Jordan Lake
Water Supply Allocation

Application

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Information Needs

- Updated data for hydrologic model
  - Extend flow record?
  - Update LWSP demand/supply projections
  - Revisit withdrawal/discharge relationships
  - Revise LWSPs
- JL Allocation Application Information
  - Some covered by model update data
  - Additional information required

Applications requirements:

- Population and Demand to 2060
  - Include methodology and assumptions
- Presently available sources and yield
- Map of current and future service areas
- Alternative sources
  - Potential yield, quality, costs
- Demand management practices
- Plans to utilize Jordan Lake
- Financial commitment statement
- Additional necessary information

15A NCAC 2G .0500

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Decision by EMC based on:

- 20-year needs to be used < 5 years
- 30-year needs to be used > 5 years
- Keeping 50% on the watershed?
- System needs and alternative sources
- Proposed average use of the resource relative to requested allocation
- Financial commitment relative to total cost
- Effects on yield of reservoir
- Level of facility sharing and cooperation

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Application Contents

I. Water Demand Forecast

II. Conservation and Demand Management

III. Current Water Supply

IV. Future Water Supply Needs

V. Alternative Water Supplies

VI. Plans to Use Jordan Lake

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I. Water Demand Forecast

- Average Daily Amounts
- 2010 – 2060
- By use sector
  - Residential, Commercial, Industrial, Institutional, unique facilities
  - Describe members of each sector
- Usage rate by sector
  - Consider Demand Management (Section II)
- Explain Methodology / Assumptions

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Project Sector Demand

- Residential Use
  - Population or dwelling units
    - (single / multi-family)
  - Effects of demand management program
  - Explain basis of usage rate
- Commercial
- Industrial
- Institutional
- Unique Facilities
- % for system processes & unaccounted-for

Demand Worksheet

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SECTION 7: WATER DEMAND PROJECTIONS

7-A. Population to be Served	2010	2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
Year-Round											
Seasonal (if applicable)*											

*Please list the months of seasonal demand: _____ Attach a detailed explanation of how projections were calculated.

Table 7-B Projected Average Daily Service Area Demand in Million Gallons per Day (MGD) (Does not include sales to other systems)
Sub-divide each water use type as needed for projecting future water demands.

	2010	2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
(1) Residential											
(2) Commercial											
(3) Industrial											
(4) Institutional											
(5) System Processes											
(6) Unaccounted-for water											
(7) Total Service Area Demand [sum (1) thru (6)]											

- **5-year or 10-year increments?**

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Projections

* denotes required fields

Population Projections	2009	2010	2020	2030	2040	2050
*Year-Round	288	0	0	0	0	0
Seasonal		0	0	0	0	0

Water Use Projections (MGD)	2006	2010	2020	2030	2040	2050
*Residential	0.016	0	0	0	0	0
*Commercial	0.002	0	0	0	0	0
*Industrial	0.000	0	0	0	0	0
*Institutional	0.003	0	0	0	0	0
*System Process	0.003	0	0	0	0	0
Unaccounted-for Estimate	Calculate	0.000	0.000	0.000	0.000	0.000
*Unaccounted-for Fill	0.003	0	0	0	0	0

Note:

Add 2060 data here

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JORDAN LAKE WATER SUPPLY ALLOCATION ROUND #3
WATER DEMANDS BY SECTOR

WATER SERVICE PROVIDER:			
ESTIMATED POPULATION SERVED BY SYSTEM:	167,743	People	
AVERAGE DAILY WATER DEMAND FOR SYSTEM:	31.1000	MGD	(includes bulk water sales)
Total Average Daily Water Use for Single-Family Residential Users:	9.7790	MGD	
Total Average Daily Water Use for Multi-Family Residential Users:	3.2560	MGD	
Total Average Daily Water Use for Commercial Users:	4.6870	MGD	
Total Average Daily Water Use for Industrial Users:	1.9770	MGD	
Total Average Daily Water Use for Institutional Users:	2.9050	MGD	

Meter Size	5/8"	3/4"	1"	1.5"	2"	3"	4"	6"	8"	10"
5/8" Meter Equiv. Ratios	1	1.5	2.5	5	8	15	25	50	80	

(Source: APWA, Manual C-704)

Single-Family Residential Users — Average Daily Water Use For Class: 9.779 MGD

	Number of Customers By Meter Size										Totals
	5/8"	3/4"	1"	1.5"	2"	3"	4"	6"	8"	10"	
# Accounts (Customers)	42,475		623	206	279	11	4	1	1	1	43,601
# Meters	42,475		623	206	279	11	4	1	1	1	43,601
Ratio	1	1.5	2.5	5	8	15	25	50	80		
Total Meter Equivalents	42,475.0	0.0	1,557.5	1,030.0	2,232.0	165.0	100.0	50.0	80.0		47,689.5

Single-Family Residential Class Usage Factors:

Usage Per Capita in GPD:	58.3
Usage Per Account (Customer) in GPD:	224.3
Usage Per 5/8" Meter Equivalent in GPD:	205.1

SUMMARY USAGE RATES:

System Name: 0

	GPD per Capita	GPD per Account	GPD per 5/8" ME
Single-Family Residential	58.3	224.3	205.1
Multi-Family Residential	19.4	2,559.7	839.7
Commercial	27.9	1,431.1	441.5
Industrial	11.8	19,969.7	1,805.5
Institutional	17.3	3,863.0	822.2

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II. Conservation & Demand Management

- Cost-recovery Rate Structure
- Residential rates not declining
- Leak detection & repair Program
- Regular water audits
- Meter all water use (where practical)
- Consumer Education Program
- Evaluate reclaimed water options

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III. Current Water Supply

SECTION 3: WATER SUPPLY SOURCES

3-A. SURFACE WATER. List surface water source information. Mark and label locations of intakes on the System Map.

1 Name of Stream and/or Reservoir	2 Drainage Area Square Miles	3 Is Withdrawal Metered? Y / N	4 Sub-Basin	5 Average Daily Withdrawal for days used		6 Maximum Day Withdrawal	7* Available Supply		8* System Component Limiting Daily Output		9 Useable On-Stream Raw Water Supply Storage Million Gallons	10* R or E
				MGD	# of Days	MGD	MGD	Qualifier	Capacity MGD	System Component		
								Totals				

*NOTES Column 7 Supply Qualifiers: C=Contract amount, SY20=20-year Safe Yield, SY50=50-year Safe Yield, F=20% of 7Q10 or other instream flow requirement, T=Treatment plant capacity, O=Other (specify) _____

Column 8 Component: R=Raw water pumps, T=Treatment facilities, M=Transmission main, D=Distribution system, O=Other (specify) _____

Column 10 R=Regular Use, E=Emergency Use

3-F. GROUND WATER. List well information. ***Mark and label the location of all wells on the System Map.***

1 Name or Number of Well	2 Well Depth Feet	3 Casing Depth Feet	4 Screen Depth		5 Well Diameter Inches	6 Pump Intake Depth Feet	7 Is Well Metered? Y / N	8 Average Daily Withdrawal for Days Used		9 Maximum Day Withdrawal MGD	10 12-Hour Supply Million Gallons	11* System Component Limiting Daily Output		12* R or E
			Top Feet	Bottom Feet				MGD	# of Days			Capacity MGD	System Component	

3-D. WATER PURCHASES FROM OTHER WATER SYSTEMS IN 2000

List all systems that can supply water to this system through existing interconnections (regular and emergency). Mark the locations of the connections on the System Map.

1 Water supplied by:		2 Average Daily Amount		3 Contract Amount		4 Pipe Size(s)	5* R or E
Water System	PWSID	MGD	# of Days	MGD	Expiration Date	Inches	

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III. Current Water Supply

Table 8-A. AVERAGE DAILY DEMAND AS PERCENT OF SUPPLY Show all quantities in MGD.

Available Supply, MGD	2010	2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
(1) Existing Surface Water Supply (Item 3-B)											
(2) Existing Ground Water Supply (Item 3-G)											
(3) Existing Purchase Contracts (Item 3-E)											
(4) Future Supplies (Item 7-E)											
(5) **Total Available Supply** [sum (1) thru (4)]											

- **Summarize data for all water sources (MGD)**
- **SW – yield available**
- **GW – 12-hour yield**
- **PW – contract limit**

IV. Water Supply Needs

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SECTION 8: FUTURE WATER SUPPLY NEEDS

Local governments should maintain adequate water supplies to ensure that average daily water demands do not exceed 80% of the available supply. Completion of the following table will demonstrate whether existing supplies are adequate to satisfy this requirement and when additional water supply will be needed.

Table 8-A. AVERAGE DAILY DEMAND AS PERCENT OF SUPPLY Show all quantities in MGD.

Available Supply, MGD	2010	2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
(1) Existing Surface Water Supply (Item 3-B)											
(2) Existing Ground Water Supply (Item 3-G)											
(3) Existing Purchase Contracts (Item 3-E)											
(4) Future Supplies (Item 7-E)											
(5) **Total Available Supply** [sum (1) thru (4)]											
Average Daily Demand, MGD											
(6) Service Area Demand (Item 7-B, Line 7)											
(7) Existing Sales Contracts (Item 2-H)											
(8) Future Sales Contracts (Item 7-G)											
(9) **Total Average Daily Demand** [sum (6) thru (8)]											
(10) Demand as Percent of Supply [(9) / (5)] x 100											
(11) **Supply Needed to maintain 80%** **[(9) / 0.8] - (5)**											
Additional Information for Jordan Lake Allocation											
(12) Sales Under Existing Contracts											
(13) Expected Sales Under Future Contracts											
(14) Demand in each planning period [(6)+(12)+(13)]											
(15) Supply minus Demand [(5) - (14)]											

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V. Alternate Water Supplies

Future Supply Alternative List the components of each alternative scenario including the planning period when each component will come online.

(Alternative #X)	2010	2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
(1) Line (15) from Table 8-A "Existing Supply – Demand"											
(2) Available supply from Project 1 (describe)											
Available supply from Project 2 (describe)											
Available supply from Project 3 (describe)											
(3) Supply available for future needs [(1) + (2)]											
(4) Total discharge to Source Basin											
(5) Consumptive Use in Source Basin											
(6) Total discharge to Receiving Basin											
(7) Consumptive Use in Receiving Basin											
(8) Amount not returned to Source Basin [(6) + (7)]											

List details of the future supply options included in this alternative in the table below

Future Source or Facility Name	PWSID (if purchase)	Surface water or Ground water	Sub-Basin of Source	Water Quality Classification	Additional Supply (MGD)	Development Time years	Year Online

- **Complete a table for each alternative that could meet future demands**
- **Describe each alternative**
- **Locations of SW withdrawals/discharges**

V. Alternative Comparisons

Alternatives	Summary Description
Alternative 1	
Alternative 2	
Alternative 3	
(etc.)	

	Alternatives				
	(Example)	2	3	4	5
Total Supply (MGD)	24				
Environmental Impacts	Worse				
Water Quality Classification	WS-III				
Interbasin Transfer (MGD)	3				
Regional Partnerships	Yes				
Technical Complexity	Complex				
Institutional Complexity	Not Complex				
Political Complexity	Very Complex				
Public Benefits	Few				
Consistency with Local Plans	Yes				
Total Cost ($ Millions)	12.7				
Unit Cost ($/1000 gallons)	2.12				

V. Alternative Comparisons

- Technical Complexity
  - Not Complex, Complex, Very Complex
- Institutional Complexity
  - Not Complex, Complex, Very Complex
- Political Complexity
  - Not Complex, Complex, Very Complex
- Public Benefits
  - in addition to water supply
- Justify Responses

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V. Alternative Comparisons

- Costs (planning estimates)
- Capital Costs
  - Design & Construction
  - Land acquisition
  - Facilities and Equipment
- Operation and Management
- Contingency

Contingency	Project Is: Not Complex or Complex	Project Is: Very Complex
Engineering Costs	.10	.20
Legal & Administrative Costs	.05	.10
Cost of Regulatory Requirements	.05	.10
General Contingency	.10	.10

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VI. Plans to Use Jordan Lake

- When will use begin
- Locations of intakes, discharges, and treatment facilities
- Cooperative arrangements
- Schedule of development