

# Farmers Branch Creek Study Update

January 21, 2014  
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City of Farmers Branch

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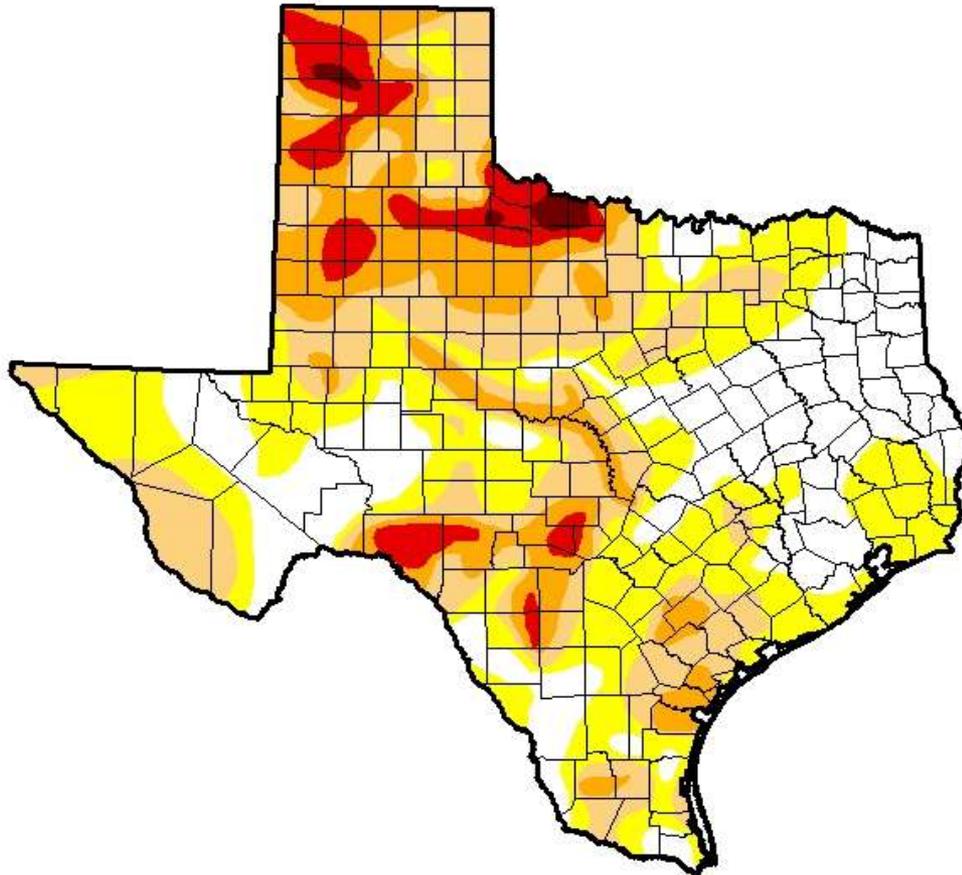
- ▶ Study approved by City Council on 12/17/13
- ▶ Freese & Nichols (\$40,500) & TRC (\$40,360)
- ▶ After consideration of all information, City Manager appoints Environmental Health Director to be project manager on 12/23/13
- ▶ Search for specialized engineering firm
- ▶ Environmental review of current proposal
- ▶ Study to address flows, seepage, evaporation losses, groundwater
- ▶ Low downstream flows due to drought or Vitruvian or both?

# What is Drought?

- ▶ Drought is generally understood to be a lack of water over an extended period
- ▶ Drought can impact a single region in different ways
- ▶ Municipal water supply versus agricultural
- ▶ Region may be doing well when considering the short term of weeks or months but be in a multi-year pattern of low rainfall
- ▶ Identifying the severity and duration of a drought involves knowledge of local needs as well as the supply and demands of available water.

# U.S. Drought Monitor Texas

**January 14, 2014**  
(Released Thursday, Jan. 16, 2014)  
Valid 7 a.m. EST



*Drought Conditions (Percent Area)*

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
<b>Current</b>	26.18	73.82	44.54	21.59	6.68	0.79
<b>Last Week</b> <i>1/7/2014</i>	28.13	71.87	43.89	20.84	5.82	0.79
<b>3 Months Ago</b> <i>10/15/2013</i>	9.10	90.90	65.25	21.73	3.19	0.12
<b>Start of Calendar Year</b> <i>12/31/2013</i>	28.48	71.52	43.84	21.15	5.82	0.79
<b>Start of Water Year</b> <i>10/1/2013</i>	6.62	93.38	70.95	25.08	4.01	0.12
<b>One Year Ago</b> <i>1/15/2013</i>	9.48	90.52	74.01	50.49	20.84	6.72

Intensity:

- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

*The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.*

**Author:**  
*Eric Luebehusen*  
U.S. Department of Agriculture



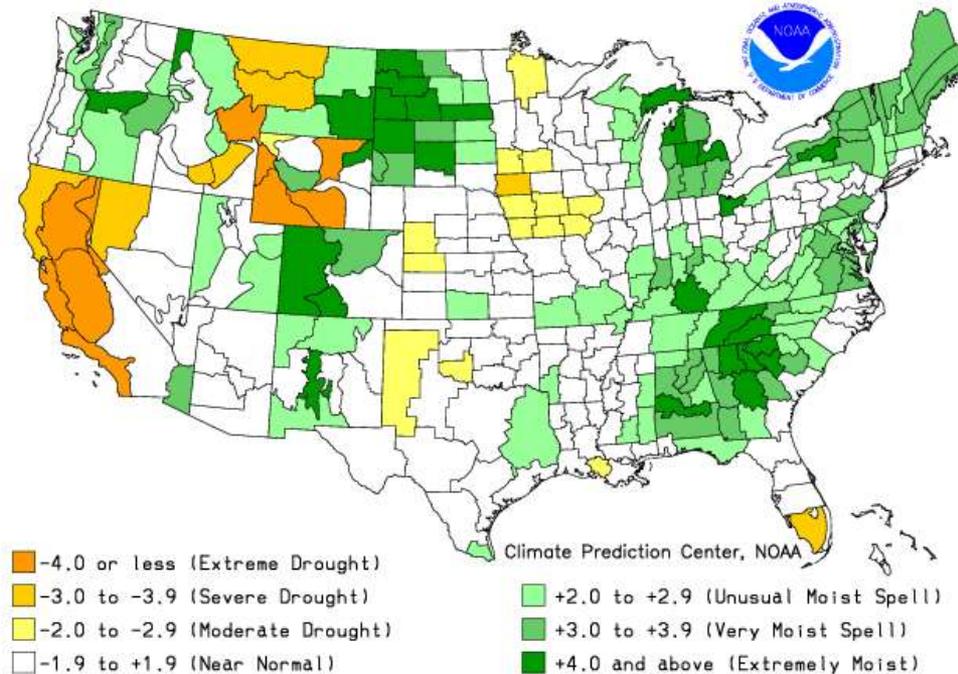
<http://droughtmonitor.unl.edu/>

# Palmer Drought Severity Index

- ▶ The Palmer Drought Severity Index, devised in 1965, was the first drought indicator to assess moisture status comprehensively. It primarily reflects long-term drought and has been used extensively to initiate drought relief. It is more complex than the Drought Monitor.

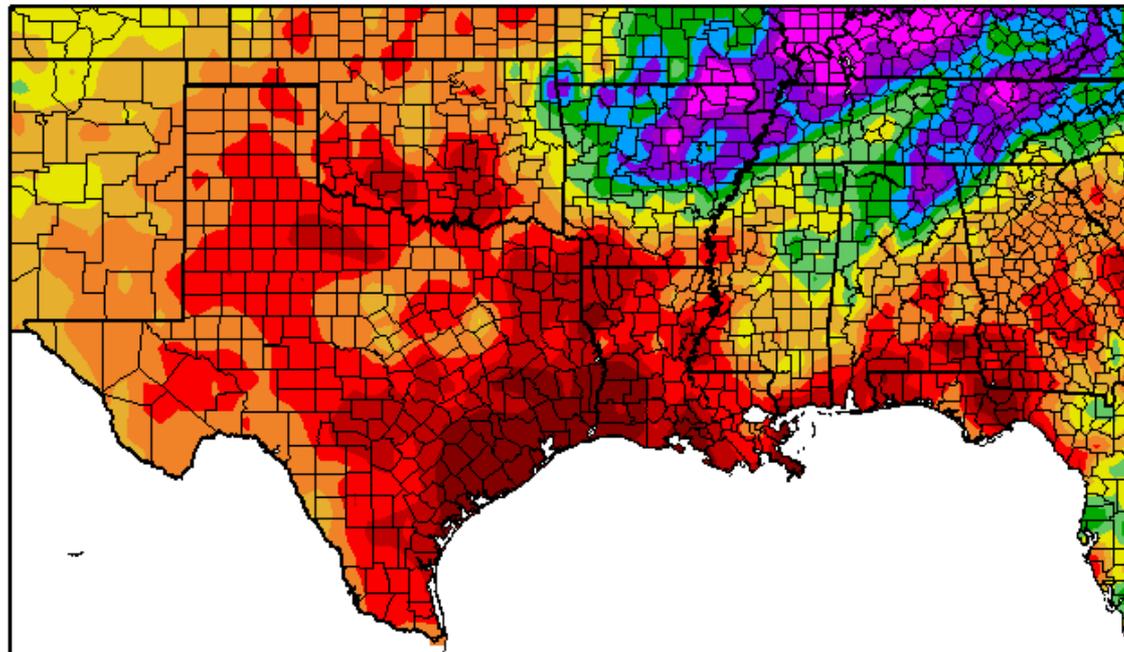
# Long Term Palmer Index

Drought Severity Index by Division  
Weekly Value for Period Ending JAN 11, 2014  
Long Term Palmer



# 2011

Departure from Normal Precipitation (in)  
1/1/2011 – 12/31/2011

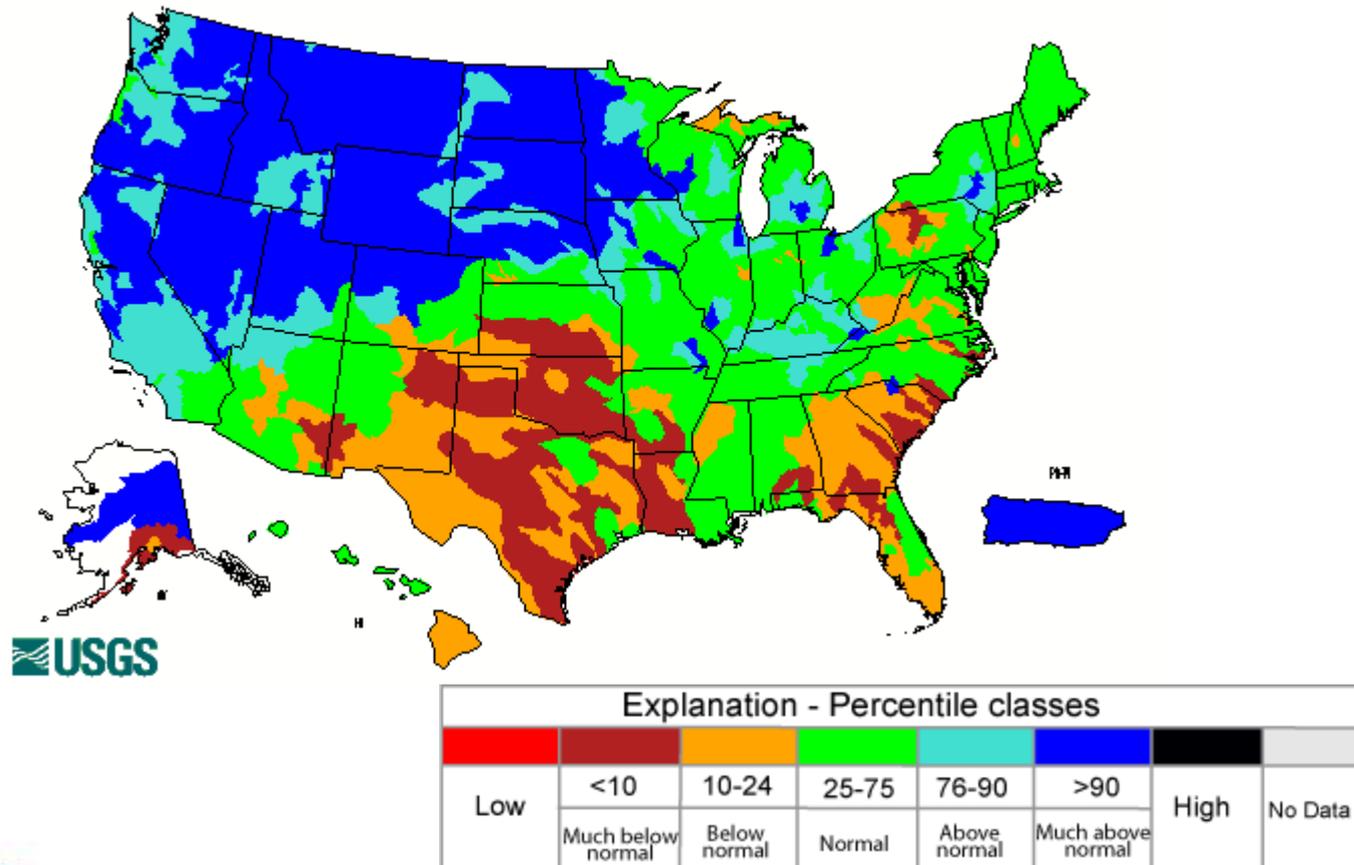


Generated 6/15/2012 at HPRCC using provisional data.

Regional Climate Centers

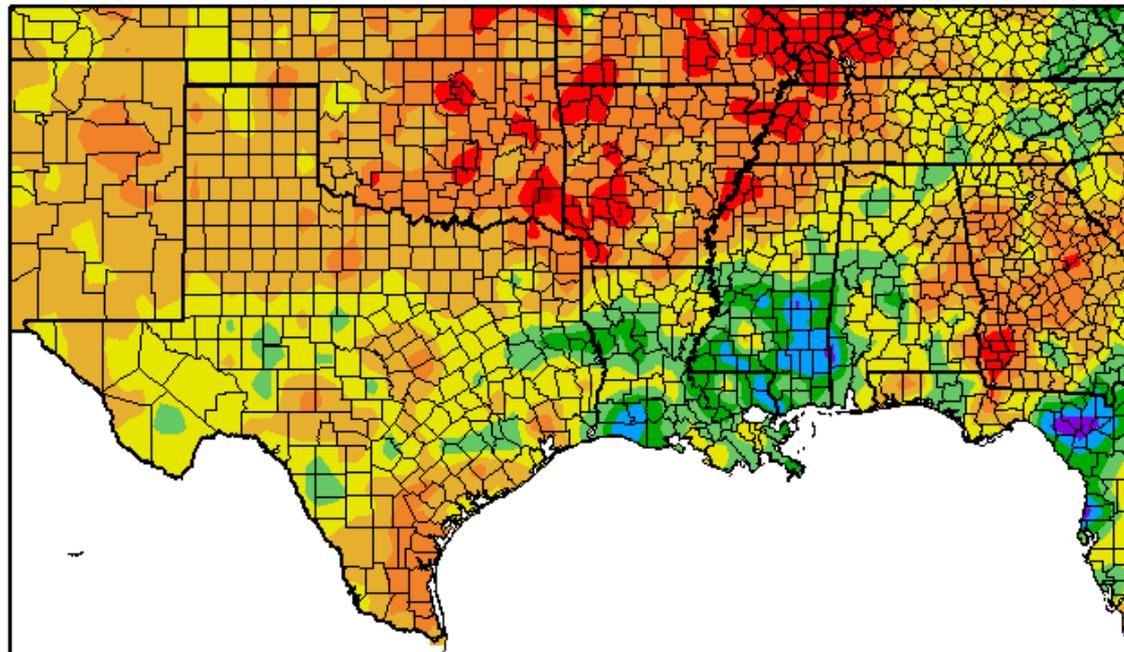
# Monthly-Average Streamflow for July 2011

July 2011



# 2012

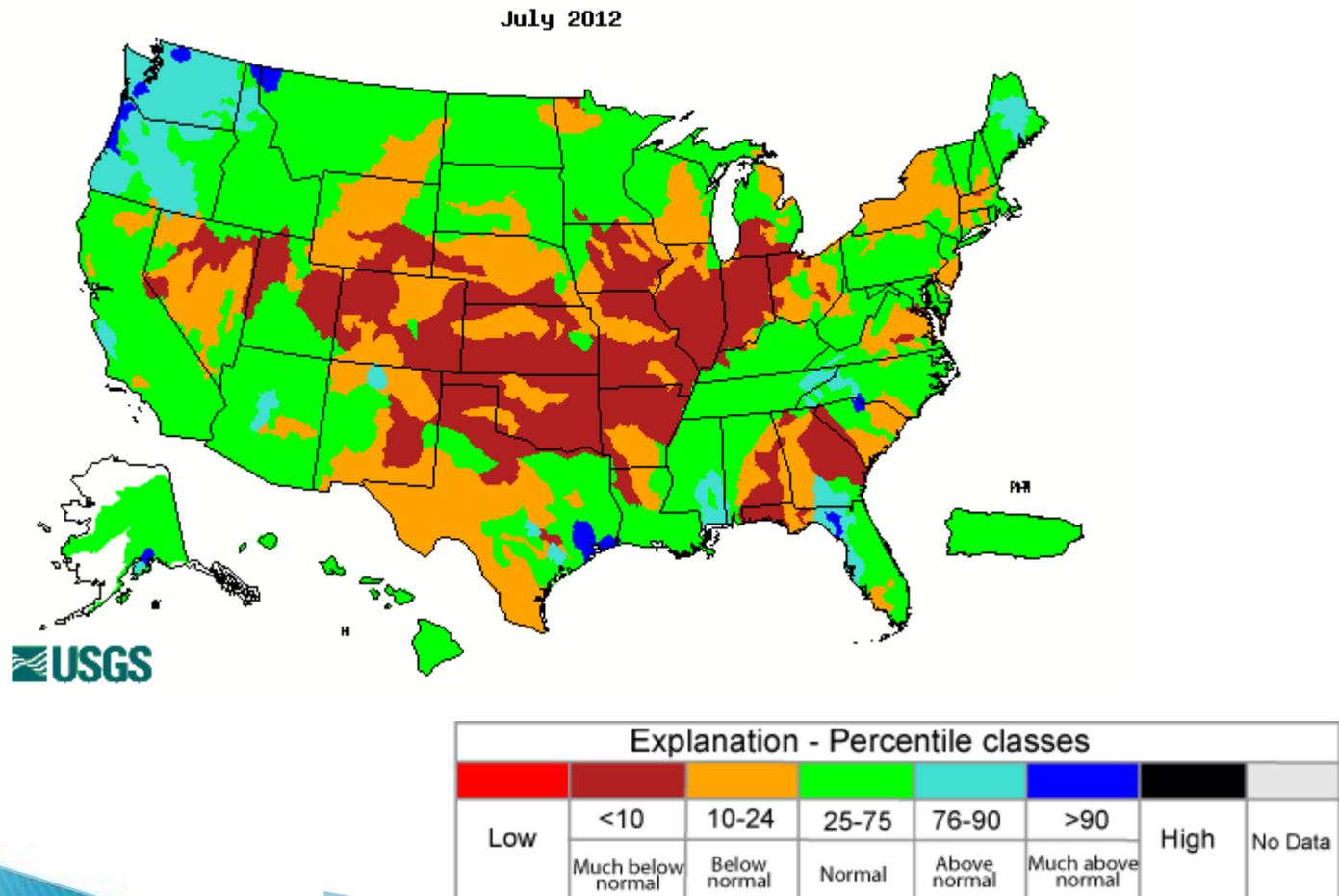
Departure from Normal Precipitation (in)  
1/1/2012 – 12/31/2012



Generated 1/11/2013 at HPRCC using provisional data.

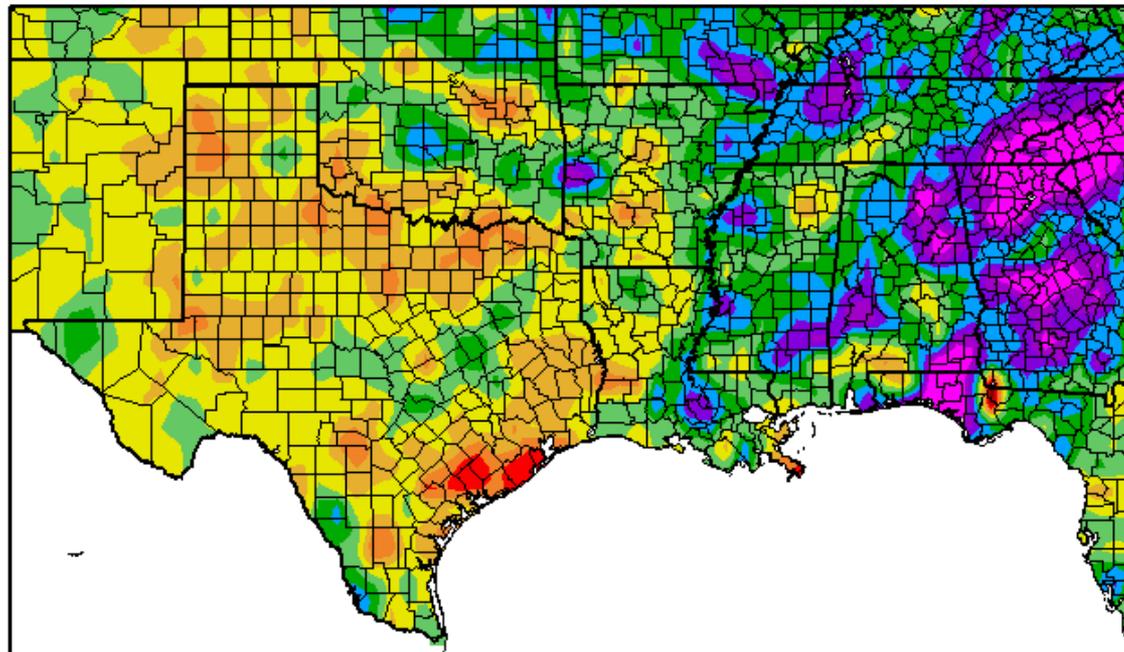
Regional Climate Centers

# Monthly-Average Streamflow for July 2012



# 2013

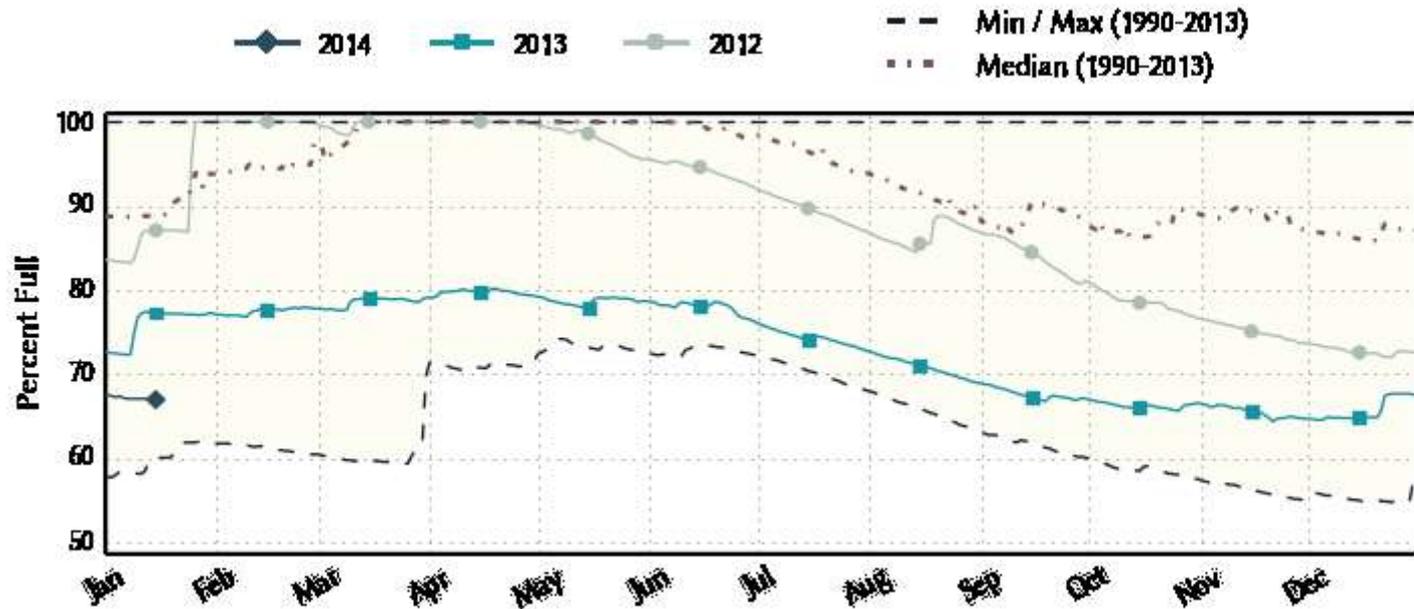
Departure from Normal Precipitation (in)  
1/1/2013 – 12/31/2013



Generated 1/11/2014 at HPRCC using provisional data.

Regional Climate Centers

# Lake Grapevine 66.9% Full



# IS Farmers Branch in Drought?

- ▶ Lake Levels– No (but levels have declined)
- ▶ Palmer Long Term Index– NO
- ▶ Drought Monitor– NO (Very Close to Drought)
- ▶ USGS Stream Flows– NO

# Vitruvian Park





# 982 Gallons Per Minute





# East Cascading Dam



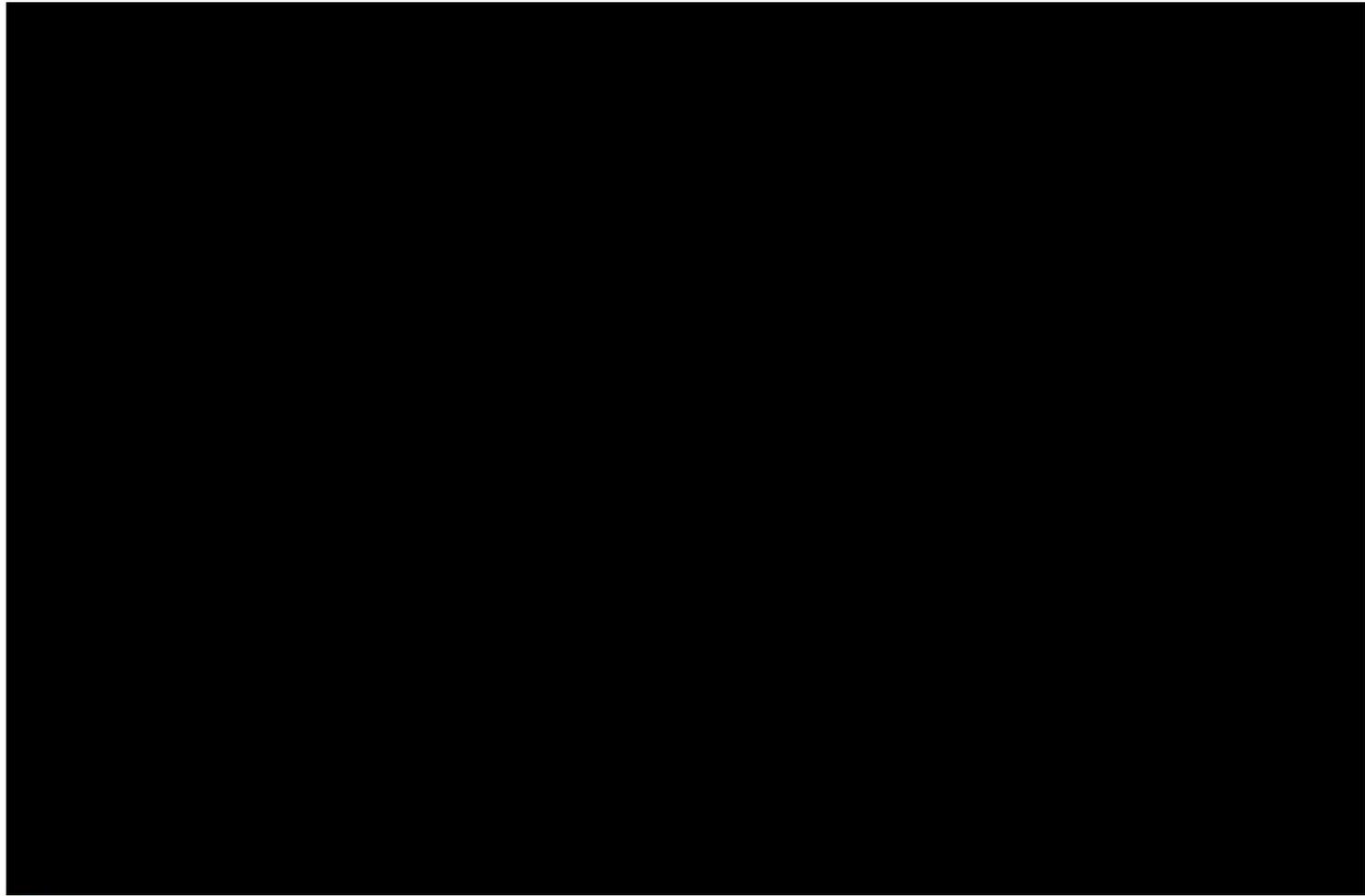
# East Cascading Dam



# West Cascading Dam



# Reservoir 2 Dam



# What Do These Have In Common?



Vitruvian Park Waterfall



1.5 Million Gallon Water Tower

# Waterfall Aerates 344 Water Towers per year (516 Million Gallons)



Vitruvian Park Waterfall



1.5 Million Gallon Water Tower

# Revised Scope of Work

- ▶ Top Notch Engineering Firm
  - ▶ No association with Addison
  - ▶ More Comprehensive
  - ▶ Answers concerns regarding potential impacts from Vitruvian Park
  - ▶ Addison has granted access to facilitate study
  - ▶ Look at historical evaporation losses
- 

# Revised Scope of Work Continued;

- ▶ In depth calculations of evaporation losses;
- ▶ Develops monthly, if not daily, gallons of water Addison must discharge to meet zero takings requirement in water rights permit;
- ▶ Conducts flow measurements (seepage?)
- ▶ Studies groundwater well including water quality and quantity for current/future needs

# Goal of Study

- ▶ To make sure that every drop of water that flows into Vitruvian Park from Farmers Branch flows through and out to downstream residents of Farmers Branch on a daily basis
- ▶ Results of study and recommendations to City Council in March or April 2014