

# WATER RESOURCES

- Water
- Wastewater
- Stormwater
- Reuse Water



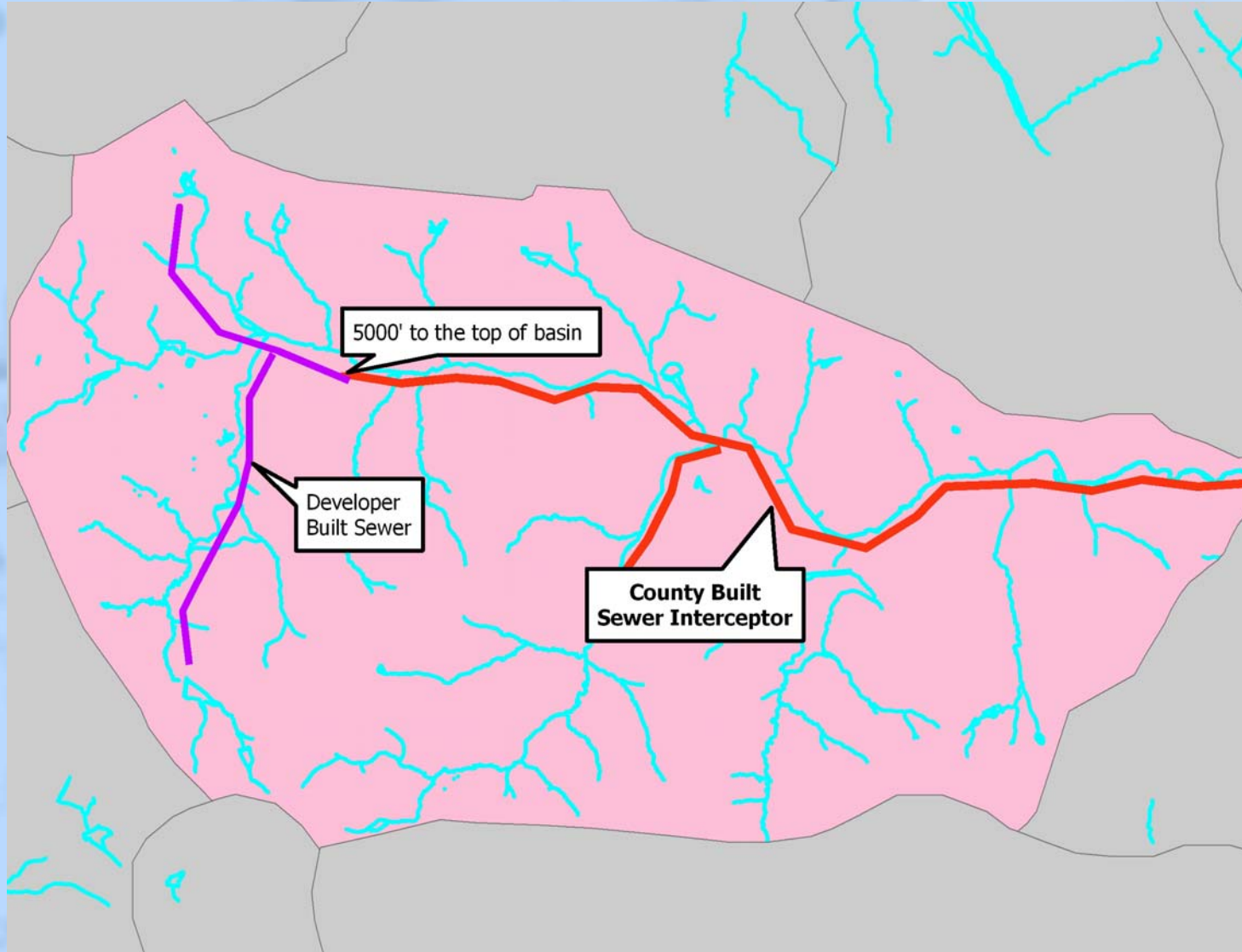
# Water Resources 101

- Subbasin: County is divided into 60 sewer subbasins which are basically small drainage basins
- Interceptor Sewer: gravity sewer (usually larger diameter) which collects wastewater from smaller collector sewers
- Wastewater Pump Station: located at a low point to collect flow to be pumped elsewhere to be treated
- Force Main: pressure pipe which carries pumped wastewater
- Water Reclamation Facility: treats wastewater
- Transmission Main: large diameter water pipe
- Water Filter Plant: produces potable water

# Design Policies

- County builds interceptors to within 5,000 linear feet of top of basin as funds become available
- Interceptors: 50 year flow design
- Pump Stations
  - Concrete: 20 years
  - Pumps: Phased approach
- Force Mains
  - 50 year flow design
  - 2 parallel pipes
- Minimum water pressure to meet fireflows

# Who builds what where?



# Design Policies

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# Environmental Policies



- Wetlands Protection
- Watershed Protection
- Stormwater Management
- Minimize disturbance
- Control pollutants in runoff
- Public Education

# Operational Policies

- Reduce per capita demands
- Improve reliability
- Comply with environmental and public health regulations
- Maintaining a high level of service at a minimum cost by using asset management principles
- **PLAN PROACTIVELY!**



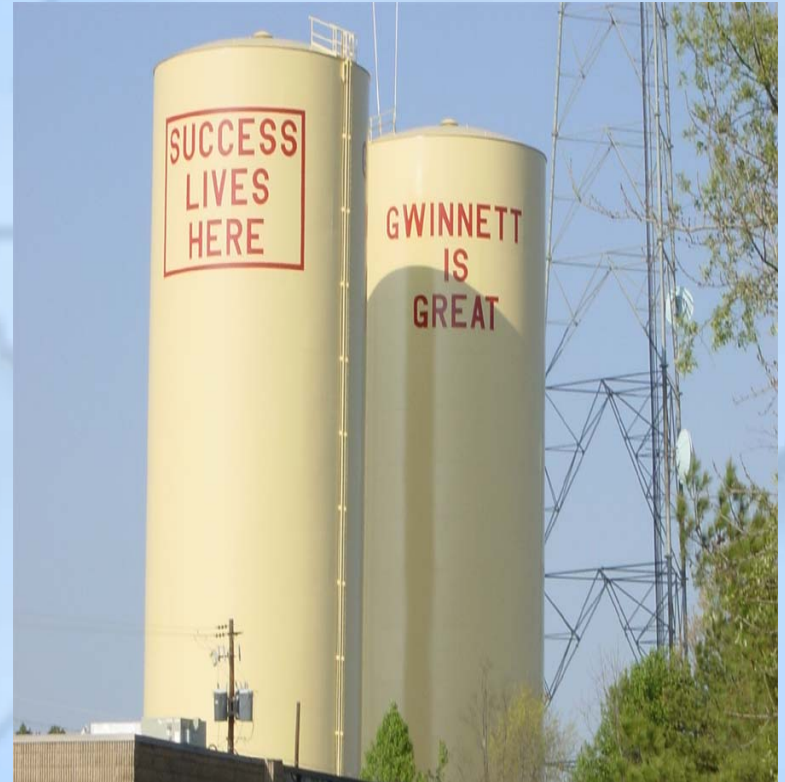
# Taking a realistic look....



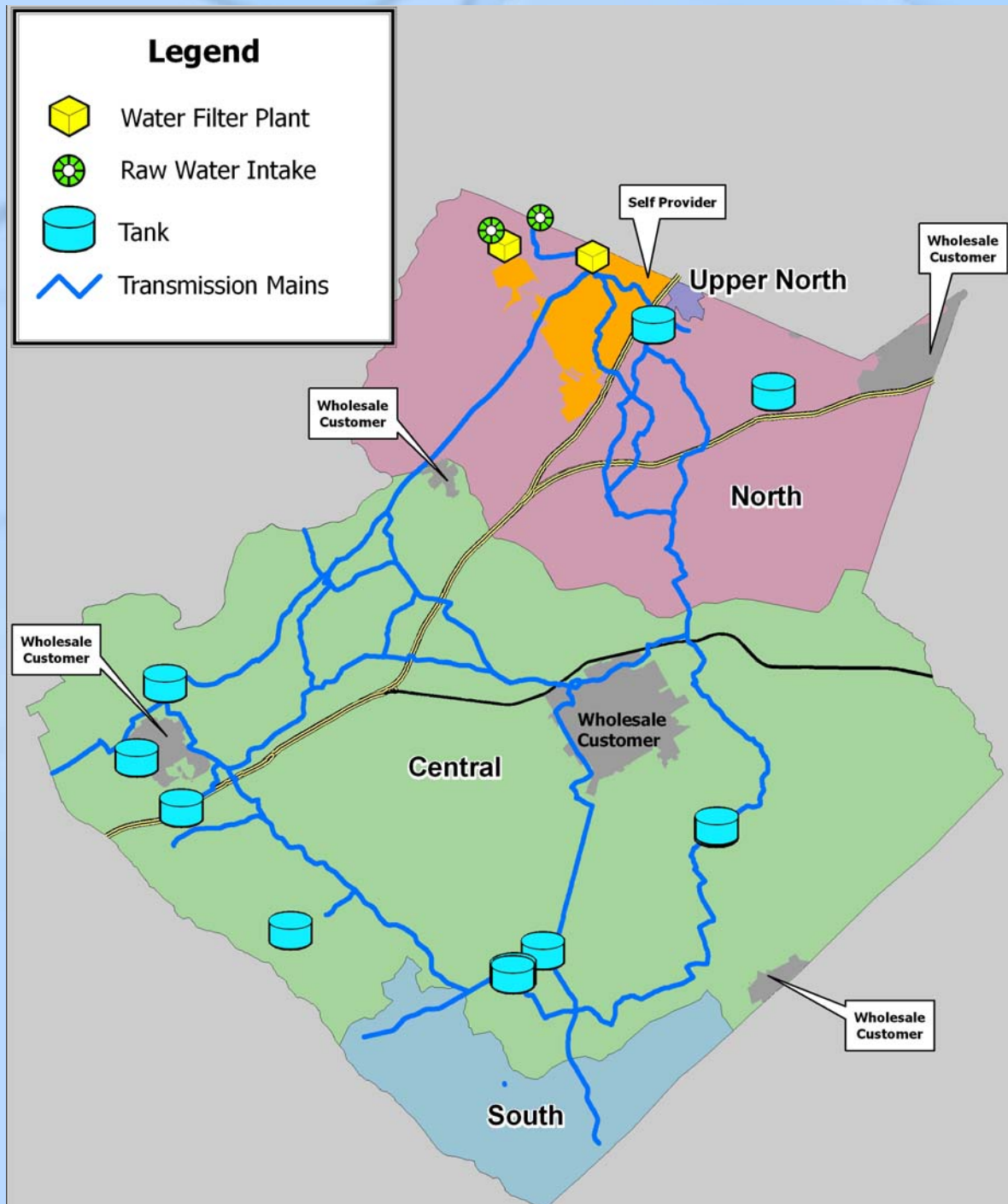
- 40 new development projects added monthly
- 10,000 customers (meters) added annually
- Developer pump stations
  - Pros: Sewer not septic
  - Cons: Operational expense and planning issues
- Sewers were designed for single-family residential development
- **REACTIVE AT TIMES!**

# Current Water System

- Lake Lanier
  - Permitted withdrawal  
150 MGD (monthly avg)
  - Average Day  
85 MGD
  - Historical Maximum Day  
142 MGD
  - 2 Filter Plants
  - 221,000 water customers
    - 205,000 residential
    - 16,000 commercial and institutional



# Current Water System

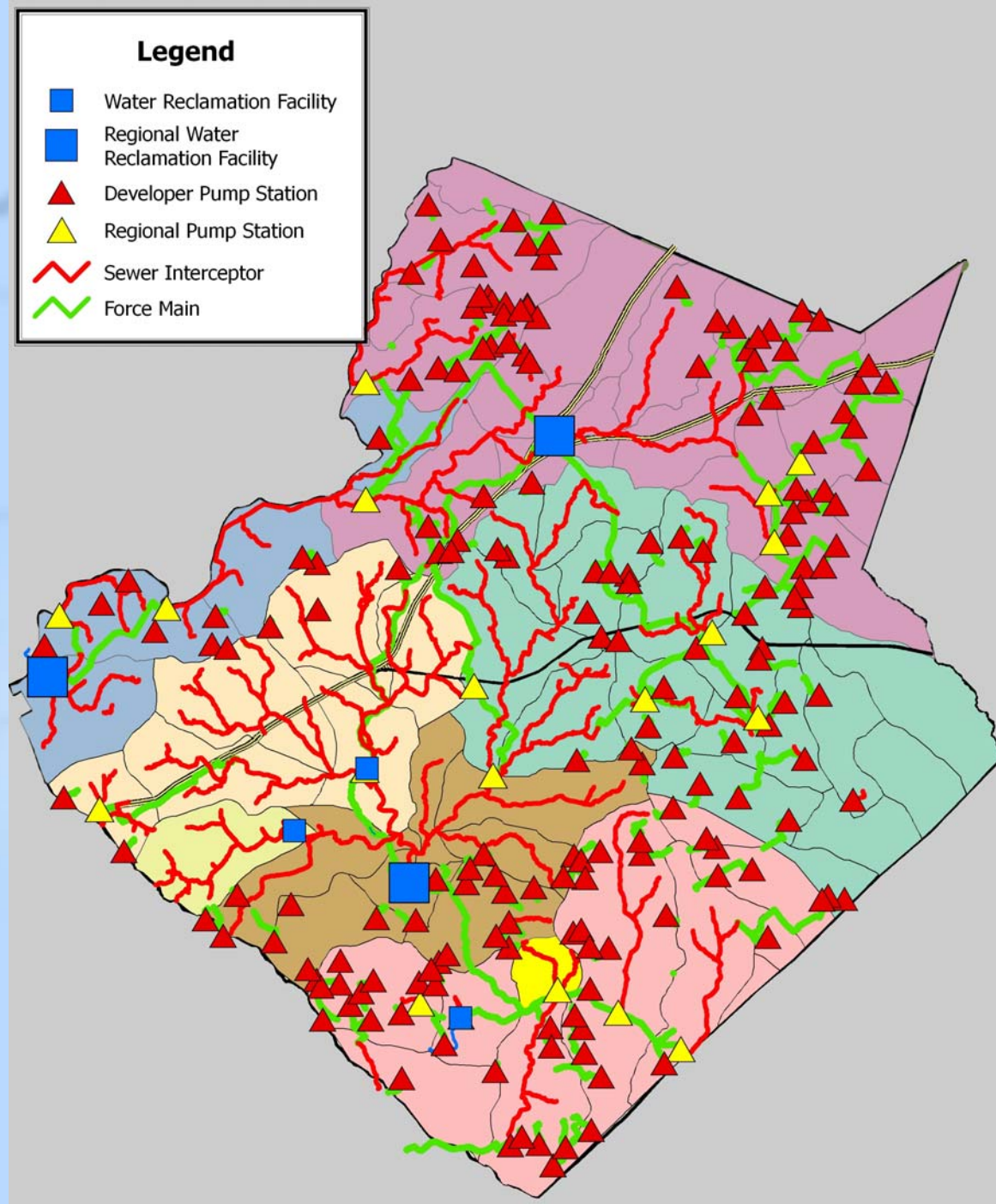


# Current Sewer System

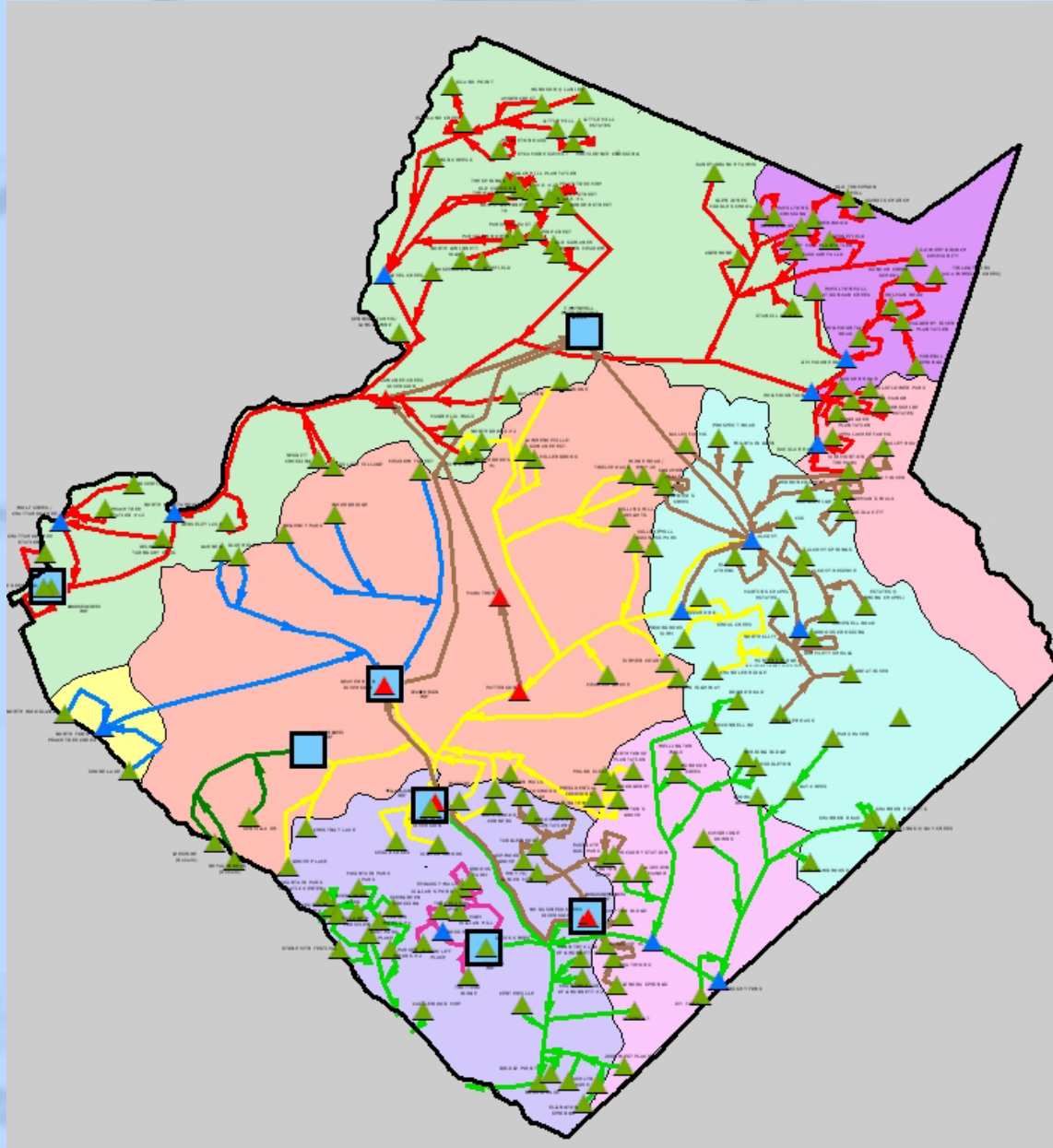


- Permitted discharge  
67 MGD
  - Yellow River: 22 MGD
  - Chattahoochee: 45 MGD
- Permit pending  
40 MGD additional
- Avg. Day Max. Month  
54 MGD
- 6 Active Water  
Reclamation Facilities
- 139,000 sewer customers
- ~ 90,000 septic tanks

# Current Sewer System



# Pump Stations Service Direction Map



# “What If Scenario”

(Conceptual planning effort based on buildout of current Land Use Plan)



- Conservative cost estimates
- Costs exclude refurbishment, replacement, operating and maintenance of existing infrastructure
- Conservative demands
  - Unit based sewer loadings
  - Gwinnett per capita water demand: ~ 76 gallons per day
  - Metro Atlanta average:  
~ 91 gallons per day

# Current Comprehensive Plan Buildout “What If” Scenario Assumptions

- Projected population: 1.25 million
- Current updated Land Use Plan including Major Activity Centers
- Water Withdrawal Permit: 256 MGD  
(150 MGD current)
- Wastewater Discharge Permit: 242 MGD  
(67 MGD current)

# Long Term Water Supply Challenges

- Metro North GA Water Planning District has identified available water supply through 2030
- By 2020 regional water supply solutions will need to be identified

# Long Term Wastewater Challenge

- Limited capacity identified in receiving waters to absorb effluent
- Inter-basin transfer policies limit flexibility
- Aging septic systems

**HYPOTHETICAL  
SCENARIO**






**HYPOTHETICAL  
SCENARIO**

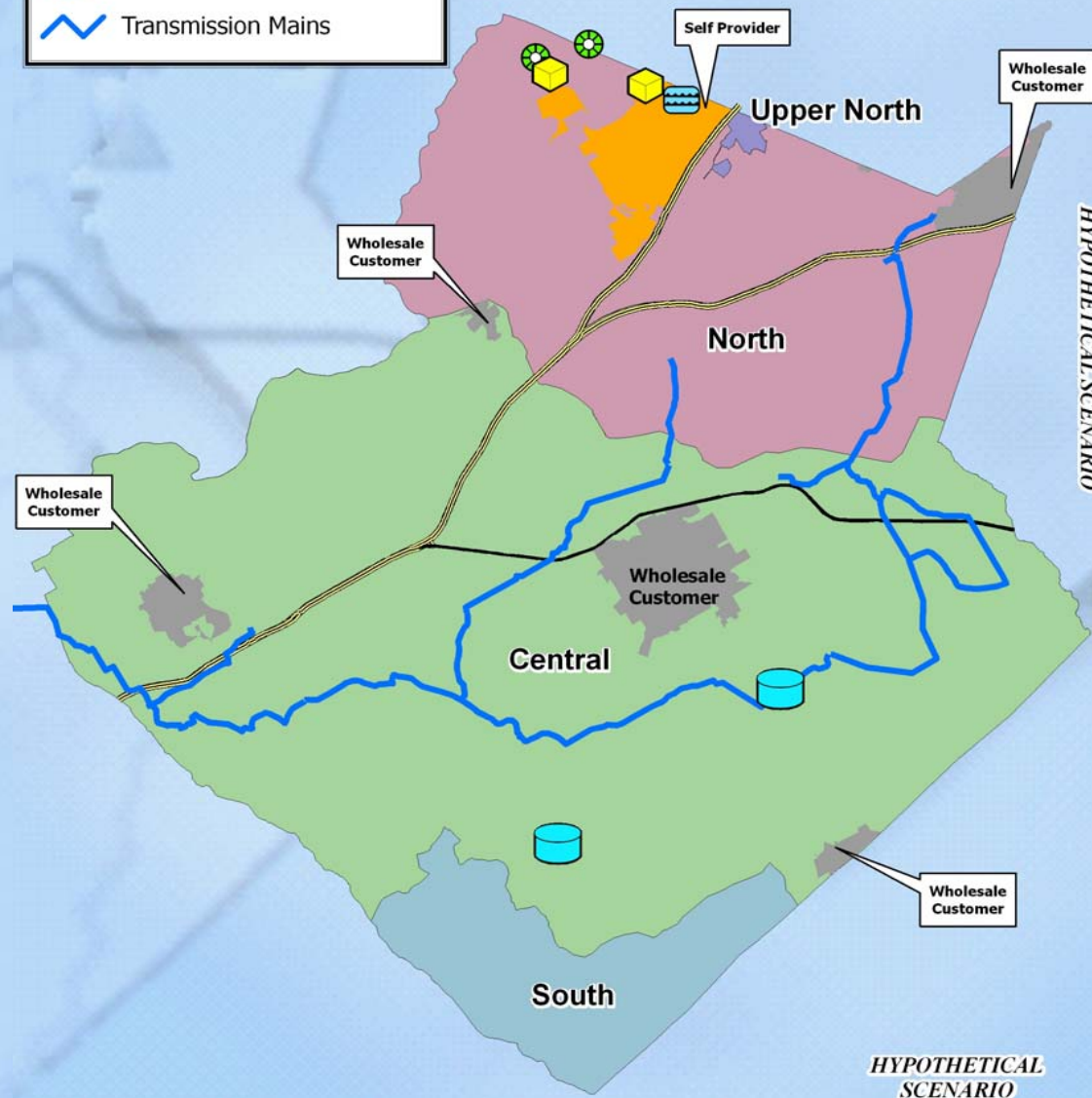
**HYPOTHETICAL SCENARIO**

**HYPOTHETICAL SCENARIO**

# Conceptual Water Infrastructure Needs

**Legend**

-  Expanded Water Filter Plant
-  Expanded Raw Water Intake
-  New Water Tank
-  New Water Storage Facility
-  Transmission Mains



**HYPOTHETICAL  
SCENARIO**

**HYPOTHETICAL  
SCENARIO**

# Conceptual Water Infrastructure Needs

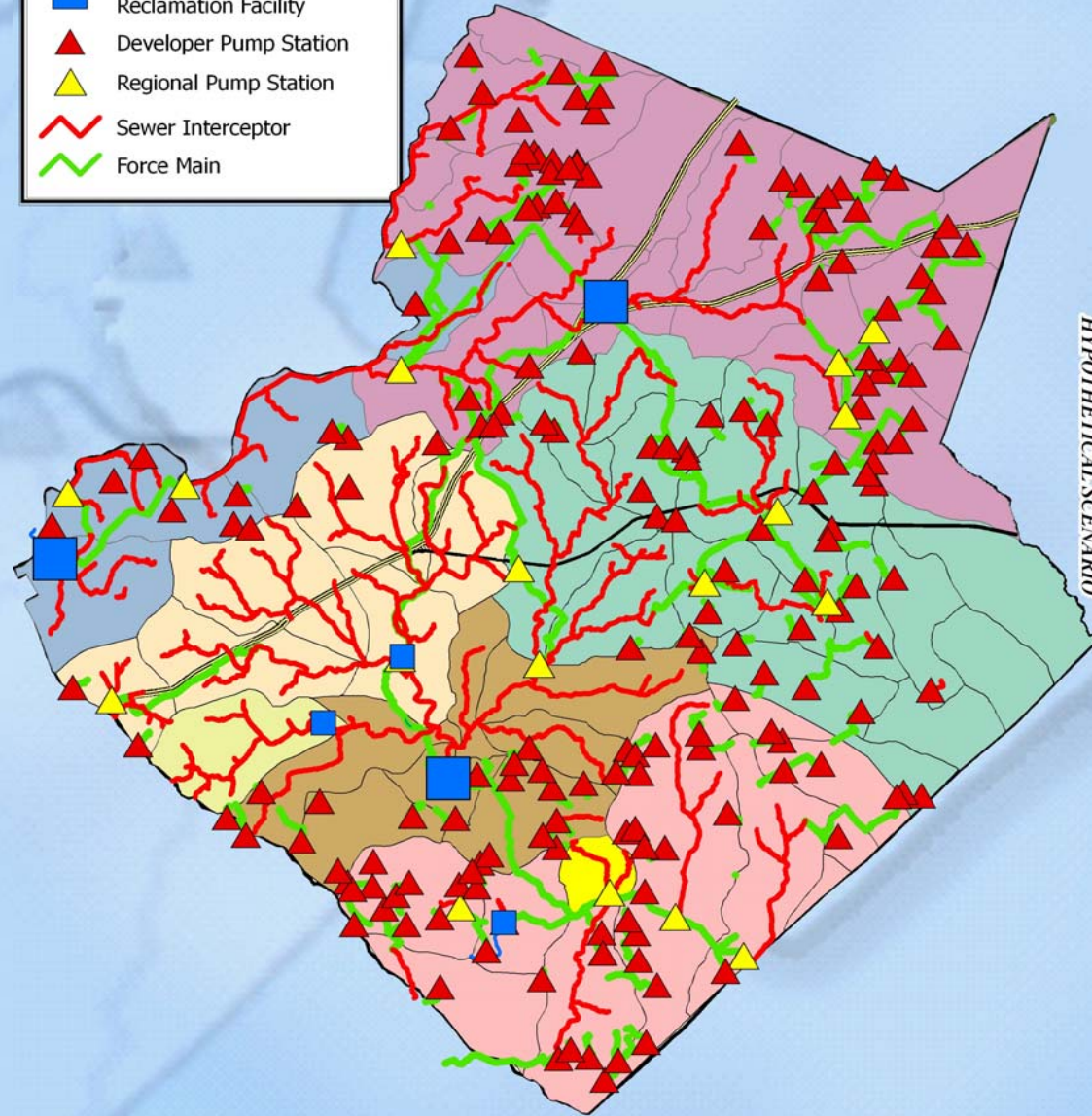
(Assumes 256 MGD Water Withdrawal Permit)

Infrastructure Type	Dollars Needed*	Percentage
Water Production	\$150 million	22%
Pipelines	\$268 million	39%
Storage	\$128 million	19%
Pump Stations	\$139 million	20%
Total	\$685 million	100%

**HYPOTHETICAL SCENARIO**

**HYPOTHETICAL SCENARIO**

# Conceptual Sewer Infrastructure Needs



Permit Assumptions

- Area A: 100 MGD
- Area B: 75 MGD
- Area C: 42 MGD
- Area D: 25 MGD

# Conceptual Sewer

## Infrastructure Needs

(Assumes 242 MGD Wastewater Discharge Permit)

Infrastructure Type	Dollars Needed*	Percentage
Water Reclamation	\$1.58 billion	45%
Gravity Sewer**	\$1.47 billion	41%
Pump Stations	\$254 million	7%
Force Mains	\$245 million	7%
Total	\$3.55 billion	100%

HYPOTHETICAL SCENARIO

HYPOTHETICAL SCENARIO

# Highlights

- This scenario used very broad assumptions that are very conceptual and very conservative
- Long term water supply and wastewater “challenges” were not addressed in this scenario
- DWR current approved CIP for 2006-2011: \$1.05 billion
- Conceptual exercise identified \$4.2 billion of additional water and sewer needs to accommodate growth through buildout
- These costs exclude ongoing capital programs, replacement and refurbishment costs, and operating and maintenance costs
- These costs can likely be reduced by implementing serious water conservation measures to lower per capita usage
- Financing Mechanisms
  - Contributed assets/betterments
  - System Development Charges
  - Bonds
  - Operating Revenue

# Benefits of “Smart” Planning

- Land Use Plan is a reliable tool
- Facilitates long range planning, permitting, design and construction process
- **PLAN PROACTIVELY!**

