MATH ACTIVITY: WATER WITHDRAWAL IN OUR PARISH

Teacher Guide

Summary: Students will use the information data sheets to interpret and analyze graphs and answer questions about the water use in Ascension and EBR Parish.

Instructions: Give half the class information sheets on their parish and the other half information sheets on a neighboring parish. For this lesson, I have included EBR Parish and Ascension Parish. Students will answer questions about water withdrawals using the information sheet given and compare their answers to the other half of the classroom. Teachers should discuss factors and differences between Baton Rouge and Ascension that yield the answers given.

Possible Modifications: You may choose to give all the students the same sheet concerning their district instead.

Possible Extension: Give all students both EBR and Ascension sheet. Pair the students up. Each pair will make "two truths and a lie" from the data sheets. They will give three statements using the information sheet. Two statements will be correct and one will be incorrect. Each pair will give their three statements to the class and the class will determine which statement is the incorrect one. The class will hold up one number that represents the statement they feel is false. The pair that stumps the class the most is the winner.

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Student Sheet

Parish: _____

Directions: Use the "Water Use in Louisiana, 2010" document to answer the following questions about the parish you were given.

1. What year between 1960 and 2010 had the most water withdrawal? How much was it?

2. What year between 1960 and 2010 had the least water withdrawal? How much was it?

3. What percent of the total water used in 2010 were from public supply?

4. Which industrial group made the most withdrawal in 2010? How much did they withdraw and what percent of the total industrial withdrawal was from this group?

5. What category contributed to the most withdrawal of water in 2010?

6. How much water was withdrawn per person for public supply in 2010?

7. How much groundwater was used in the year 2010 (use 365 days = 1 year)? Write your answer in scientific notation.

8. What percent of the public supply water in 2010 were from ground water versus surface water?

9. What can you conclude about the overall water use, ground water, and surface water use from 1960 to 2010?

East Baton Rouge

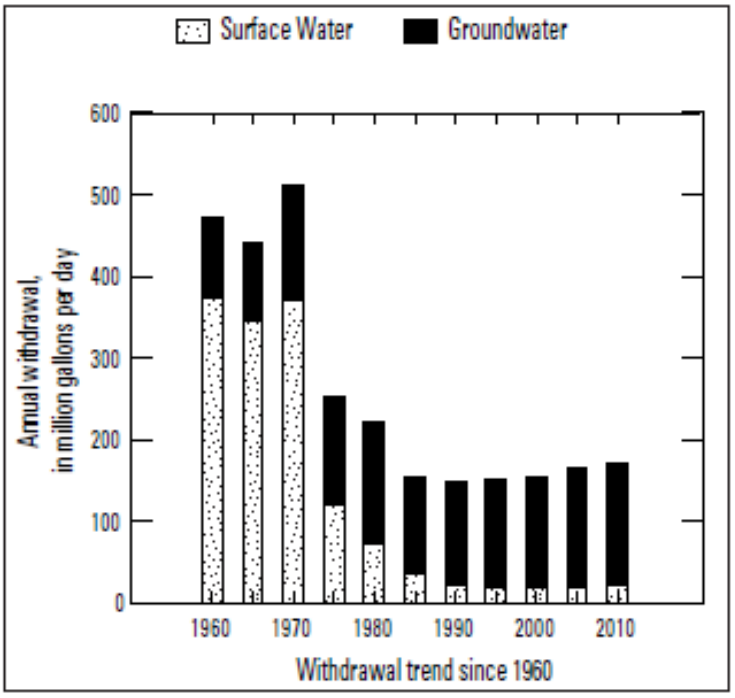
Population: 440,171
Population served by public supply: 436,650
Per capita withdrawals (gal/d): 389
Acres irrigated: 0
Hydroelectric power instream use (Mgal/d): 0

Withdrawals, in million gallons per day (Mgal/d)

	Groundwater (GW)	Surface Water (SW)	Total
Public supply	75.12		75.12
Industrial	66.22	21.51	87.73
Power generation	7.79		7.79
Rural domestic	.28		.28
Livestock	.19	.01	.21
Rice irrigation			.00
General irrigation	.25		.25
Aquaculture	.04		.04
Total	**149.89**	**21.52**	**171.41**

Withdrawals by Major Industrial Group (Mgal/d)

Standard Industrial Classification		GW	SW
26	Paper products	33.23	
28	Chemicals	23.97	
29	Petroleum refining	8.69	18.80
30	Rubber and plastics	.17	2.70
33	Primary metals	.09	



Withdrawals by Major Public Supplier (Mgal/d)

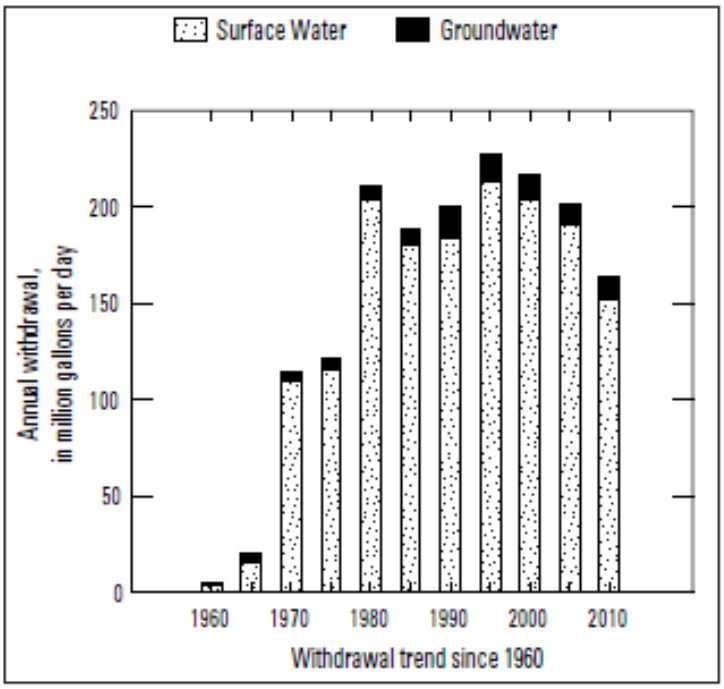
Public Supplier	GW	SW
Baker Utilities	4.45	
Baton Rouge Water Company	55.11	
Bellingrath Water Company, Inc.	.17	
Parish Water Company	12.69	
Red Oak Water Company	.58	
Slaughter Water System	.02	
Zachary Water System	2.02	

Ascension

Population: 107,215
Population served by public supply: 56,610
Per capita withdrawals (gal/d): 1,527
Acres irrigated: 222
Hydroelectric power instream use (Mgal/d): 0

Withdrawals, in million gallons per day (Mgal/d)			
	Groundwater (GW)	Surface Water (SW)	Total
Public supply	3.02	1.97	4.98
Industrial	6.40	149.44	155.84
Power generation			.00
Rural domestic	2.23		2.23
Livestock	.13	.03	.16
Rice irrigation			.00
General irrigation	.12		.12
Aquaculture	.05	.32	.38
Total	**11.95**	**151.76**	**163.71**

Withdrawals by Major Industrial Group (Mgal/d)			
Standard Industrial Classification		GW	SW
28	Chemicals	2.88	149.44
29	Petroleum refining	.06	



Withdrawals by Major Public Supplier (Mgal/d)		
Public Supplier	GW	SW
Ascension Water Company	0.12	
Gonzales Water System	1.76	
Parish Water Company	1.04	
People's Water Service		1.97
Tranquility Lakes Water System	.02	

Math Activity: Water Withdrawal in Our Parish

ANSWER KEY

Parish: __East Baton Rouge_____

Directions: Use the "Water Use in Louisiana, 2010" document to answer the following questions about the parish you were given.

1. What year between 1960 and 2010 had the most water withdrawal? How much was it?
   1970; approximately 510 million gallons per day

2. What year between 1960 and 2010 had the least water withdrawal? How much was it?
   1990; approximately 150 million gallons per day

3. What percent of the total water used in 2010 were from public supply?
   44%
4. Which industrial group made the most withdrawal in 2010? How much did they withdraw per day and what percent of the total industrial withdrawal was from this group?
   Paper products; 33.23 million gallons per day; 38%
5. What category contributed to the most withdrawal of water in 2010?
   Industrial

6. How much water was withdrawn per person per day for public supply in 2010?
   A little over 172 gallons per person per day

7. How much groundwater was used in the year 2010 (use 365 days = 1 year)? Write your answer in scientific notation.
   2.74188×10^{10} gallons

8. What percent of the public supply water in 2010 were from ground water versus surface water?
   100% of the public water supply in 2010 were from ground water. 0% were from surface water.

9. What can you conclude about the overall water use, ground water, and surface water use from 1960 to 2010?
   Overall water withdrawal decreased; surface water withdrawal decreased; ground water withdrawal increased.

Teacher Note: *Discuss factors between EBR and Ascension that may led to the differences in numbers.*

Math Activity: Water Withdrawal in Our Parish

ANSWER KEY

Parish: __Ascension_____

Directions: Use the "Water Use in Louisiana, 2010" document to answer the following questions about the parish you were given.

1. What year between 1960 and 2010 had the most water withdrawal? How much was it?
   2000; approximately 230 million gallons per day

2. What year between 1960 and 2010 had the least water withdrawal? How much was it?
   1960; approximately 5 million gallons per day

3. What percent of the total water used in 2010 were from public supply?
   Approximately 3%

4. Which industrial group made the most withdrawal in 2010? How much did they withdraw and what percent of the total industrial withdrawal was from this group?
   Chemicals

5. What category contributed to the most withdrawal of water in 2010?
   Industrial

6. How much water was withdrawn per person for public supply in 2010?
   A little under 88 gallons per person per day

7. How much groundwater was used in the year 2010 (use 365 days = 1 year)? Write your answer in scientific notation.
   Approximately 1.8177×10^9 gallons

8. What percent of the public supply water in 2010 were from ground water versus surface water?
   Approximately 61% of the pubic supply water was from groundwater and 39% from surface water

9. What can you conclude about the overall water use, ground water, and surface water use from 1960 to 2010?
   The overall water, groundwater, and surface water use has increased from 1960 to 2010 but has fluctuated in between the years.

Teacher Note: *Discuss factors between EBR and Ascension that may led to the differences in numbers.*