

Water Use in Alabama – An Update

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Overview

- Overview of “Water Use in Alabama” report
 - Overview of methodologies by sector
 - Overview of what is new for 2015 cycle
 - Early findings of significance
 - Preliminary timeline for publication



“Water Use in Alabama”

- Based on data submitted annually to OWR
- Multi agency effort
 - Both State and Federal
 - USGS is main partner
 - Other partners include ADEM, AGI, UDSA-NASS, Census Bureau
- Done on 5 year cycle
- Provides baseline information for OWR Water Use Studies
- OWR provides information to USGS for National Water Use Studies



“Water Use in Alabama”

- Eight sectors of Water Use are Studied
 - Public Supply
 - Self-supplied Residential
 - Irrigation (crop, nursery/sod, golf courses)
 - Livestock
 - Aquaculture
 - Industrial
 - Mining
 - Thermoelectric



Methodologies for Water Use Sectors



Methodologies for Water Use Sectors

- Public Supply Withdrawals

- Sources

- eWater Database
 - ADEM MOR's
 - Surveys to obtain information pertaining to water use within Public water systems
 - Number of residential connections and amount of water sold
 - Number of commercial/industrial connections and amount of water sold
 - Water used within system / water lost
 - » Flushing, firefighting, leaks, etc.



Methodologies for Water Use Sectors (Con't)

- NEW for 2015 report
 - Public Supply Returns (Discharges)
 - eWater Database
 - EPA NPDES Database
 - Providing estimated monthly returns values by County and HUC-8



Methodologies for Water Use Sectors (Con't)

- Self-supplied Residential
 - Public Water Survey
 - Estimated water use per capita based on residential use by rural Public Water Systems
 - US Census Bureau
 - Population served by private wells not collected directly
 - OWR developed methodologies to estimate population served based on Census data



Methodologies for Water Use Sectors (Con't)

- Irrigation
 - Will use 2012 Census of Agriculture as well as eWater Database for row crop water use and acres irrigated
 - Limitations with Census of Ag data
 - Censored for some small operations
 - Required some estimates to be made
 - Will use crop coefficients estimated by OWR surveys completed by registered irrigation withdrawers
 - Developed OWR Golf Course Survey to use with eWater data to estimate acreage and water use for golf courses

Methodologies for Water Use Sectors (Con't)

- NEW for 2015
 - USGS undertaking national effort to estimate consumption for Irrigation sector
 - Will be based on studies of irrigation water use and coefficients
 - Within Alabama, based on lack of comprehensive information, our program assumes all irrigation use to be 100 percent consumptive



Methodologies for Water Use Sectors (Con't)

- Livestock

- USDA-NASS livestock counts were used with published coefficients of water use by livestock type

- Previous “Water Use in Alabama” reports relied on USGS national methodologies
 - OWR applied similar methodology for estimated livestock water use by type
 - Uses estimated per head water requirements by type (dairy cows, beef cows, broilers, pullets, layers etc.)



Methodologies for Water Use Sectors Con't

- Aquaculture
 - Methodologies developed by USGS water use personnel for the National Water Use Report process
 - Based on national water-use coefficients
 - Estimated from USDA-NASS Data



Methodologies for Water Use Sectors (Con't)

- Mining
 - Methodologies developed by USGS personnel for National Water Use Report process
 - Based on production data collected by the USGS National Water use Information Program (NWUIP) personnel.
 - Estimates were developed using mine-production data and water use coefficients



Methodologies for Water Use Sectors (Con't)

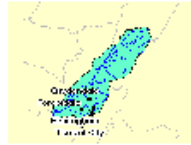
- Industrial and Thermoelectric Withdrawals
 - eWater database
 - Withdrawal collected as part of Annual Reporting Process
 - NEW for 2015
 - Estimates of Returns and Consumption for Industrial and Thermoelectric sector
 - eWater database
 - EPA NPDES database
 - DOE-EIA database for plant type



Example of Consumption for 2015

03160111-Locust Fork

Area (Thousand Acres) 773,785
 Estimated Population (2010) 390,935
 River Basin Black Warrior

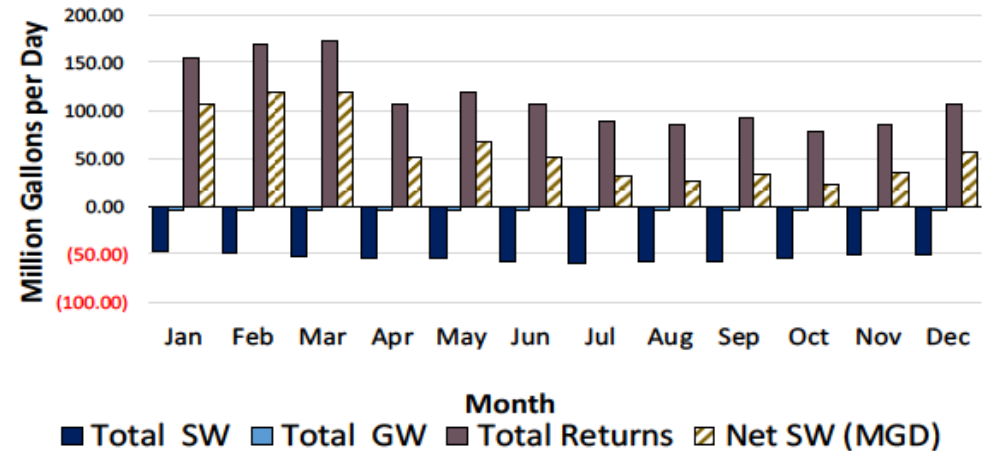


PROVISIONAL DATA

Withdrawals													
Category		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Public Supply	GW	(2.56)	(2.50)	(2.51)	(2.40)	(2.38)	(2.60)	(2.64)	(2.49)	(3.12)	(2.91)	(2.88)	(3.05)
	SW	(46.61)	(49.00)	(50.95)	(51.59)	(50.23)	(51.86)	(54.01)	(53.42)	(53.17)	(51.73)	(50.26)	(49.74)
Industrial/Mining	GW	(0.93)	(1.03)	(0.88)	(0.86)	(0.99)	(0.87)	(0.84)	(0.90)	(1.00)	(0.86)	(0.89)	(0.86)
	SW	(0.35)	(0.35)	(0.35)	(0.35)	(0.35)	(0.35)	(0.35)	(0.35)	(0.35)	(0.35)	(0.35)	(0.35)
Thermoelectric	SW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Agriculture	GW	(0.53)	(0.55)	(0.60)	(0.77)	(0.91)	(1.15)	(1.23)	(1.05)	(0.90)	(0.78)	(0.60)	(0.54)
	SW	(0.20)	(0.30)	(0.55)	(1.94)	(3.02)	(4.37)	(5.08)	(4.39)	(4.17)	(2.67)	(0.74)	(0.20)
Total	SW	(47.16)	(49.64)	(51.85)	(53.88)	(53.59)	(56.58)	(59.43)	(58.16)	(57.69)	(54.75)	(51.35)	(50.28)
Total	GW	(4.01)	(4.09)	(3.99)	(4.03)	(4.28)	(4.62)	(4.71)	(4.44)	(5.01)	(4.55)	(4.37)	(4.44)

Returns													
Category		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Public Supply		125.70	139.80	142.41	86.10	104.88	89.69	75.97	66.85	66.98	62.18	71.94	80.67
Industrial/Mining		11.74	11.74	12.87	12.09	11.79	12.10	10.89	11.10	9.73	9.78	9.07	9.08
Thermoelectric		16.16	16.16	16.16	7.11	3.15	5.63	2.85	7.11	14.59	5.30	4.51	16.16
Agriculture		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Returns		153.60	167.70	171.44	105.30	119.82	107.41	89.71	85.06	91.31	77.25	85.52	105.91

03160111-Locust Fork													PROVISIONAL DATA	
Total	SW	(47.16)	(49.64)	(51.85)	(53.88)	(53.59)	(56.58)	(59.43)	(58.16)	(57.69)	(54.75)	(51.35)	(50.28)	
Total	GW	(4.01)	(4.09)	(3.99)	(4.03)	(4.28)	(4.62)	(4.71)	(4.44)	(5.01)	(4.55)	(4.37)	(4.44)	
Withdrawal Total		(51.17)	(53.73)	(55.84)	(57.91)	(57.87)	(61.19)	(64.14)	(62.59)	(62.70)	(59.30)	(55.72)	(54.72)	
Total Return		153.60	167.70	171.44	105.30	119.82	107.41	89.71	85.06	91.31	77.25	85.52	105.91	
Net SW (MGD)		106.44	118.06	119.59	51.42	66.22	50.84	30.28	26.90	33.62	22.50	34.17	55.63	



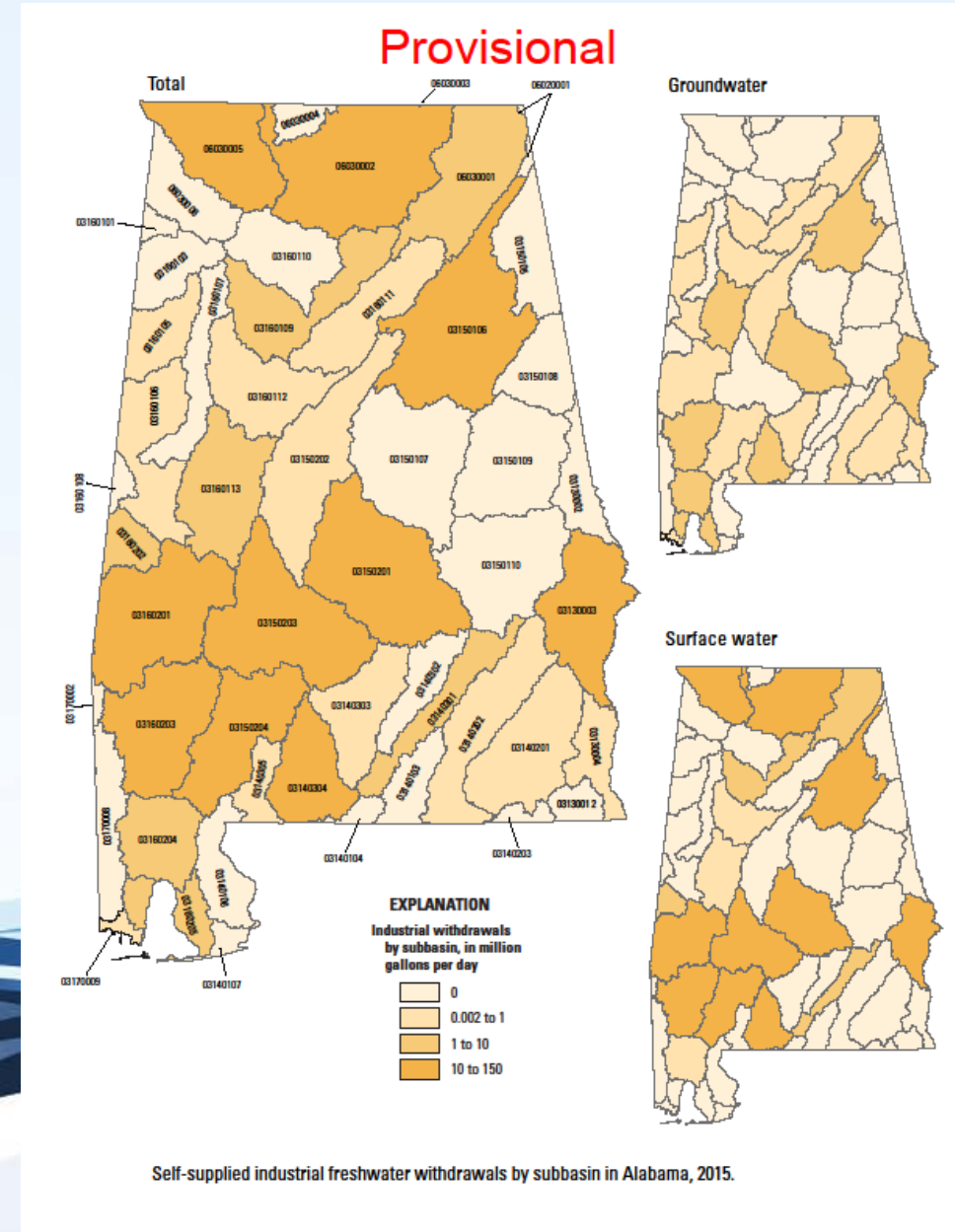
Early Findings



Early findings for 2015

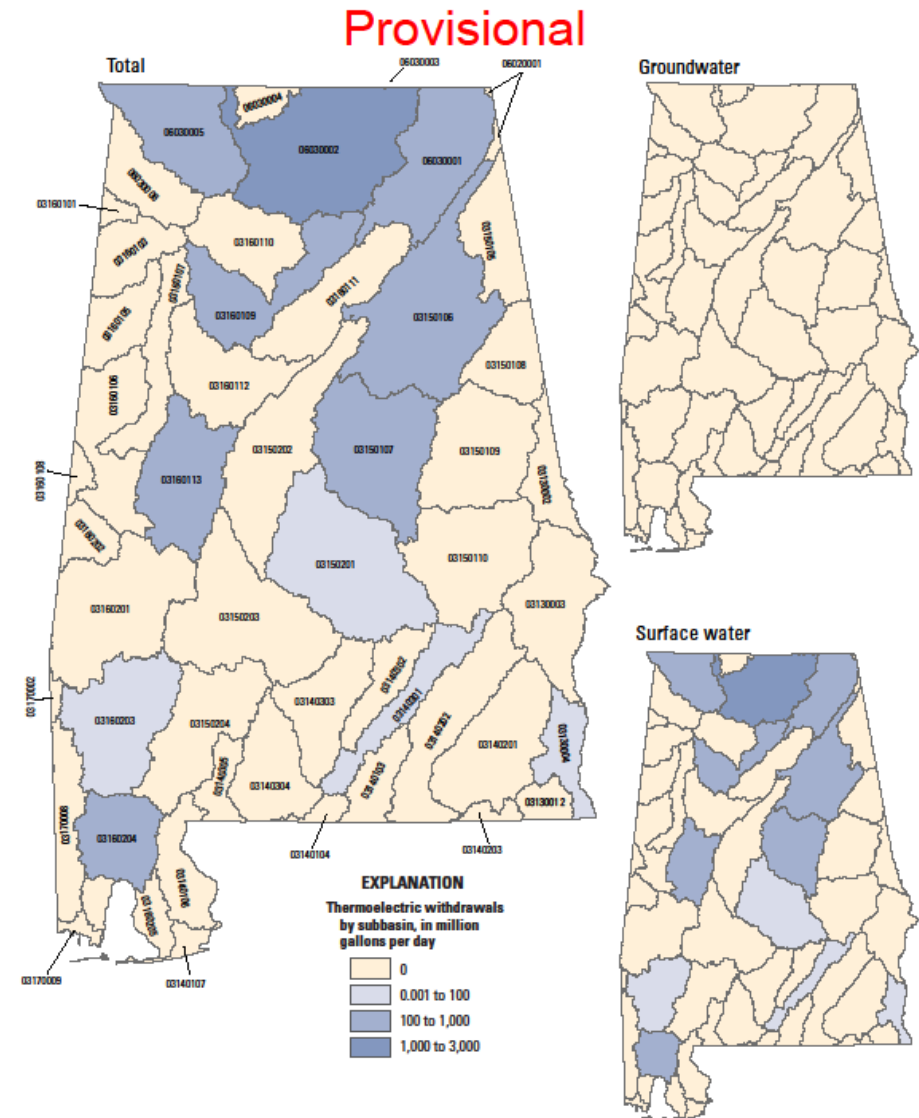
– Industrial Withdrawals

- Industry has expanded since 2010
 - More COUs
- Industrial withdrawals have reduced by approximately 8 percent
 - Closure of paper mill
 - » International Paper in Courtland, AL accounted for approximately 10 percent of all industrial withdrawals in 2010



Early findings for 2015

- Thermoelectric withdrawals
- Withdrawals have been reduced by approximately 24 percent
 - Closure of Colbert Fossil and Widows Creek by TVA
 - Accounted for 28 percent of total thermoelectric withdrawals in 2010
 - Conversion of coal plants to natural gas



Thermoelectric-power freshwater withdrawals by source and subbasin in Alabama, 2015.

Preliminary timeline for “Water Use in Alabama, 2015”

- Data Entry complete – January 1, 2017
 - Withdrawals and Returns
- Data review complete – May 1, 2017
 - Ready for publication
- Report to publisher – September, 1 2017
 - Report to be online with limited copies available on CD



Questions?

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