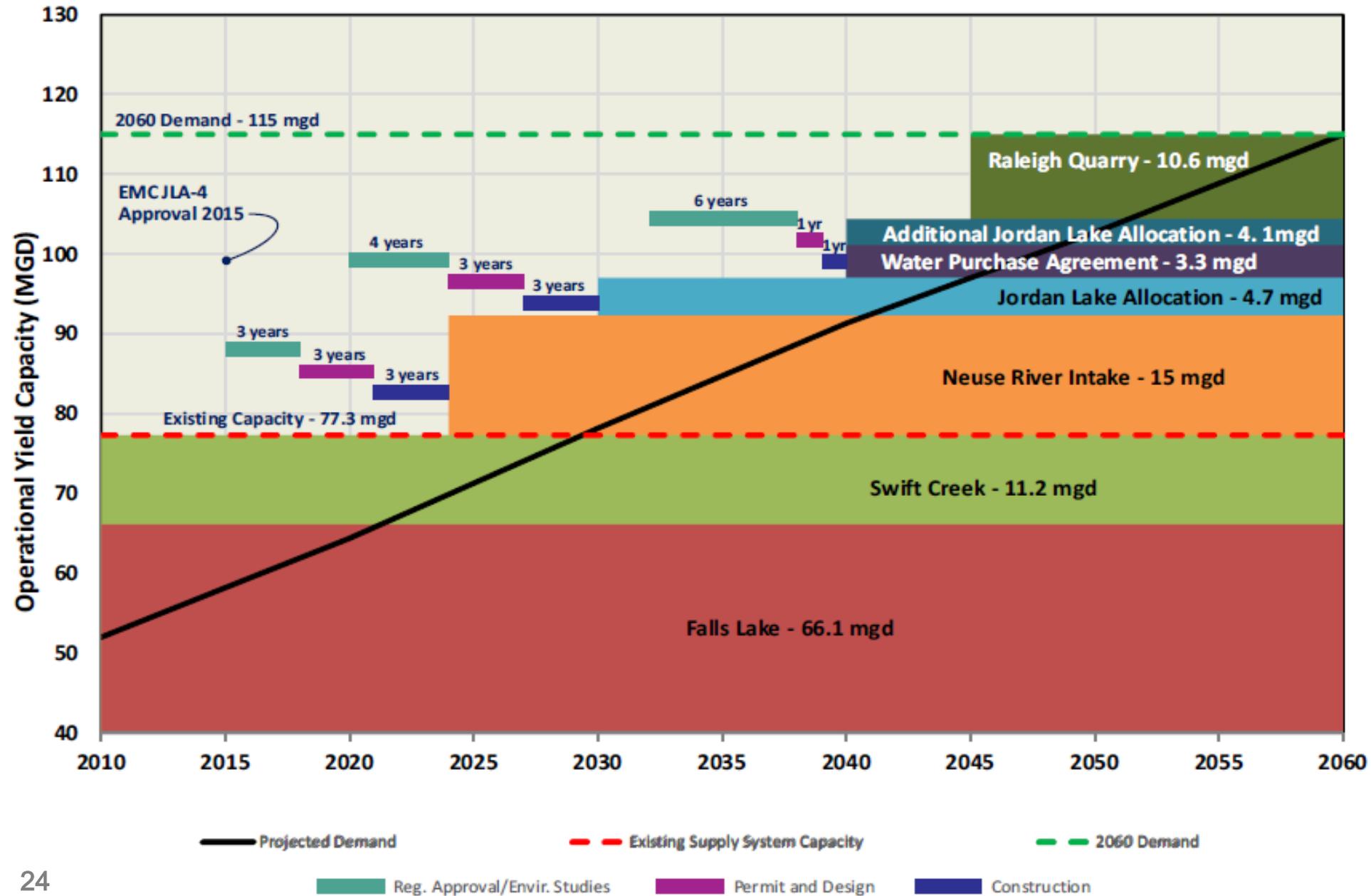
Alternative 1



Alternative 2



Alternative 3



The End?

Questions

