



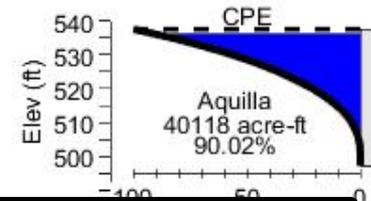
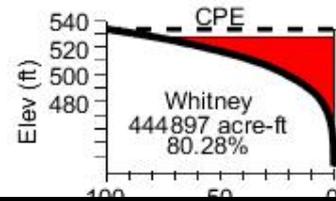
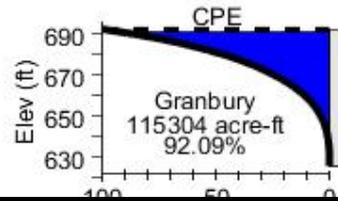
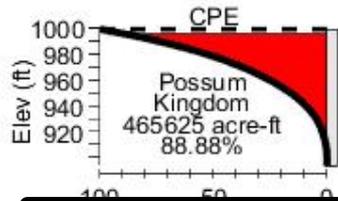
Gulf Coast Water Authority

Drought Contingency Plan Update
US BoR WaterSMART Grant
Drought Task Force Meeting

8/14/2018

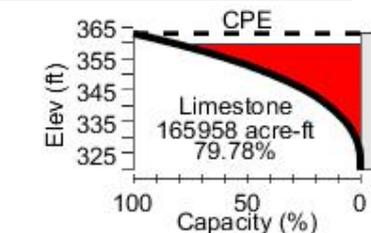
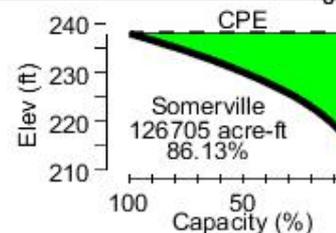
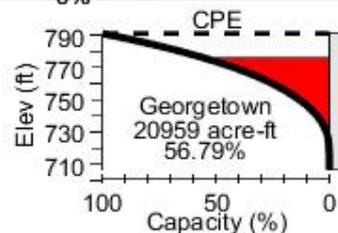
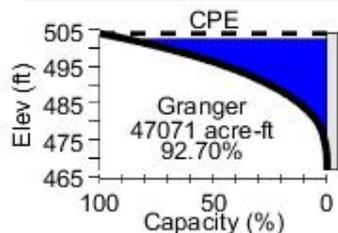


Current Conditions in the Lower Brazos Basin

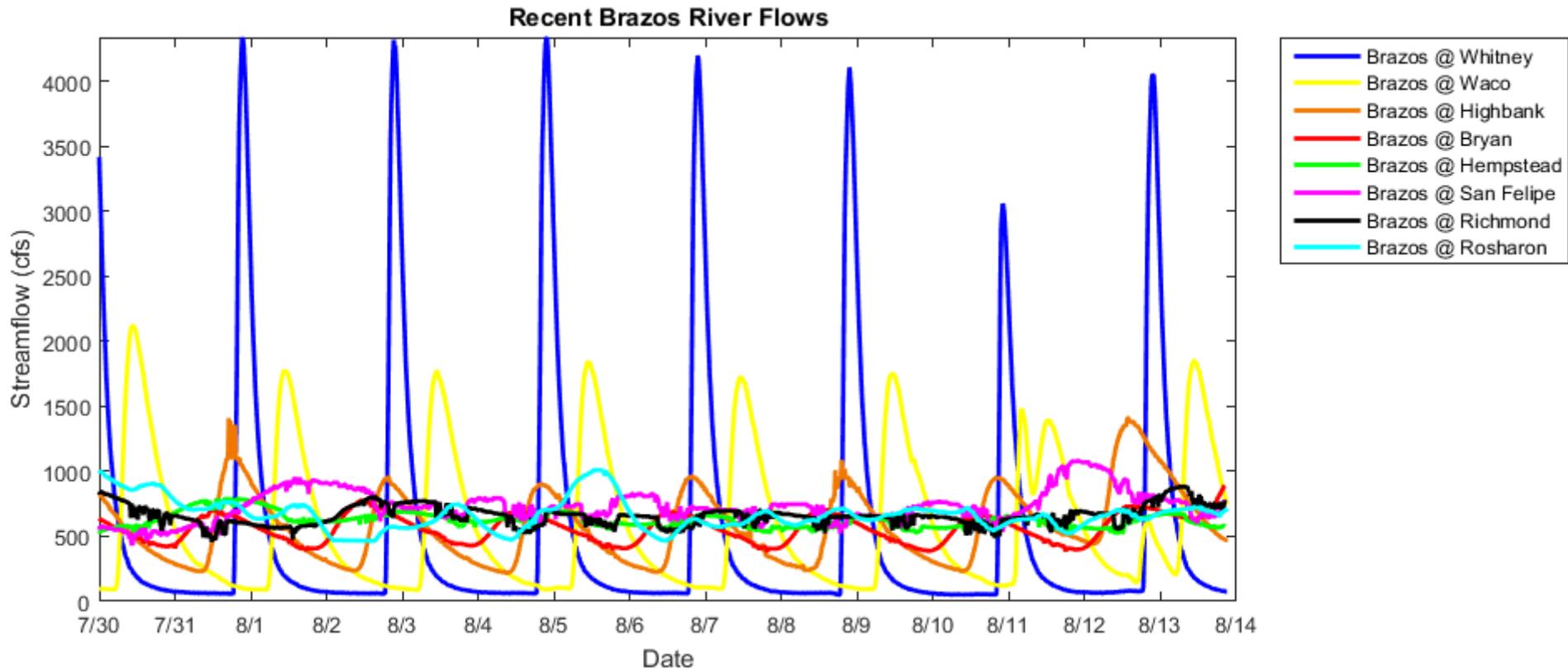


Streamflow Records (cfs):

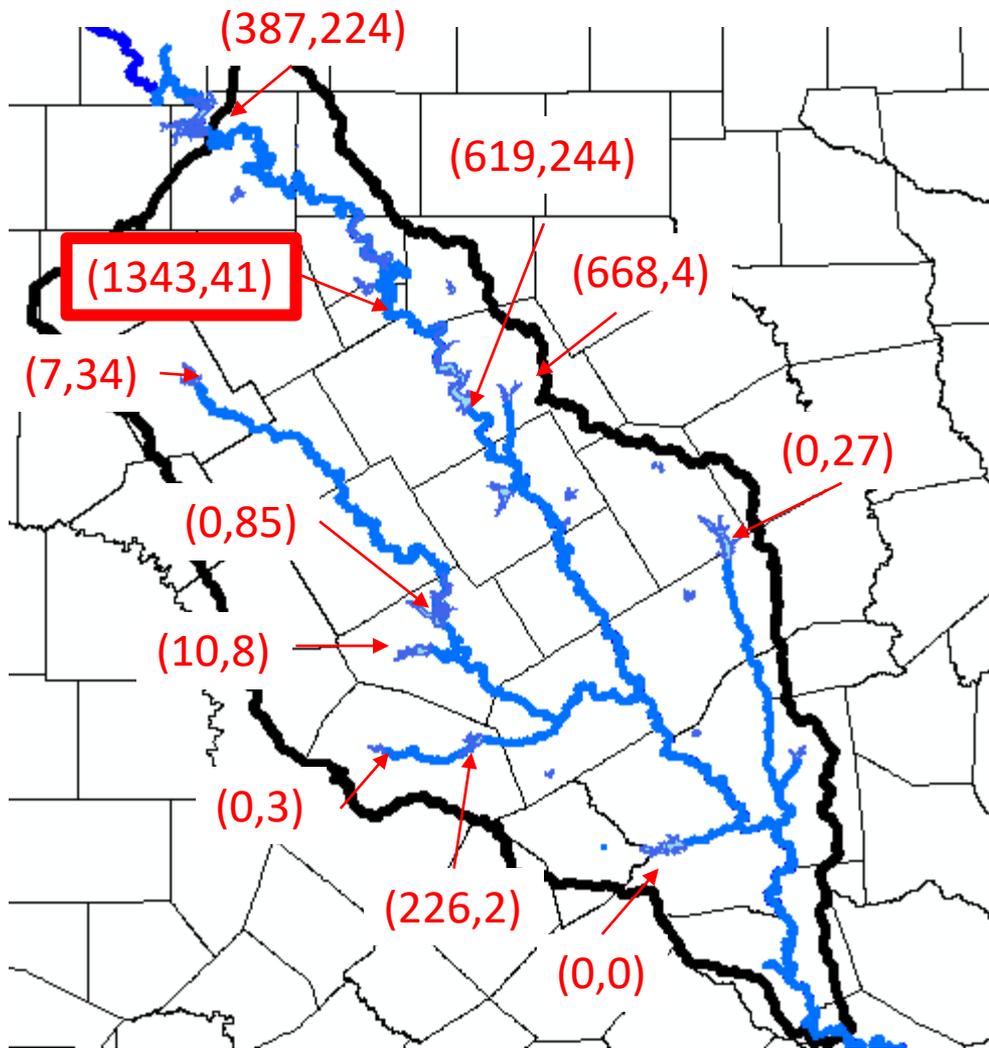
	Current Flow	8/12/2018 Average Flow	
Whitney	= 95	4050	
Waco	= 1170	611	
HighBank	= 530	1410	
Bryan	= 723	732	
Hempstead	= 571	599	Watershed Inflow
San Felipe	= 644	896	
Richmond	= 745	690	GCWA & NRG Diversions
Rosharon	= 688	664	



Brazos River Gauged Flows – Last Two Weeks



Tracking BRA Reservoir Inflows – 8/13/2018



Total Inflows: 3,262 acre-ft

Total Outflows: 371 acre-ft

Difference: 2,891 acre-ft

BRA calculates inflows weekly
In their accounting plan
Provides weekly info to Watermaster

GCWA will estimate inflows daily
May make “suggestions” to BRA &
Watermaster

So far, all are working together!

Project Summary

Existing GCWA DCP –
From 2012

TCEQ Required Update
By May 2019

US BoR WaterSMART Grant
Update DCP – Complete by 9/30/2018
Additional Measures beyond TCEQ Update

Today: Consider Proposed DCP Draft

Seeking Feedback on Content – Not spelling/grammar

DRAFT Drought Contingency Plan Version 9 – 7/30/2018

Drought Contingency Plan for Gulf Coast Water Authority

1
2
3
4
5
6
7
8
9

Section I: Introduction

The purpose of this drought contingency plan (the Plan) for the Gulf Coast Water Authority (GCWA) is as follows:

- To conserve the available water supply in times of drought and emergency
- To maintain supplies for domestic water use, industrial use, sanitation, and fire protection,

DCP Definitions & Concepts

- **System Demand:**

Demand on the GCWA system, defined as the sum of GCWA customer demands located at or downstream of a given subject location on the GCWA water distribution system (canals, reservoirs, water treatment plant, pump stations, and other water distribution infrastructure).

- **Affected Customers:**

Customers that are impacted by a particular shortage of deliverable capacity compared to system demand

*****Not all GCWA Customers may be affected equally during a given drought – especially under emergency conditions.***

DCP Definitions & Concepts

- **Firm Customers:**

Customers to whom GCWA is contractually obligated to provide water. Firm customers may receive run-of-river supplies or alternate supplies provided by GCWA

- **Interruptible Customers with Backup:**

Customers to whom GCWA may provide water only when sufficient run-of-river supplies are available, or when GCWA is delivering alternate water supplies which the customer has purchased.

- **Interruptible Customers without Backup:**

Customers to whom GCWA may provide water only when sufficient run-of-river supplies are available; these customers do not have access to alternate water supplies delivered by GCWA.

DCP Definitions & Concepts

- Firm Customers:**

Customers to whom GCWA is contractually obligated to provide water. Firm customers may receive run-of-river supplies or alternate supplies provided by GCWA

- Entitled Water Use:**

Computed monthly average usage by GCWA firm customers based on reported usage during the subject month during the three previous calendar years

			Current Month	6																	
			Current Year	2018																	
																			3-year Monthly Average - Acre-ft/month		
J	311.23	55.82	68.13	991.69	765.11	196.55	744.76	338.70	310.20	63.02	66.38	12.77	77.40	1416.05	90.84	65.35	20.36				
F	300.07	69.36	53.01	1045.65	807.63	204.77	645.88	267.36	218.40	55.38	60.04	11.21	72.10	1250.46	74.78	59.80	17.25				
M	425.61	74.24	45.38	1080.37	776.07	235.75	694.30	297.00	161.85	62.34	67.67	12.65	85.31	1526.06	83.71	65.36	22.28				
A	461.72	76.66	9.71	896.35	774.00	257.65	685.18	278.83	248.45	63.51	67.31	12.21	84.96	1532.41	76.69	63.76	24.39				
M	595.67	111.41	43.75	1184.13	905.33	257.89	733.21	339.19	273.77	73.72	75.03	15.46	93.55	1706.07	89.36	68.57	30.08				
J	573.41	113.63	42.59	1119.15	824.86	225.41	734.15	327.80	258.22	74.36	72.62	14.39	85.18	1768.07	103.78	64.50	28.40				
J	648.49	90.12	70.79	1344.84	864.63	270.04	820.37	323.92	299.93	82.13	89.90	17.40	97.71	2173.60	105.89	68.03	35.32				
A	621.66	95.75	59.79	1284.94	833.90	254.15	803.57	347.22	310.30	73.72	77.94	17.69	92.97	2055.27	101.11	61.86	32.82				
S	586.66	93.76	15.72	1122.16	786.27	247.18	714.79	304.39	249.97	62.71	70.13	13.17	83.15	1806.60	89.47	61.18	27.25				
D	568.57	97.30	72.79	1103.42	877.51	228.27	742.35	326.68	270.54	66.84	71.82	14.18	87.28	1817.31	108.47	66.26	28.43				
N	460.30	73.35	73.92	1005.76	778.95	232.67	696.22	310.36	257.23	64.63	66.14	13.02	76.32	1599.60	85.21	62.32	24.42				
D	391.64	48.15	78.01	1043.24	750.13	223.84	695.82	327.19	242.41	62.12	64.47	13.32	76.11	1446.59	85.64	63.76	20.49				
Canal Losses	0%	24%	15%	24%	8%	12%	24%	24%	24%	24%	24%	24%	24%	24%	24%	24%	24%	24%			

DCP Definitions & Concepts

- **Monthly Flow Target:**

Computed target streamflow set by GCWA which is required to satisfy Entitled Water Uses and Interruptible Water Uses of GCWA customers, as well as other entities permitted to divert Brazos River water downstream from GCWA

- **Run-of-River Supplies:**

Water available to GCWA under its water rights 12-5168, 13-5169, 12-5171, 12-5322, or 13-5357. This water is water available from the Brazos River, Mustang Bayou, Halls Bayou, Chocolate Bayou, or Jones & Oyster Creek, and is diverted according to the State of Texas prior-appropriation system.

- **Alternate Water Supplies:**

Any water provided by GCWA other than Run-of-River supplies

BRA “Contract” Water

Water from Wells

Desalination

Other Sources

DCP Contents

This Plan is consistent with TCEQ guidelines and requirements for the development of drought contingency plans by wholesale water suppliers, contained in Title 30, Part 1, Chapter 288, Subchapter B, Rules 288.20-288.22 of the Texas Administrative Code.

GCWA GM Designates Drought Stages

4 GCWA Drought Stages:

Stage 1 – Drought Awareness

Stage 2 – Moderate Drought – Using GCWA Alternate Supplies

Stage 3 – Severe Water Shortage

Stage 4 – Emergency Water Shortage

Reductions Apply to **Affected Customers** Only

Reductions based on same month historical usage over last 3 years

Surcharges & Credits Apply to incentivize conservation – Stage 2 and higher

Reduction Goals

5%

10%

15%

TBD

Mandatory Reductions

Voluntary Reductions

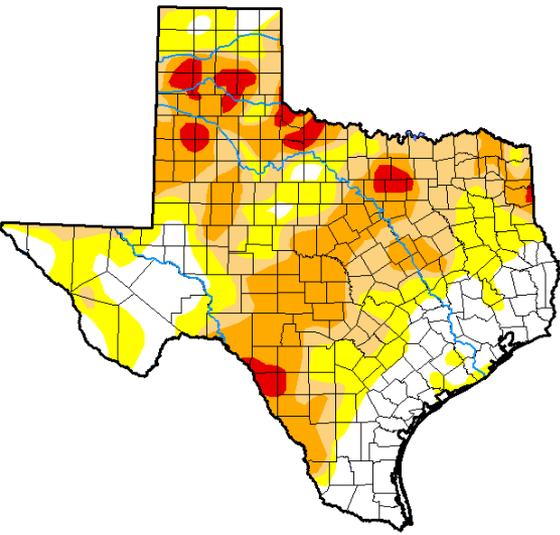
DCP Stage 1 – Mild Water Shortage

Triggers: 50% of GCWA Contributing Watershed is in D1 or Greater per US Drought Monitor, or **System Demand** exceeds 85% of **Deliverable Capacity** within GCWA's conveyance system for three consecutive days

U.S. Drought Monitor
Texas

July 24, 2018
(Released Thursday, Jul. 26, 2018)
Valid 8 a.m. EDT

Clip to Watershed
Compare Areas



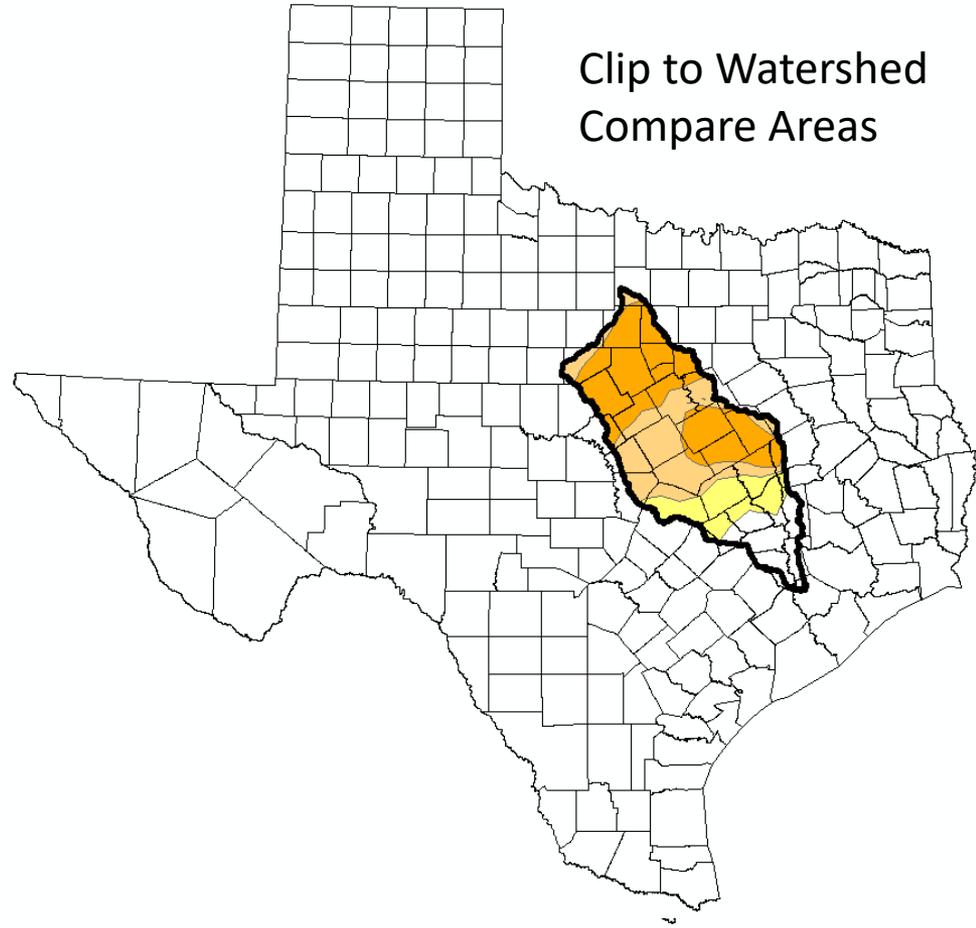
- Intensity:**
- D0 Abnormally Dry
 - D1 Moderate Drought
 - D2 Severe Drought
 - D3 Extreme Drought
 - D4 Exceptional Drought

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

Author:
Chris Fenimore
NCEI/NESDIS/NOAA

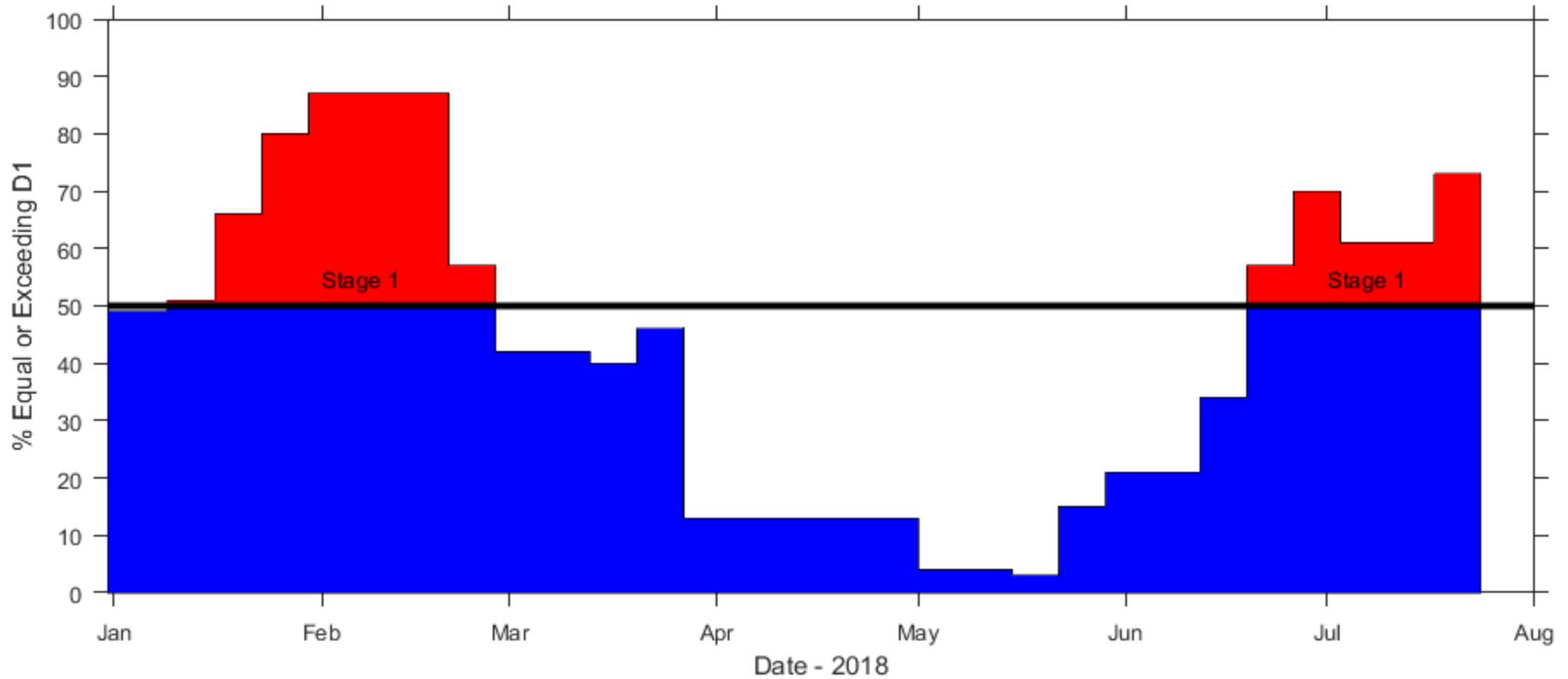


<http://droughtmonitor.unl.edu/>



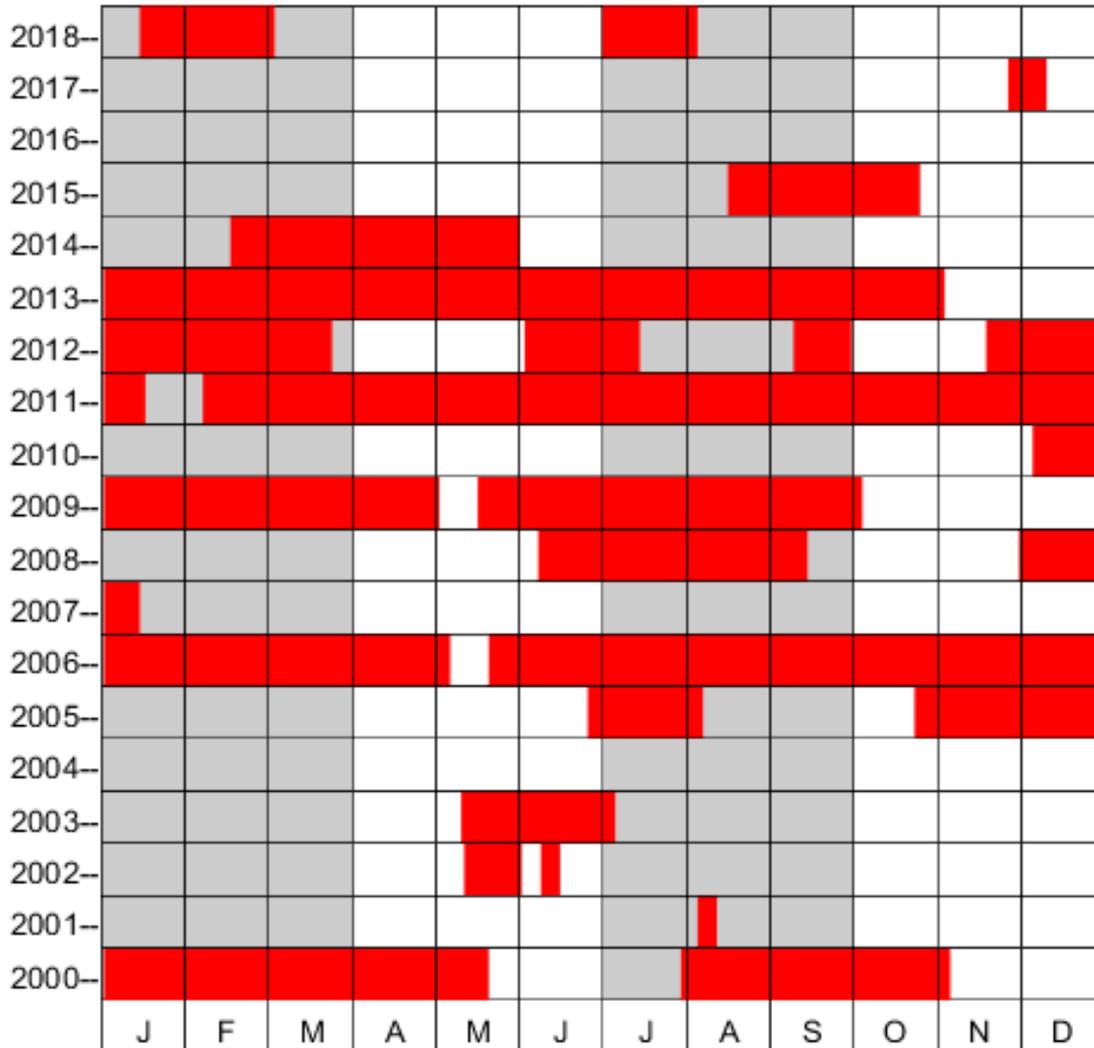
For July 24, 2018 – Stage 1 Triggered
Response: Drought Awareness
Voluntary Reductions
5% Reduction Goal

Stage 1 Trigger History – For 2018 (so far)



Stage 1 Trigger History – 2000-2018 (Approximate)

GCWA Drought Stage #1



**Eye-balling the 50% level,
NOT Calculating Areas

Frequent Stage 1 Declarations

Multiple years with minimal or
No Stage 1 declarations.

Stage 2 – Moderate Water Shortage

Triggers:

1. **System Demand** exceeds 90% of **Deliverable Capacity** within GCWA's conveyance system for three consecutive days (applicable to any portion thereof),
2. Predicted **Run-of-River Supplies** at GCWA's pump stations are less than 95% GCWA's **Monthly Flow Target** for *fourteen days into the future*
3. Water available from **Run-of-River Supplies** and **Alternate Water Supplies** is determined to be insufficient to satisfy 95% of GCWA's **Monthly Flow Target** through August 31 of the current year (if date is on or after January 1) or through August 31 of the next year (if date is on or after September 1).

Stage 2 Summary –

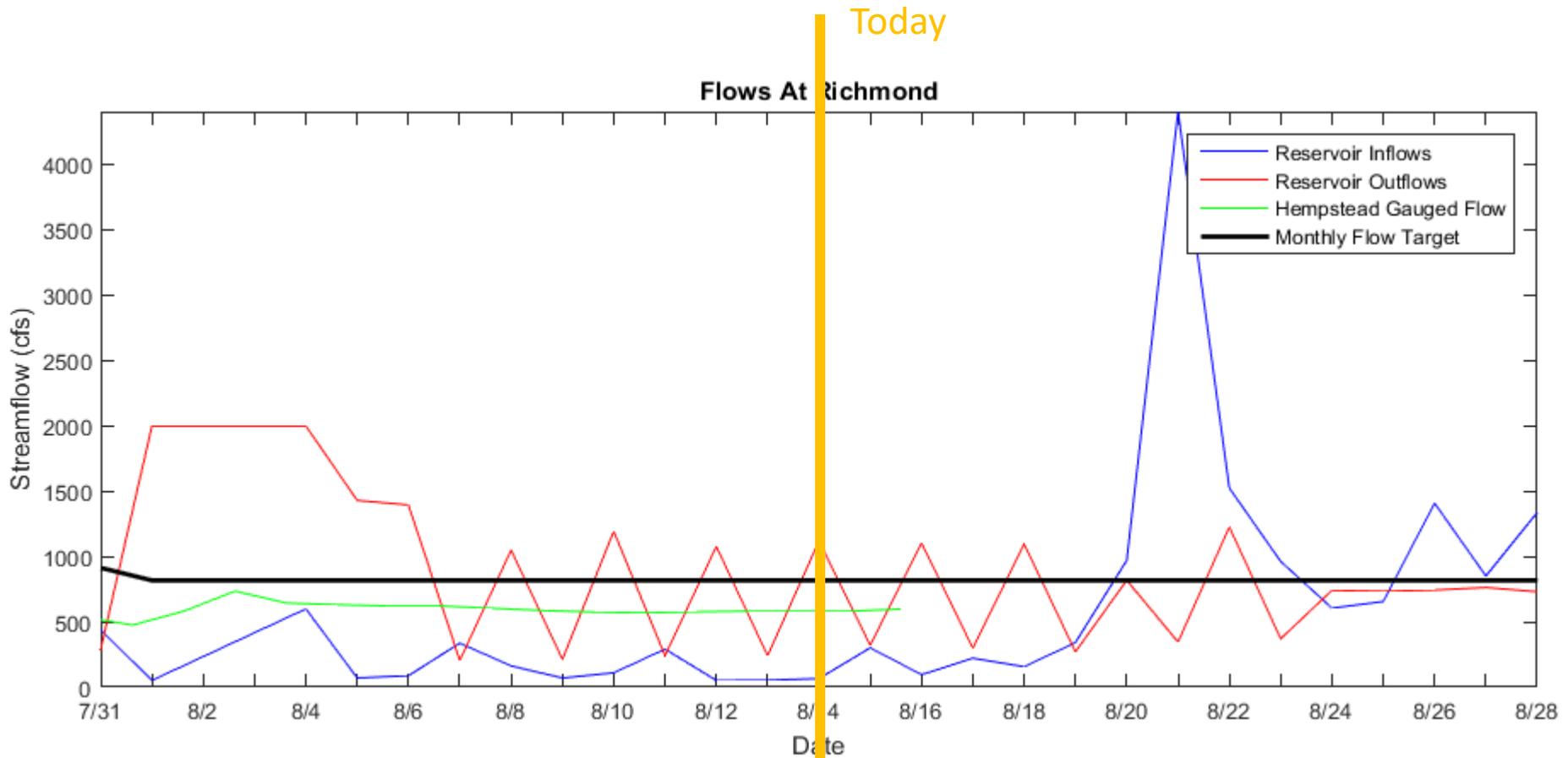
Insufficient water now and into future

Alternate Supplies will not suffice unless demands cutback

Voluntary Goal – 10% Reduction (90% Usage)

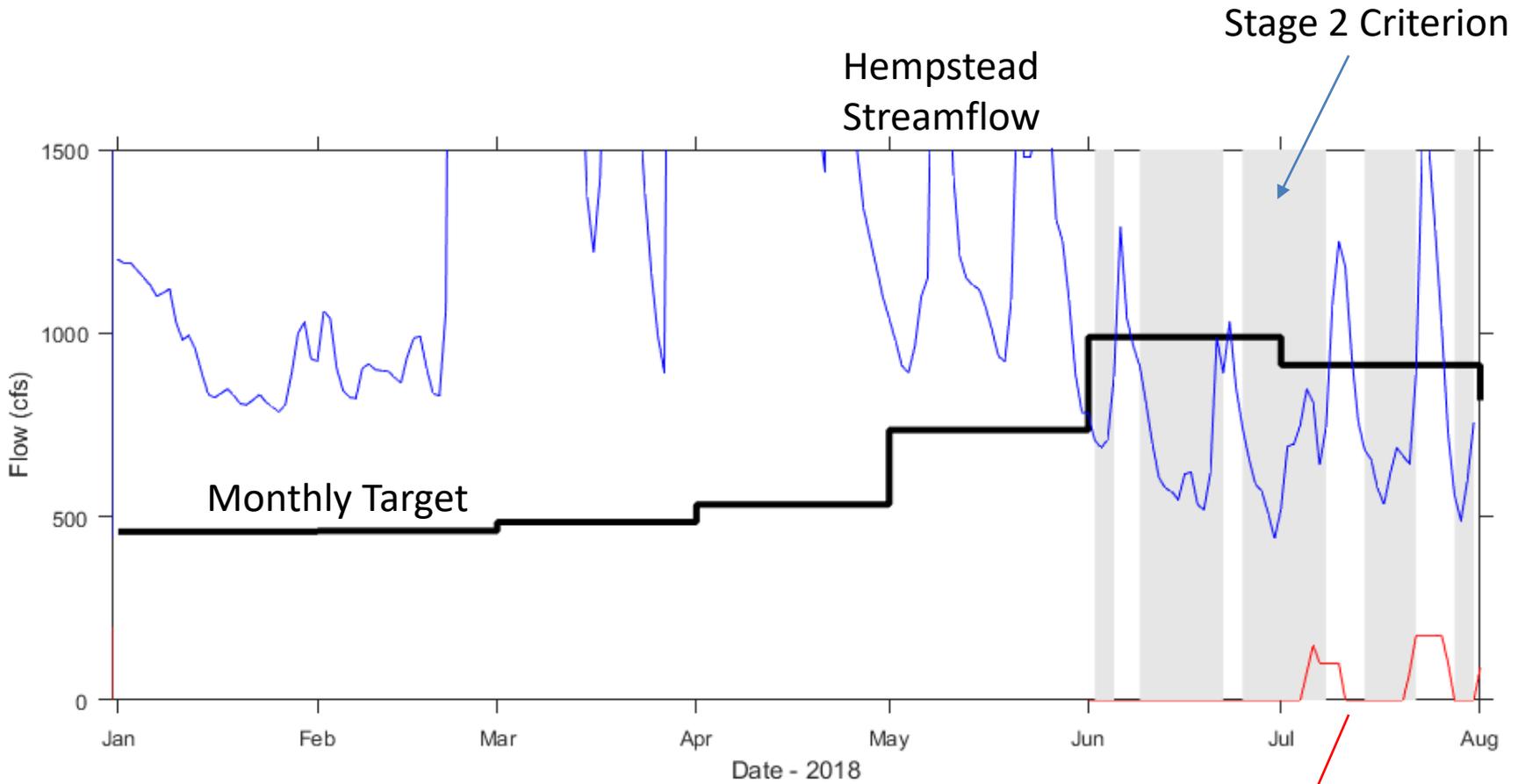
LRE Prediction & Water Accounting Tools – Developed Under US BoR DCP Update Project

Stage 2 Criterion #2 – Predicted Flows



Not Likely to declare
Stage #2 Drought

Streamflow vs. Monthly Targets - 2018



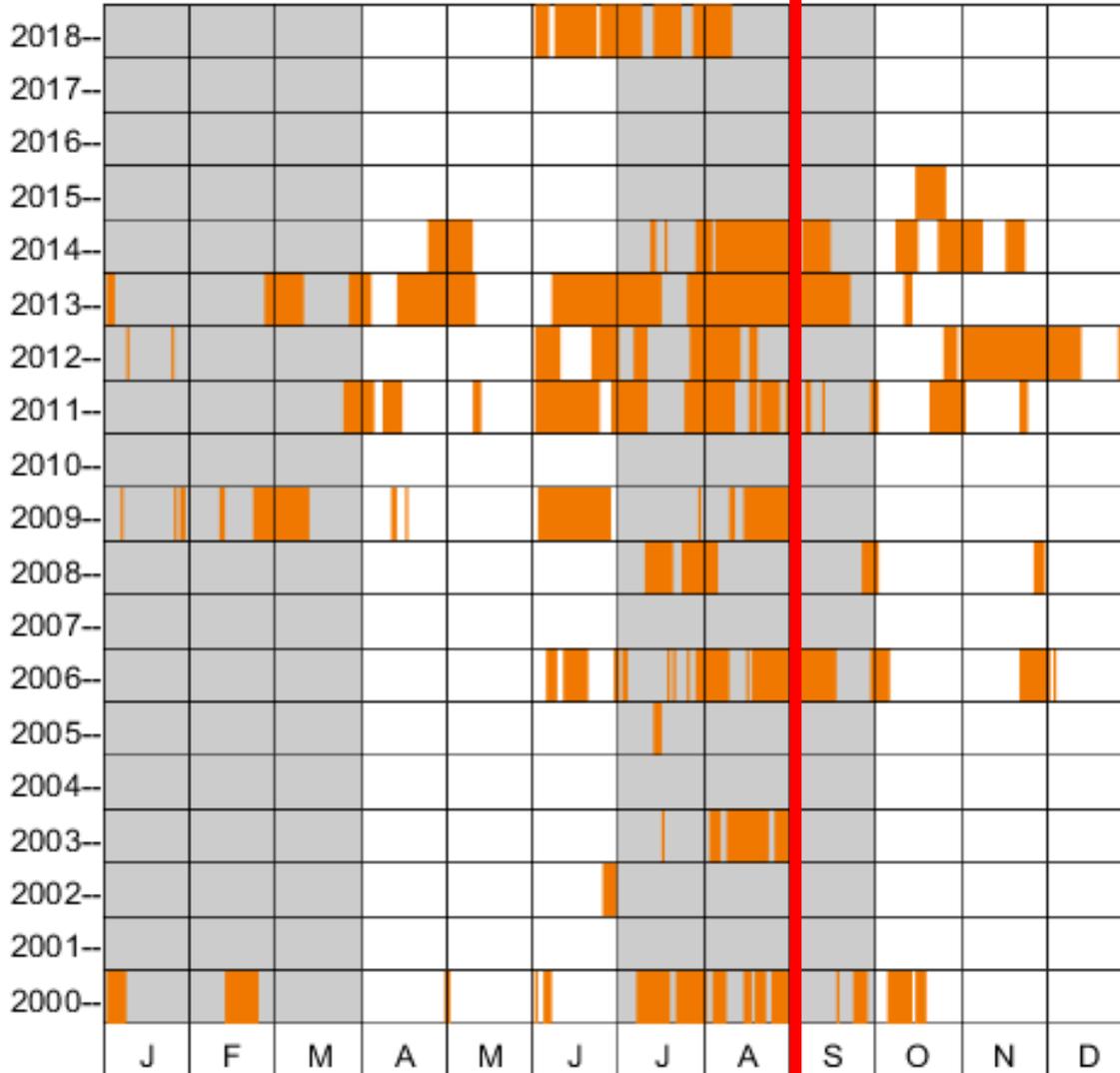
No Stage 2 Drought Declaration
GCWA has sufficient Alternate Supplies through 8/31

GCWA Using BRA Release Water

Stage 2 Trigger History – 2000-2018 (Approximate)

GCWA Drought Stage #2

BRA Supply Reset - FY



2019, 2011, 2013, 2018 flows
INCLUDED BRA Released Water

Graph Shows when RoR
Water was insufficient

RoR + Alternate Supplies
Sufficient except for:
Late 2011
Late 2012

Stage 3 – Severe Water Shortage

Triggers:

1. **System Demand** exceeds **95%** of **Deliverable Capacity** within GCWA's conveyance system for three consecutive days (applicable to any portion thereof),
2. Predicted **Run-of-River Supplies** at GCWA's pump stations are less than **90%** GCWA's **Monthly Flow Target** for *fourteen days into the future*
3. Water available from **Run-of-River Supplies** and **Alternate Water Supplies** is determined to be insufficient to satisfy **90%** of GCWA's **Monthly Flow Target** through August 31 of the current year (if date is on or after January 1) or through August 31 of the next year (if date is on or after September 1).

Stage 3 Summary –

Insufficient water now and into future

Alternate Supplies will not suffice unless demands cutback

Stage 2 Measures were insufficient

Voluntary Goal – 15% Reduction (85% Usage)

Stage 4 – Emergency Response

Triggers:

1. An emergency water shortage,
2. A major GCWA system failure leading to loss of water service,
3. The water supply becoming contaminated and unusable, or
4. Any other emergency conditions.

Mandatory Water Reductions for Affected Customers

GM to determine Reduction % - based on conditions

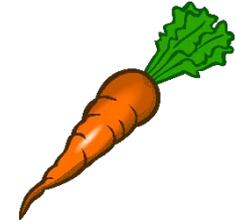
Surcharges & Credits

For Stages 2 & 3

Credit: If customer meets usage reduction goal:

Credit 1.0x Raw Water Rate for conserved quantity

*** Credit for water conserved below Entitled Use*



Surcharge:

For Stages 2 & 3

If customer usage exceeds Usage Target

Charged 2.5x Raw Water Rate for excess usage

For Stage 4

If customer usage exceeds Usage Target

Charged 10x Raw Water Rate for excess usage





LREWater, LLC

a Leonard Rice Engineers Company

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