



Rainwater Harvesting



**OVERVIEW, DESIGN, INSTALL,
MAINTENANCE, RAIN GARDEN TIE-IN,
MARKETING**



Who We Are

Texas Metal Tanks 



LAND WILDLIFE WATER
— LLC —

Texas Metal Tanks 

HABITATS
 **TEXAS**
LAND WILDLIFE WATER

Wildlife Management

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Keep your Water on Your Property

Texas Metal Tanks





The New York Times

Dangerously Low on Water, Cape Town Now Faces 'Day Zero'

[Leer en español](#)

By NORIMITSU ONISHI and SOMINI SENGUPTA JAN. 30, 2018



Cape Town Receives 0.03”



Drought-hit Cape Town rejoices at rainfall

🕒 10 February 2018

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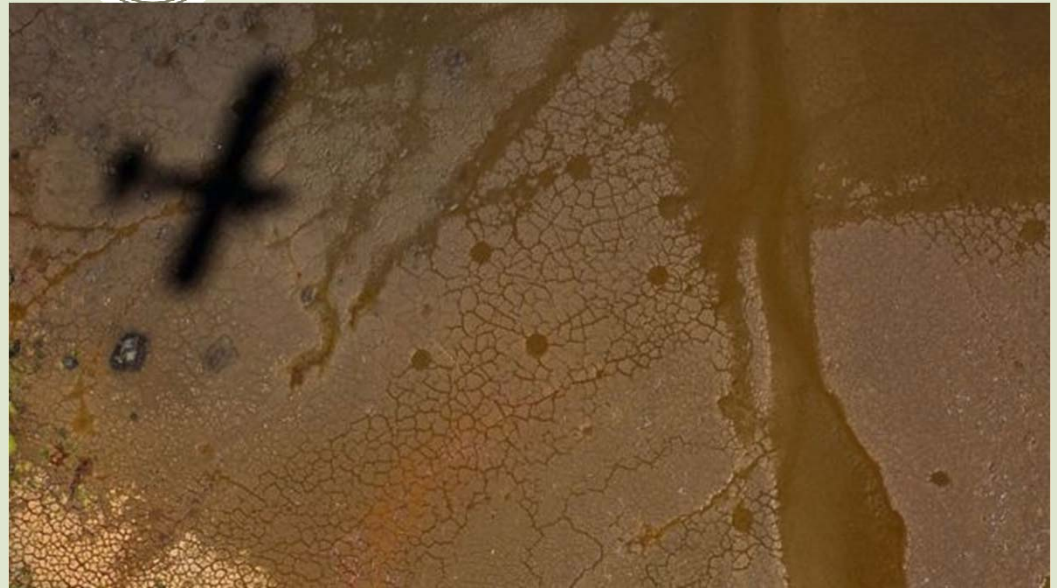


AFP/GETTY IMAGES

The waterskloof Dam has less than 20% of its water capacity and Capetonians are feeling the strain

11 Cities Most Likely to Run Out of Drinking Water

1. Sao Paulo, Brazil
2. Bangalore, India
3. Beijing, China
4. Cairo, Egypt
5. Jakarta, Indonesia
6. Moscow, Russia
7. Istanbul, Turkey
8. Mexico City, Mexico
9. London, England
10. Tokyo, Japan
11. Miami, Florida



State of Water - US



DP 

Colorado snowpack worst in more than 30 years...



1 of 28

A relatively dry view from the south side of Kenosha pass along Highway 285 near Jefferson on Thursday, Jan. 4, 2018. Colorado is experiencing a record low snowfall during the 2017-18 winter season.

Aaron Ontiveroz, The Denver Post

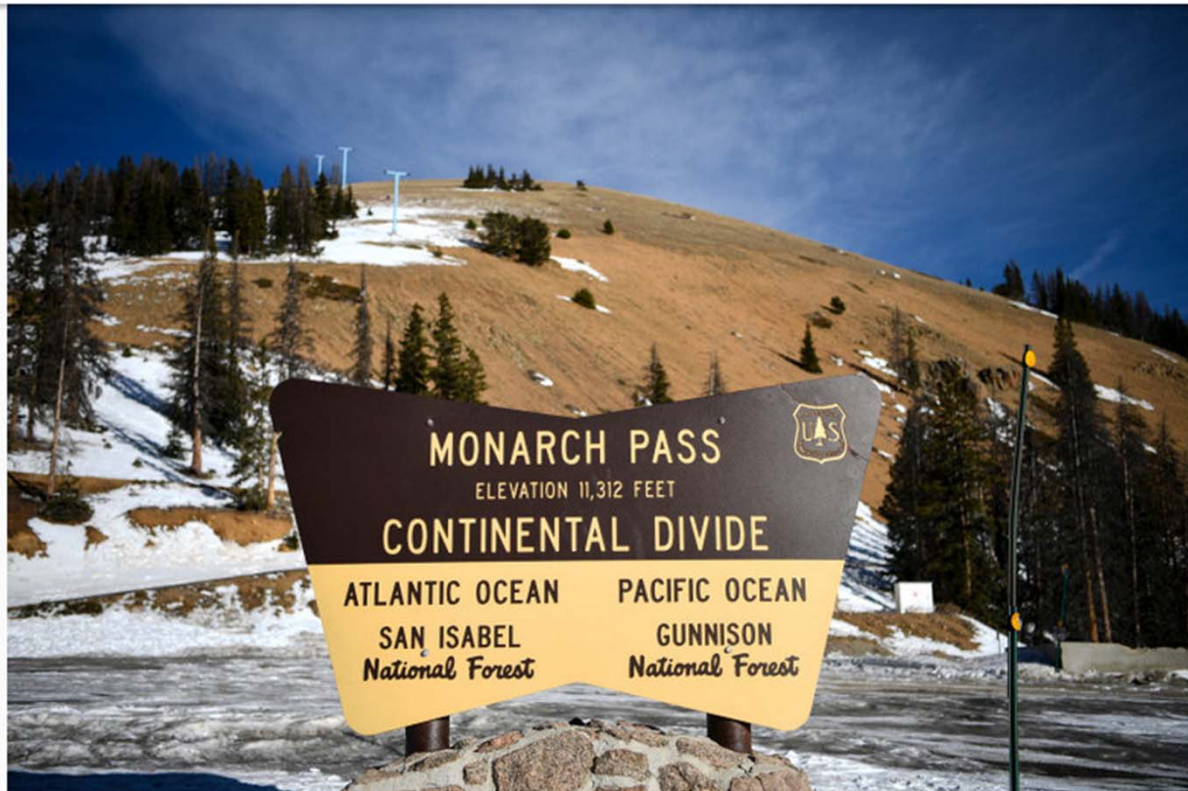


State of Water - US



DP

Colorado snowpack worst in more than 30 years...



5 of 28

Dry conditions on top of Monarch Pass, which sits at 11,312 feet above sea level, as seen on Thursday, Jan. 4, 2018.

Aaron Ontiveroz, The Denver Post



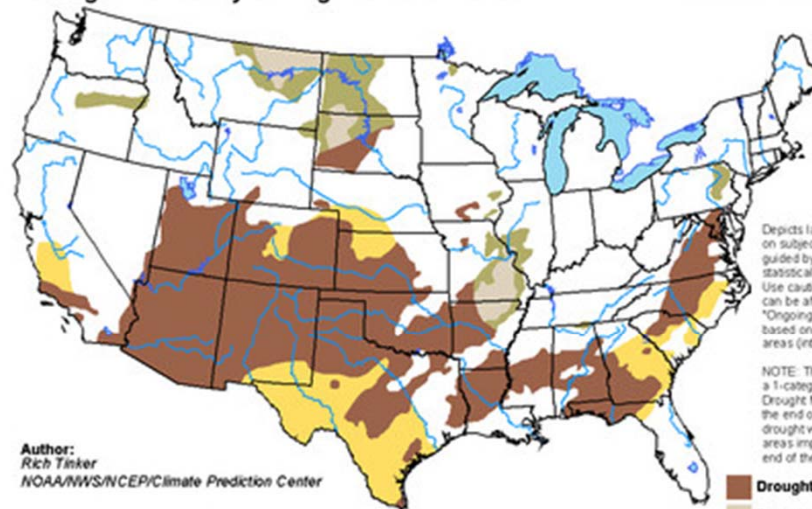
State of Water - US



The Climate Prediction Center, part of the National Weather Service, publishes this outlook on the third Thursday of each month.

U.S. Seasonal Drought Outlook Drought Tendency During the Valid Period

Valid for January 18 - April 30, 2018
Released January 18, 2018



Author:
Rich Tinker
NOAA/NWS/NCEP/Climate Prediction Center

Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Use caution for applications that can be affected by short lived events. "Ongoing" drought areas are based on the U.S. Drought Monitor areas (intensities of D1 to D4).

NOTE: The tan areas imply at least a 1-category improvement in the Drought Monitor intensity levels by the end of the period, although drought will remain. The green areas imply drought removal by the end of the period (D0 or none).

-  Drought persists
-  Drought remains but improves
-  Drought removal likely
-  Drought development likely



<http://go.usa.gov/3eZ73>



State of Water - Texas



Drought returns to Texas just months after Hurricane Harvey floods ...

The Texas Tribune

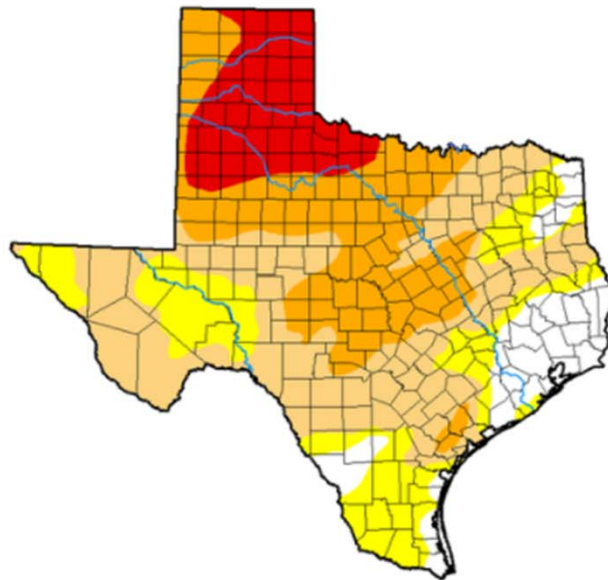
State of Water - Texas



U.S. Drought Monitor - Texas

As of February 13, 2018



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







Drought Conditions (Percent Area)

Week	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current 2/13/2018	10.26%	89.74%	71.22%	37.56%	13.07%	0.00%
Last Week 2/06/2018	9.76%	90.24%	64.88%	29.56%	11.79%	0.00%
Three Months Ago 11/14/2017	54.34%	45.66%	15.26%	0.97%	0.00%	0.00%
Start of Calendar Year 1/02/2018	33.37%	66.63%	33.56%	5.94%	0.11%	0.00%
One Year Ago 2/14/2017	88.14%	11.86%	3.69%	1.26%	0.53%	0.00%

Drought Intensities

 None: No Drought
 D0: Abnormally Dry

 D1: Moderate Drought
 D2: Severe Drought

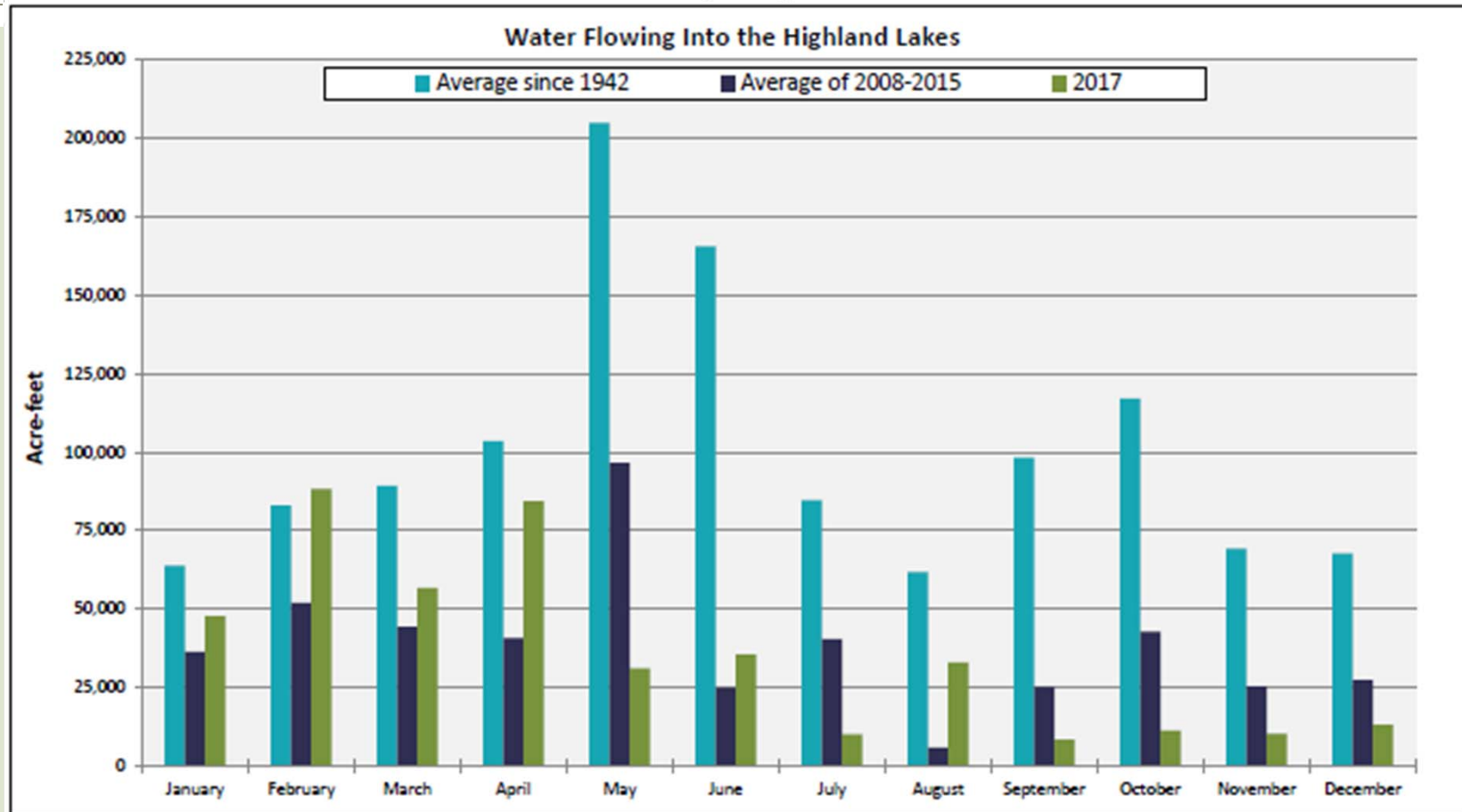
 D3: Extreme Drought
 D4: Exceptional Drought



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

State of Water - Texas

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* Inflows: the estimated amount of water flowing into the Highland Lakes from rivers and streams.

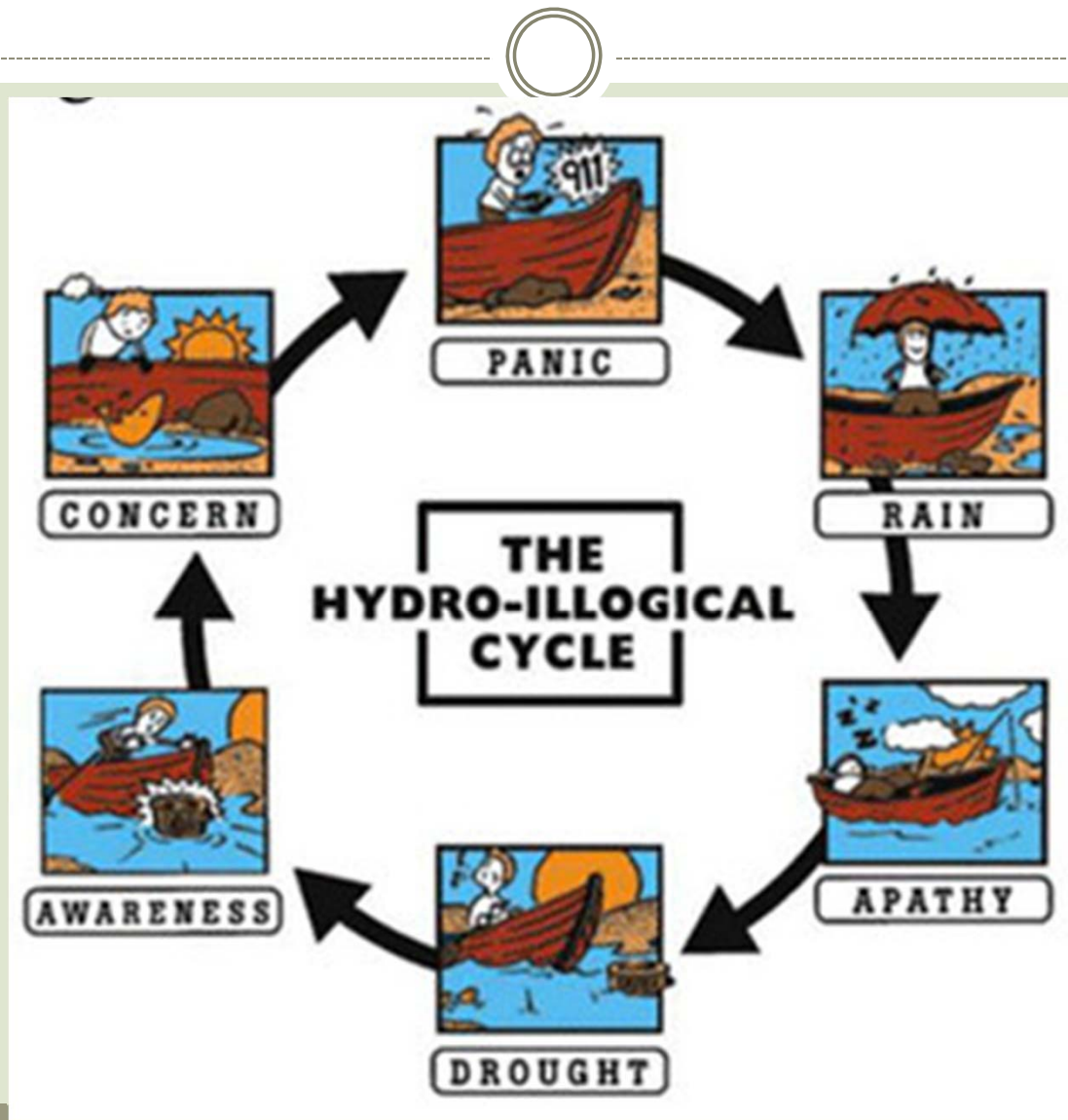
Data for 2016 and 2017 is preliminary and subject to change.

Period: December (acre-feet)	
Since 1942, December Average:	67,763
2008-2015, December Average:	27,240
December 2017:	13,071

State of Water - Texas



Where Are We Now?



Why Manage your Rainwater?

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- It's free
- There's a lot more of it than you might think
- Plants love rainwater
- You can create beautiful rainwater gardens
- Reduces demand on city water
- Prevents storm water run off
- You can create a watershed on your property
- You've got an emergency source of water
- It's not that difficult to collect /harvest /manage
- It's the future – and the future is now

Rainwater Harvesting



- Pre-design
- Design
- Installation
- Maintenance



Pre-Design Considerations



- What is the water going to be used for?
- How much can you collect?
- How much space do you have?
- Are you applying for a rebate?
- HOA regulations?
- Permitting



Pre-design: Water Use

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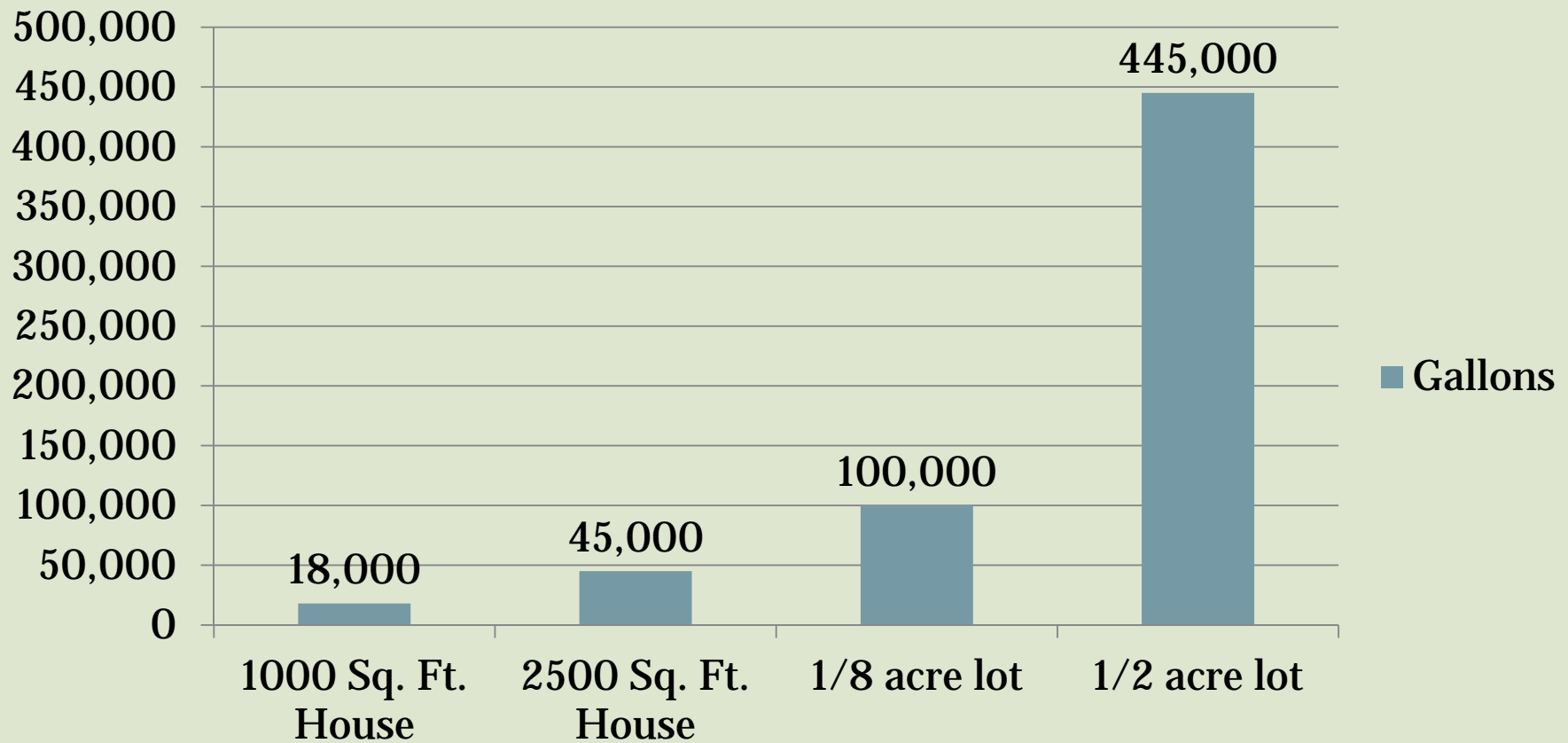


- How much rainwater do you need?
- In 2015 we got 59” of rain, but still went 60 days without a drop.
- Gardens and flowerbeds connected to drip irrigation systems use several gallons per hour.
- A sprinkler head uses 3 – 5 gallons per minute.

Pre-design: How Much Can I Capture?



Gallons Per Year



Pre-Design Considerations



- **Space constraints**
 - Fences
 - Gates
 - Tree limbs
 - Eaves
 - Power lines
 - Roof height



Pre-design: Rebates



- Austin, Round Rock, San Marcos all have rebates
- For Austin, < 500 gallons submit receipt
- For Austin, > 500 gallons pre-approval required
- \$0.50 / gallon – no pump
- \$1.00 / gallon - pump



Pre-design: HOA Restrictions



- Great news! In 2013 the Texas Legislature passed a law prohibiting HOA's from banning rainwater collection systems.
- They might limit location



Pre-design: Budget

- Plastic tanks - \$
- Galvanized tanks - \$\$
- Stainless steel tanks - \$\$\$\$
- Installation – simple vs. complex



Design: Sizing a System

Second, supply:

- Per 1000 square feet of covered spaced, a 1" rain generates 600 gallons of water.
- Plan for a 2 – 3" rain event (7 in 2017)
- Thus on a 1000 square foot roof 1200 – 1800 gallons of storage capacity appropriate



Design: Filters

- **Keep leaves and debris out of the tank!**
 - Gutter screens
 - Leafeater
 - Screened basket
 - First flush diverter



Design: Inlet and Overflow

- Wet vs. Dry



Design: Outlet

- $\frac{3}{4}$ " – 2" outlets
- Bulkhead connections are threaded all the way through.



Design: Pumps

- \$80 - \$2000 solutions
- Sump
- On demand
- Submersible
- Solar



Installation

- Create a pad
- Set tank on pad
- Connect to gutters
- Add an overflow
- Add spigot
- Paint PVC
- Secure the top



Pad Options



Maintenance

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- **None!**
- **If you do a good job with keeping leaves and debris out of the tank the tank should not ever need maintenance.**
- **Top can be removed**
- **Basket inlet needs to stay clean**
- **Clean out first flush diverter**

FAQ's

- Mosquitoes
- Algae
- Extra fittings
- Custom sizes
- Cedar wrapping
- Well use
- Tax exempt
- Tank level

Connecting to Rain Gardens

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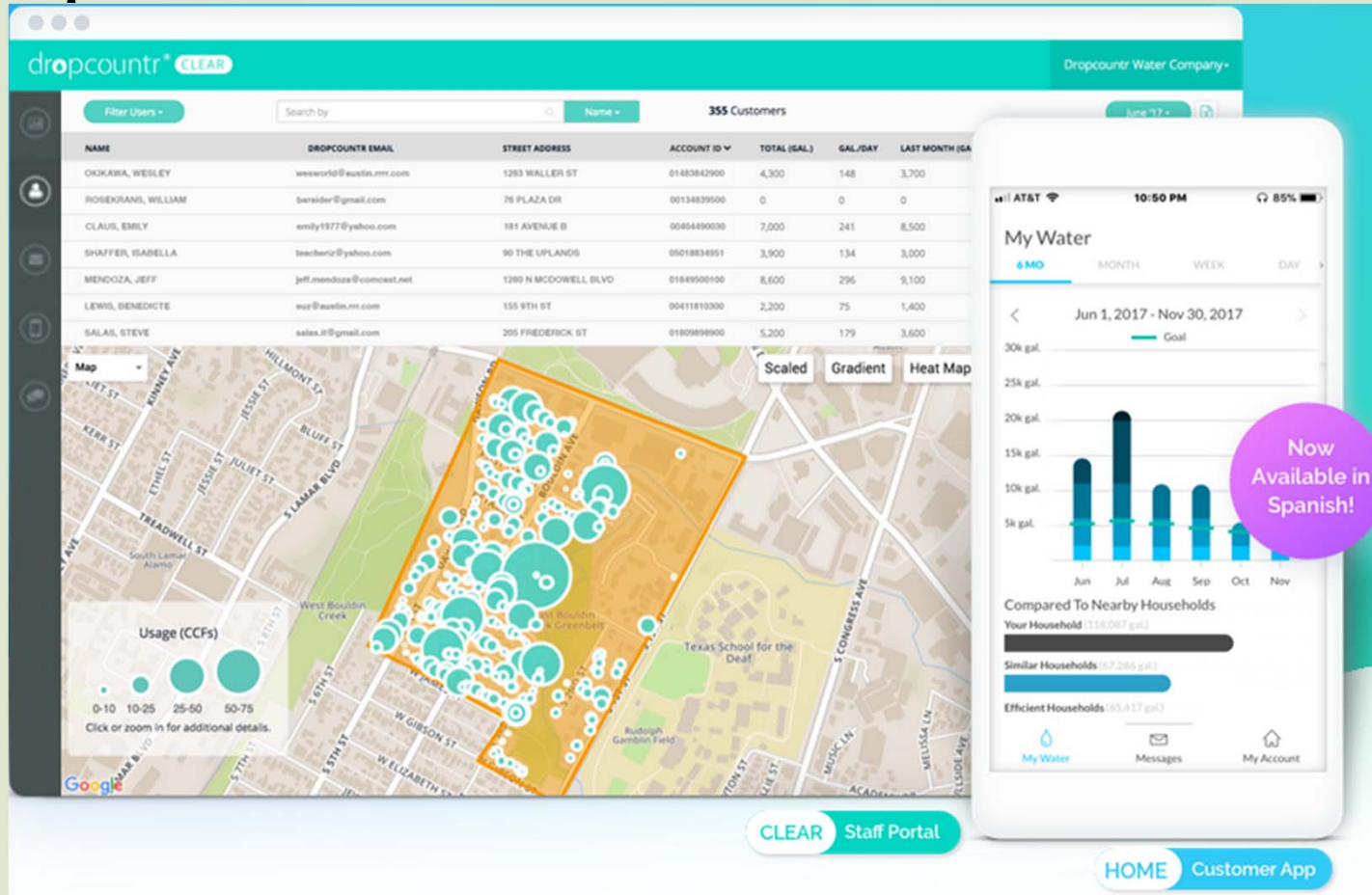
Connecting to Rain Gardens

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Marketing

- DropCounter



The image displays two views of the DropCounter system. On the left is a desktop web interface showing a customer list and a map. On the right is a mobile app interface showing a water usage chart and comparison.

DropCounter Web Interface:

- Header: dropcountr CLEAR, Dropcounter Water Company-
- Filter Users: Search by Name, 355 Customers
- Table with columns: NAME, DROPCOUNTR EMAIL, STREET ADDRESS, ACCOUNT ID, TOTAL (GAL), GAL/DAY, LAST MONTH (GAL)
- Map: Usage (CCFs) legend (0-10, 10-25, 25-50, 50-75), Scaled, Gradient, Heat Map

NAME	DROPCOUNTR EMAIL	STREET ADDRESS	ACCOUNT ID	TOTAL (GAL)	GAL/DAY	LAST MONTH (GAL)
OKKABIA, WESLEY	wesworld@austin.tmm.com	1283 WALLER ST	01483842900	4,300	148	3,700
ROSEKRANS, WILLIAM	barsider@gmail.com	76 PLAZA DR	00134839500	0	0	0
CLAUS, EMILY	emily1977@yahoo.com	181 AVENUE B	00404490030	7,000	241	8,500
SHAFFER, ISABELLA	teacheriz@yahoo.com	90 THE UPLANDS	05018834951	3,900	134	3,000
MENDOZA, JEFF	jeff.mendoza@comcast.net	1280 N MCDOWELL BLVD	01849500100	8,600	296	9,100
LEWIS, BENEDETTE	wur@austin.tmm.com	155 9TH ST	00411810300	2,200	75	1,400
SALAS, STEVE	sales.st@gmail.com	205 FRIEDRICK ST	01809898900	5,200	179	3,600

Mobile App Interface:

- Header: My Water, 4 MO, MONTH, WEEK, DAY
- Chart: Jun 1, 2017 - Nov 30, 2017, Goal line, 30k gal. scale
- Comparison: Compared To Nearby Households, Your Household (118,087 gal), Similar Households (7,286 gal), Efficient Households (65,417 gal)
- Buttons: My Water, Messages, My Account
- Callout: Now Available in Spanish!

Navigation: CLEAR Staff Portal, HOME Customer App



- **Next week we are breaking ground on our first rain garden.**
- **We sell on benefits:**
 - Beauty – blooming plants nine months of the year
 - Wildlife friendly, good for hummingbirds, butterflies, and other pollinators
 - Environmentally friendly – we only use native or adapted plants recommended by City of Austin and Wildflower Center
 - Good for the environment – you are preventing stormwater runoff. You are keeping your water on your land. You are creating your own little watershed.

Questions?

Texas Metal Tanks



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- pearce@TexasMetalTanks.com
- www.TexasMetalTanks.com
- www.LandWildlifeWater.com

