# Water Loss, Use, and Conservation Webinar Series

*Agenda:*

1. **Introductions**
   - *Special Guest Director Jackson*
2. **Water Use Survey**
   - *Katie Jones*
3. **Boundary Viewer**
   - *Braniff Davis*
4. **Water Loss Audit Part 1 & 2**
   - *John Sutton*
5. **Water Conservation**
   -*Travis Brice*
6. **Financial Assistance**
   - *Lee Huntoon*
7. **TCEQ Financial, Managerial, Technical Assistance (FMT)**
   - *Adriana Thomas*

*Specific questions?*

Be sure to ask questions with the chat or question feature on the side panel!

For those seeking TCEQ 4 CEU Hours, they will be given upon full attendance of the entire workshop presentation.

Texas Water Development Board

# Water Loss, Use, and Conservation Workshop

2021

Katie Jones
Water Use, Projections & Planning

Texas Water Development Board

# Texas Water Development Board

**Provides leadership, information, education, and support for planning, financial assistance, and outreach for the conservation and responsible development of water for Texas.**

- Regional Water Planning Groups
- Regional & State Water Plan
- SWIFT, DWSRF, CWSRF, (loans and grants)
- Flood, Groundwater, Surface Water, Innovative, Conservation

# Water Use Survey Data in Water Planning

Projections are based on historical water use

- Municipal
- Manufacturing
- Mining
- Steam-Electric Power

# LOSS, USE & CONSERVATION (LUC)
# Water Data Consolidation

- Online Applications
  - Water Use Survey
  - Water Loss Audit
  - Water Conservation Plan Annual Report
- Unified Reports

# What is the Water Use Survey?

- 7,500 water systems & industrial facilities
- Began in 1955
- Became mandatory in 1999
- Online application launched in 2011

# Why Should We Care About Water Use Survey?

- Better estimates for future municipal water demands for the State Water Planning Process
- Supports State Water Implementation Funds for Texas (SWIFT) Prioritization
- Provides Support in other Areas:
  - Groundwater Availability Models (GAMSs)
  - Groundwater Conservation Districts (GCDs)
  - United States Geological Survey (USGS) Texas Water Science Center

# Required Survey Information

- Volumes from sources
- Water sold to wholesalers
- Water sold to industry
- Connections
- Distribution amounts by customer type

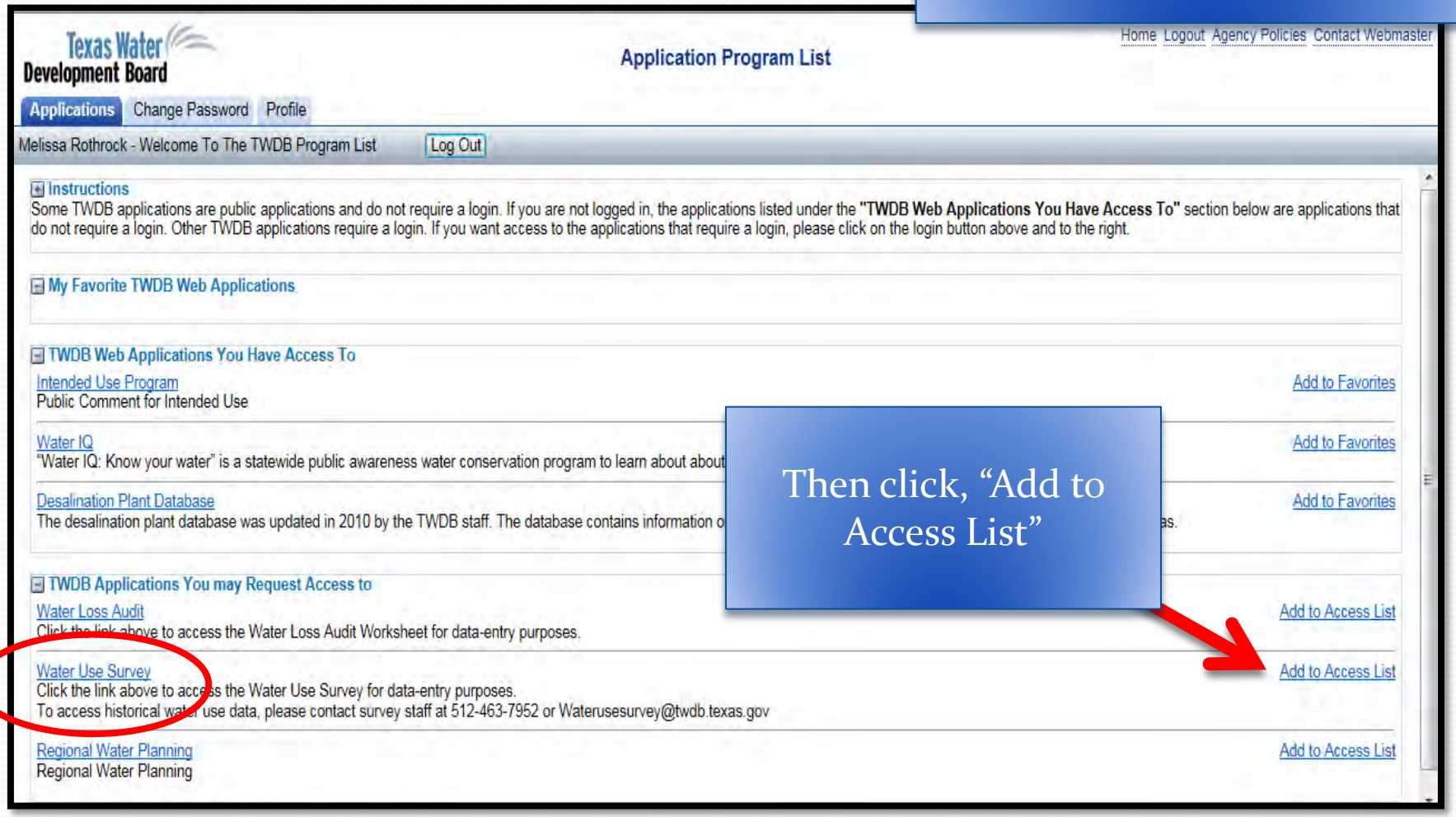
# Creating a new user account in the Online Water Use Survey Application


If you have previously registered then enter your user name & password, and click "Sign In"

Click the "Register Now" button

# Accessing the Water Use Survey from Application List

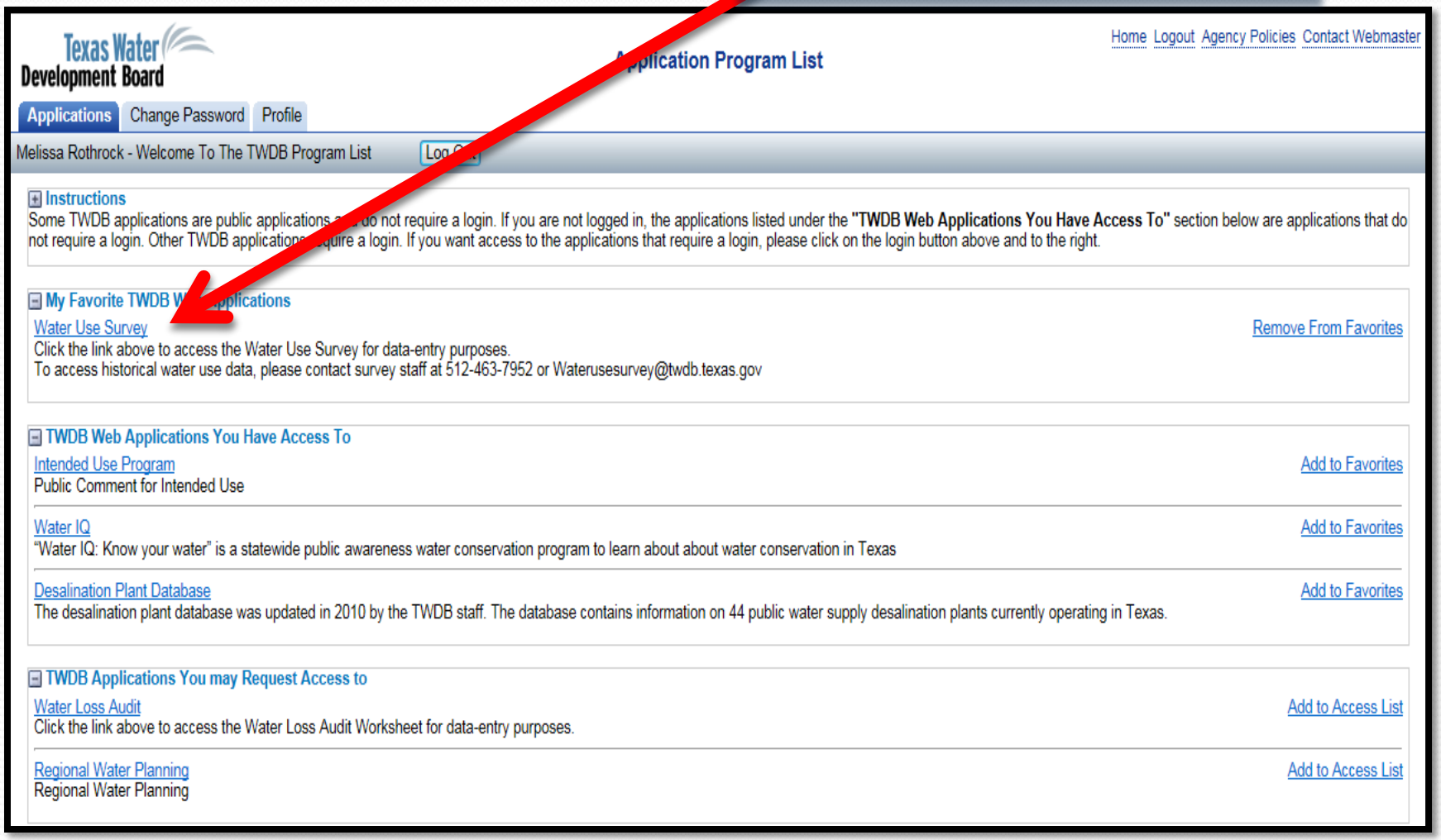
Once you are logged in, scroll down until you find the Water Use Survey application



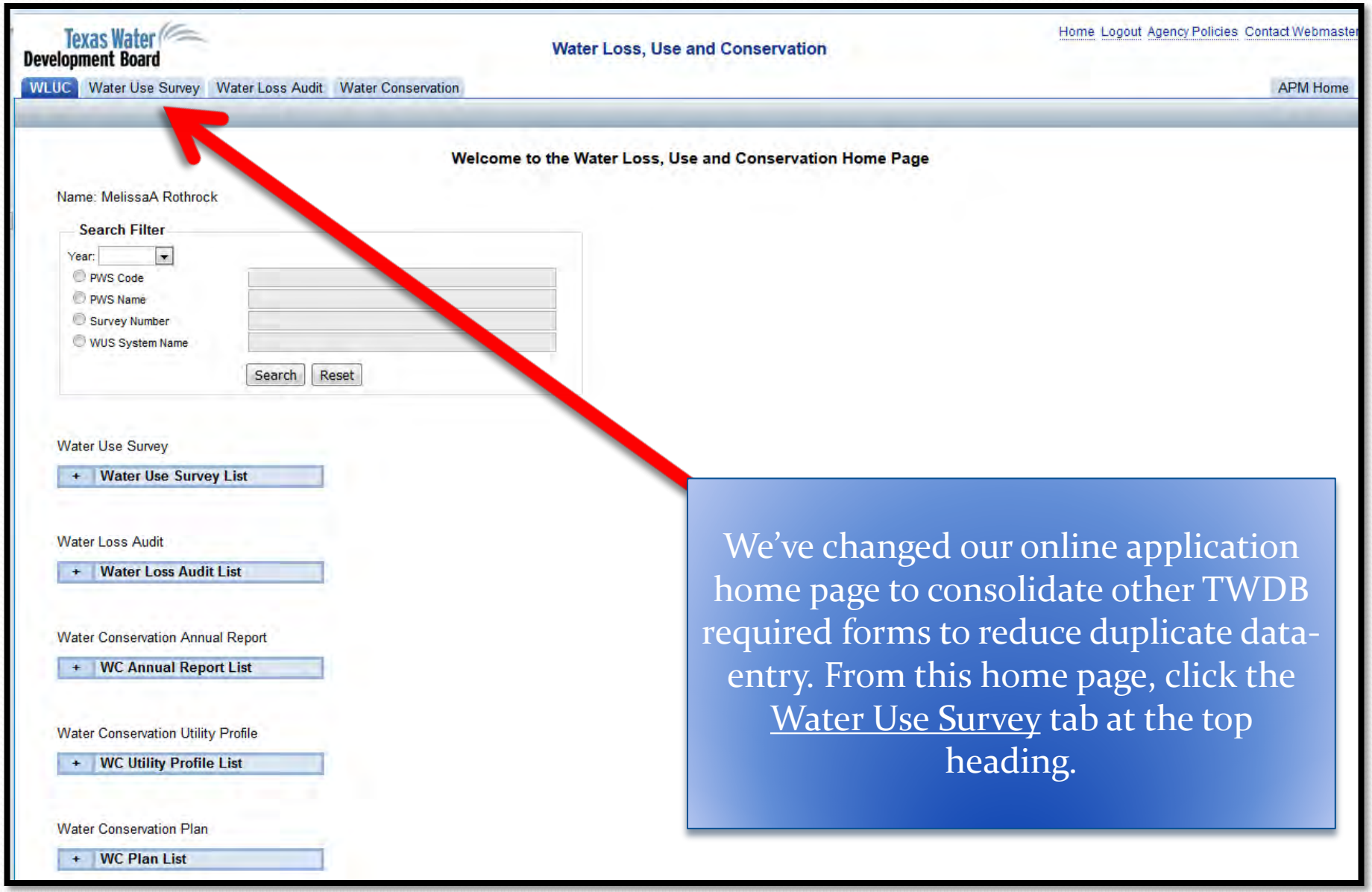

Then click, "Add to Access List"

# Start the Water Use Survey

When you are logged in, click "Water Use Survey" link to start

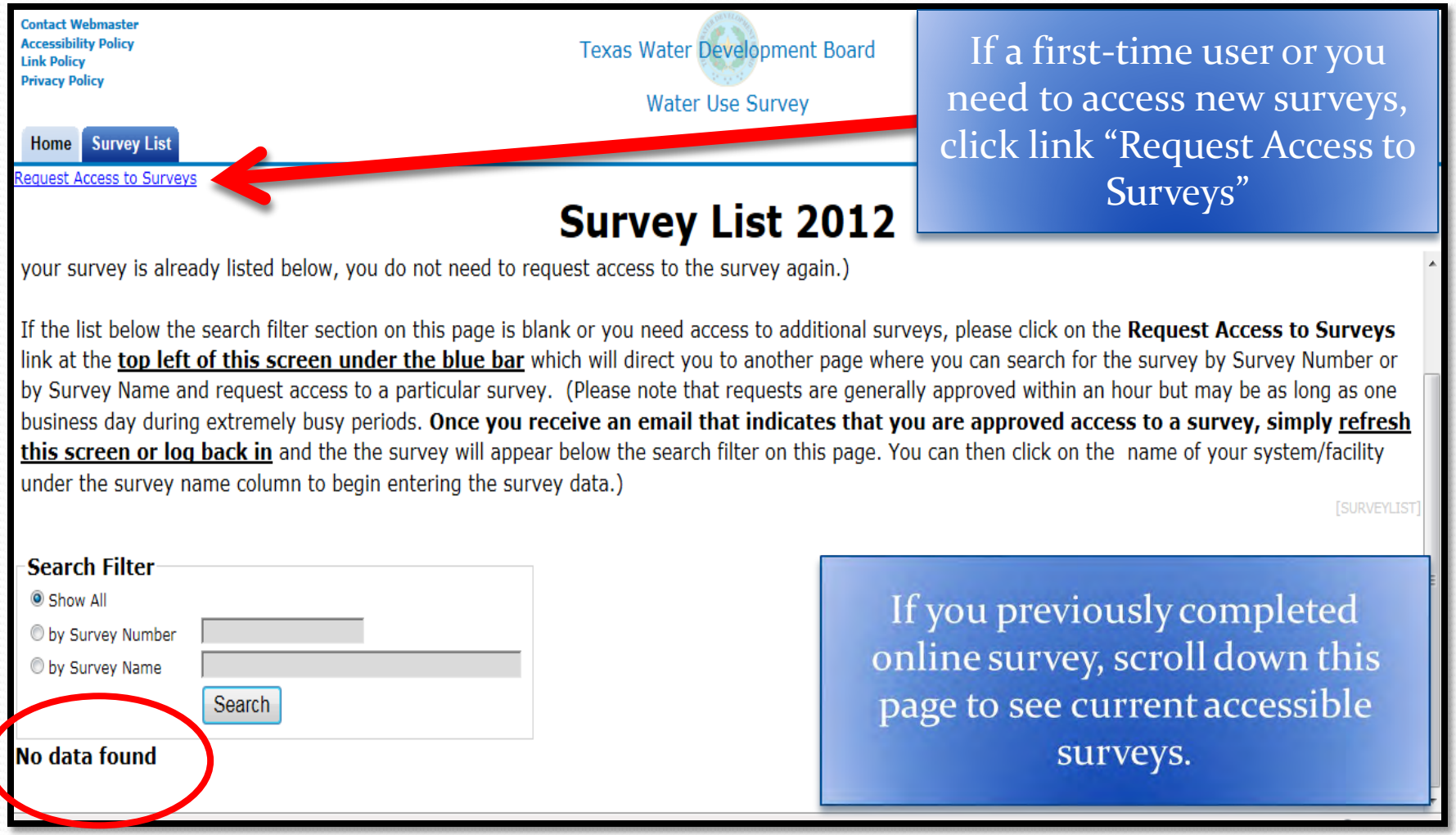


# Water Loss, Use and Conservation Home Page



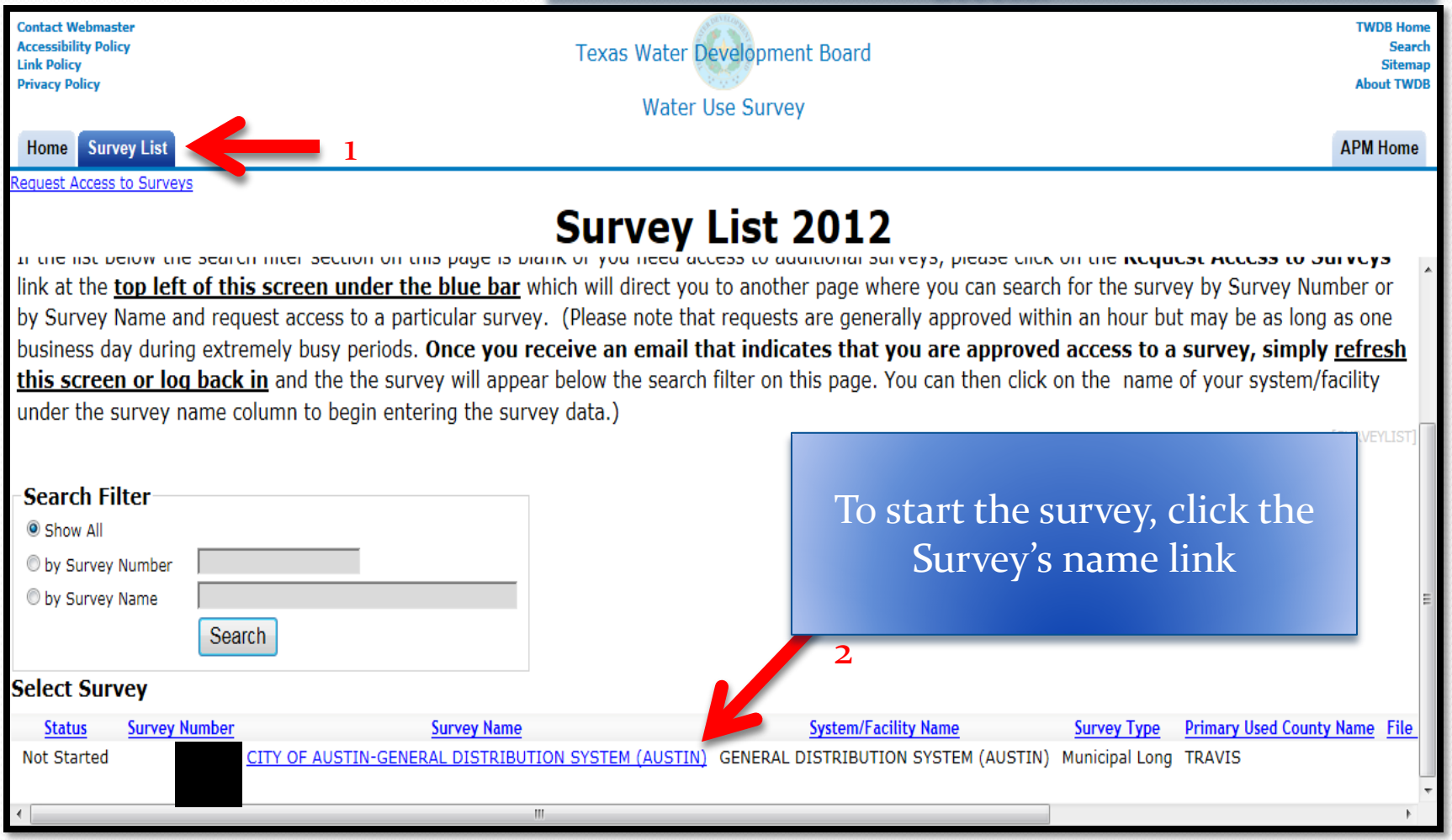

We've changed our online application home page to consolidate other TWDB required forms to reduce duplicate data-entry. From this home page, click the Water Use Survey tab at the top heading.

# Requesting Access to Surveys



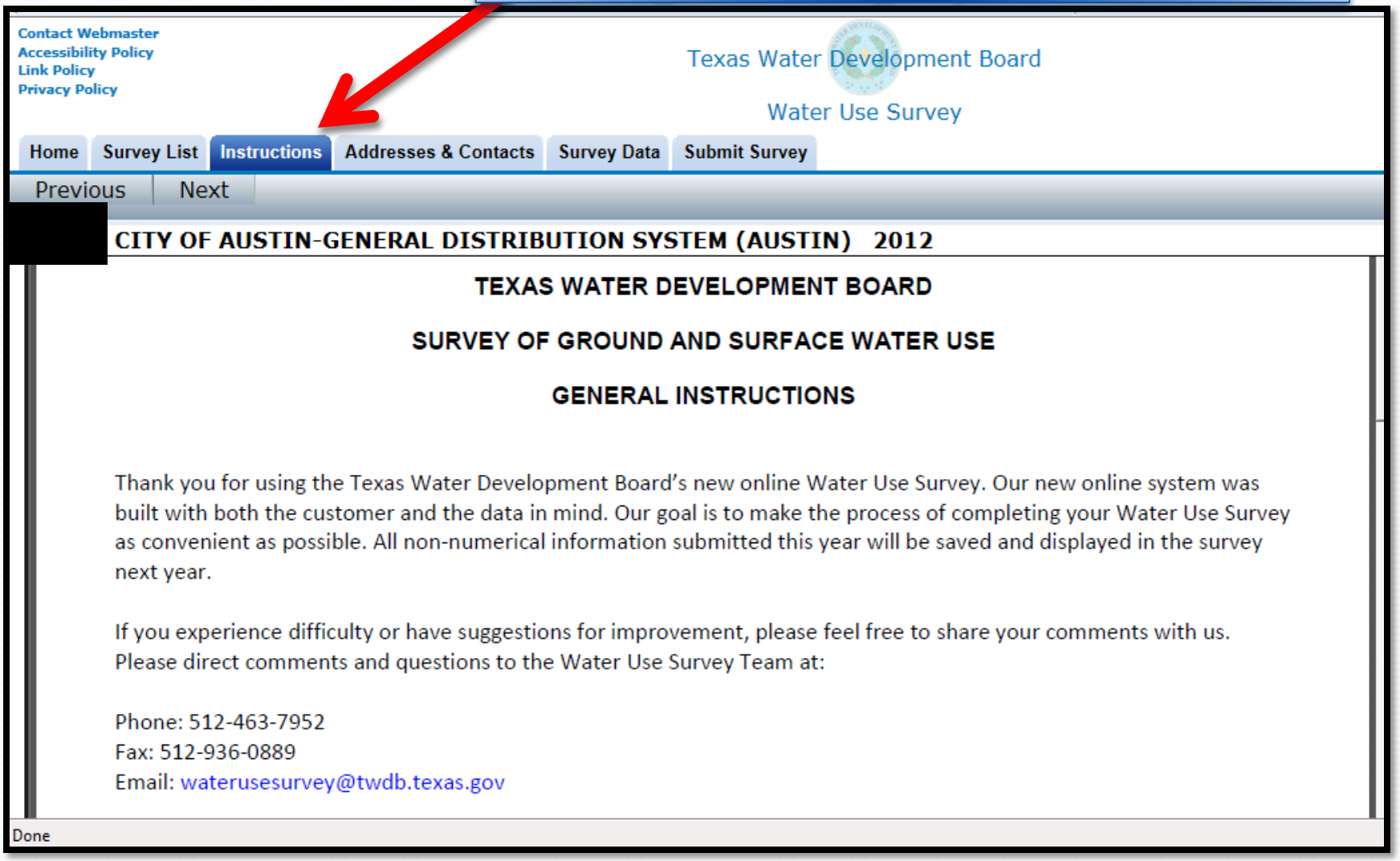
# Time to Enter Data!

Refresh your page or return to the Survey List tab to see the approved surveys you've been granted access.



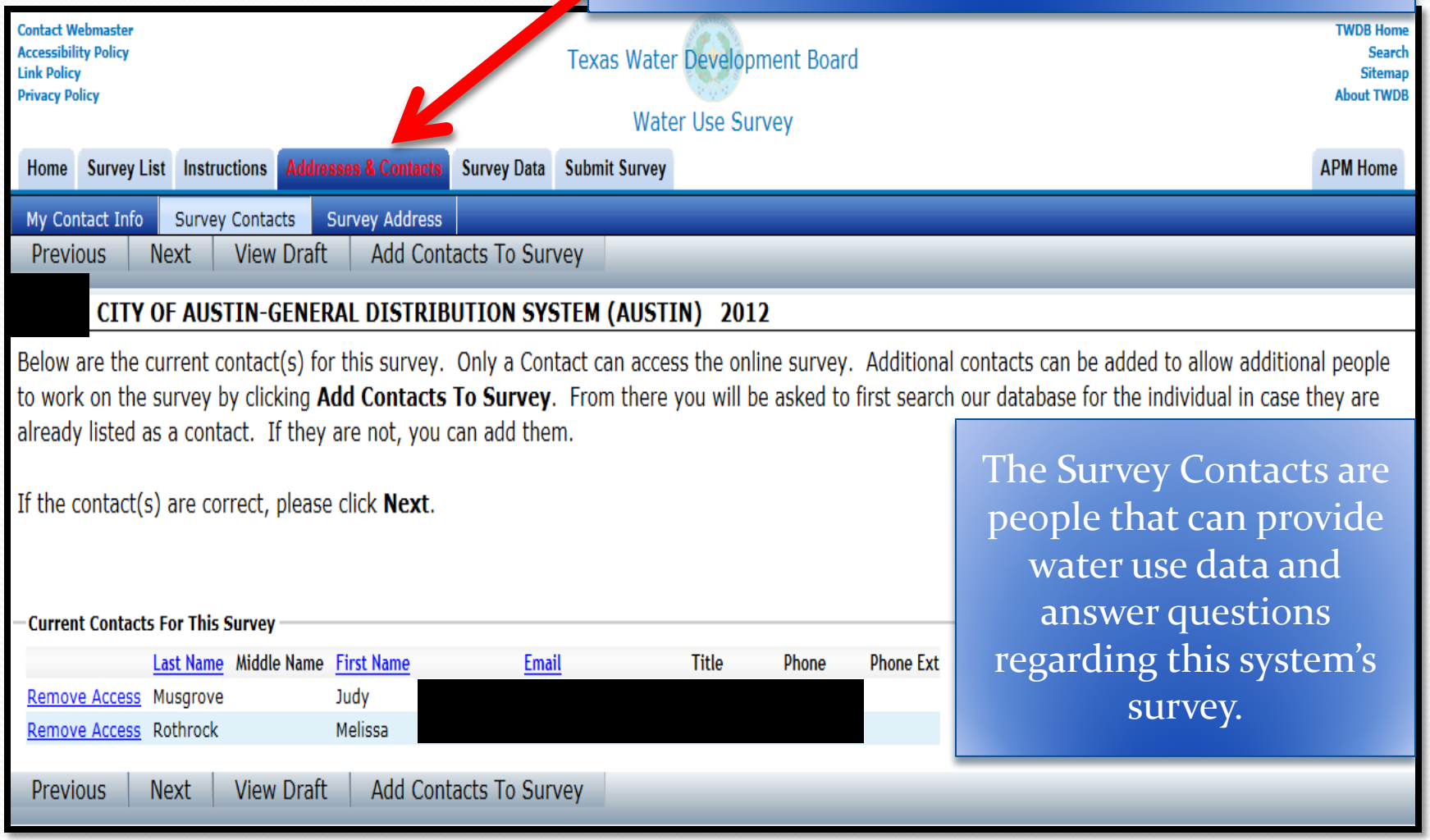
# Survey: Instructions

The 1st tab for all surveys is "Instructions". Includes general and agency contact information.



# Addresses & Contacts/ Survey Contacts

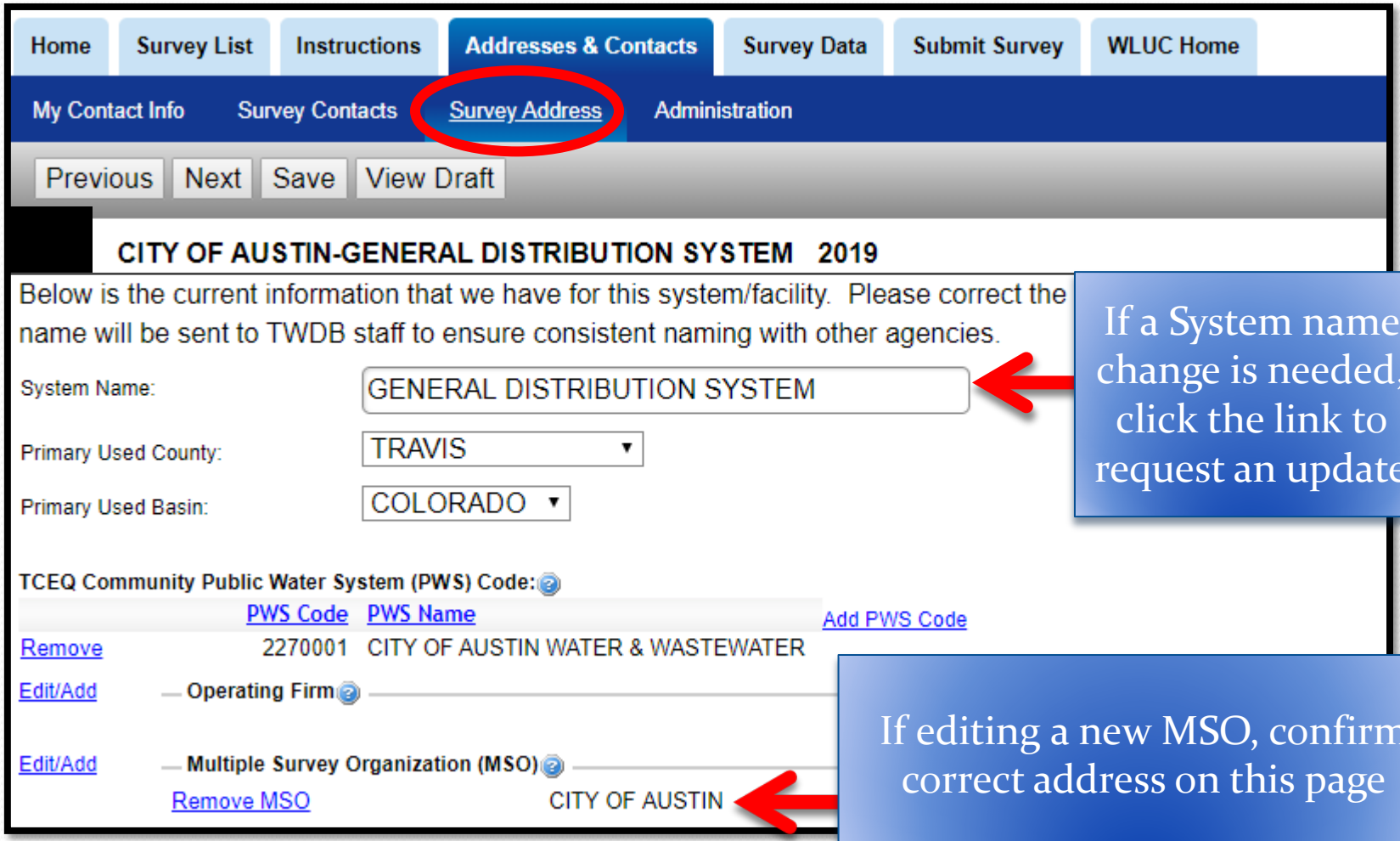
The 2nd tab is "Address & Contacts". It has 3 lower secondary tabs. Skipping the first tab, My Contact Info, the second is 'Survey Contacts'.




The Survey Contacts are people that can provide water use data and answer questions regarding this system's survey.

# Addresses & Contacts
## Survey Address

The 3rd secondary tab is "Survey Address", which includes System information and mailing address

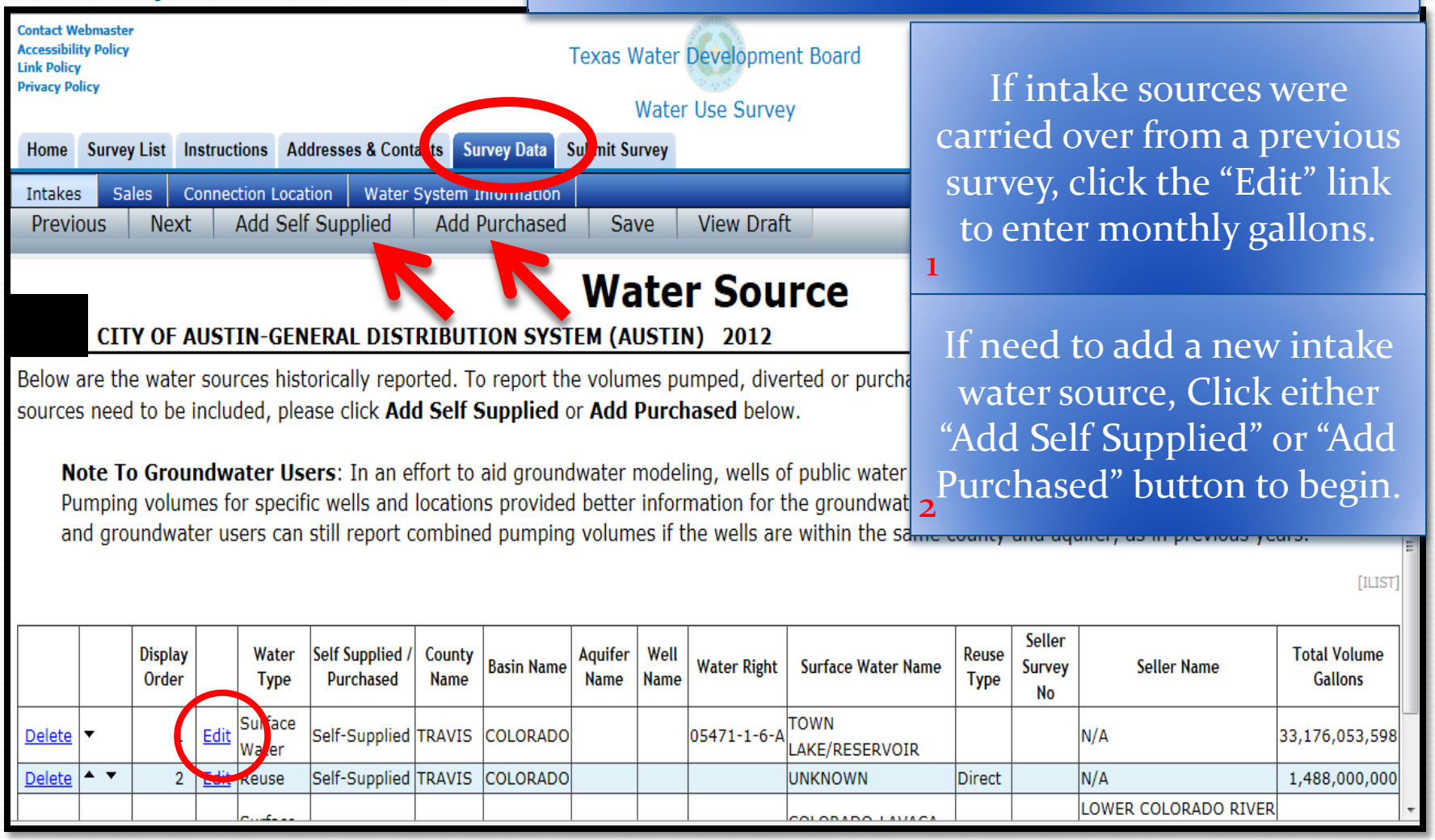



If a System name change is needed, click the link to request an update

If editing a new MSO, confirm correct address on this page

# Survey Data/Intakes

Survey Data tab includes all the water use survey information




| | | Display Order | | Water Type | Self Supplied / Purchased | County Name | Basin Name | Aquifer Name | Well Name | Water Right | Surface Water Name | Reuse Type | Seller Survey No | Seller Name | Total Volume Gallons |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Delete | ▼ | | Edit | Surface Water | Self-Supplied | TRAVIS | COLORADO | | | 05471-1-6-A | TOWN LAKE/RESERVOIR | | | N/A | 33,176,053,598 |
| Delete | ▲ ▼ | 2 | Edit | Reuse | Self-Supplied | TRAVIS | COLORADO | | | | UNKNOWN | Direct | | N/A | 1,488,000,000 |
| | | | | | | | | | | | | | | LOWER COLORADO RIVER | |

If intake sources were carried over from a previous survey, click the "Edit" link to enter monthly gallons.

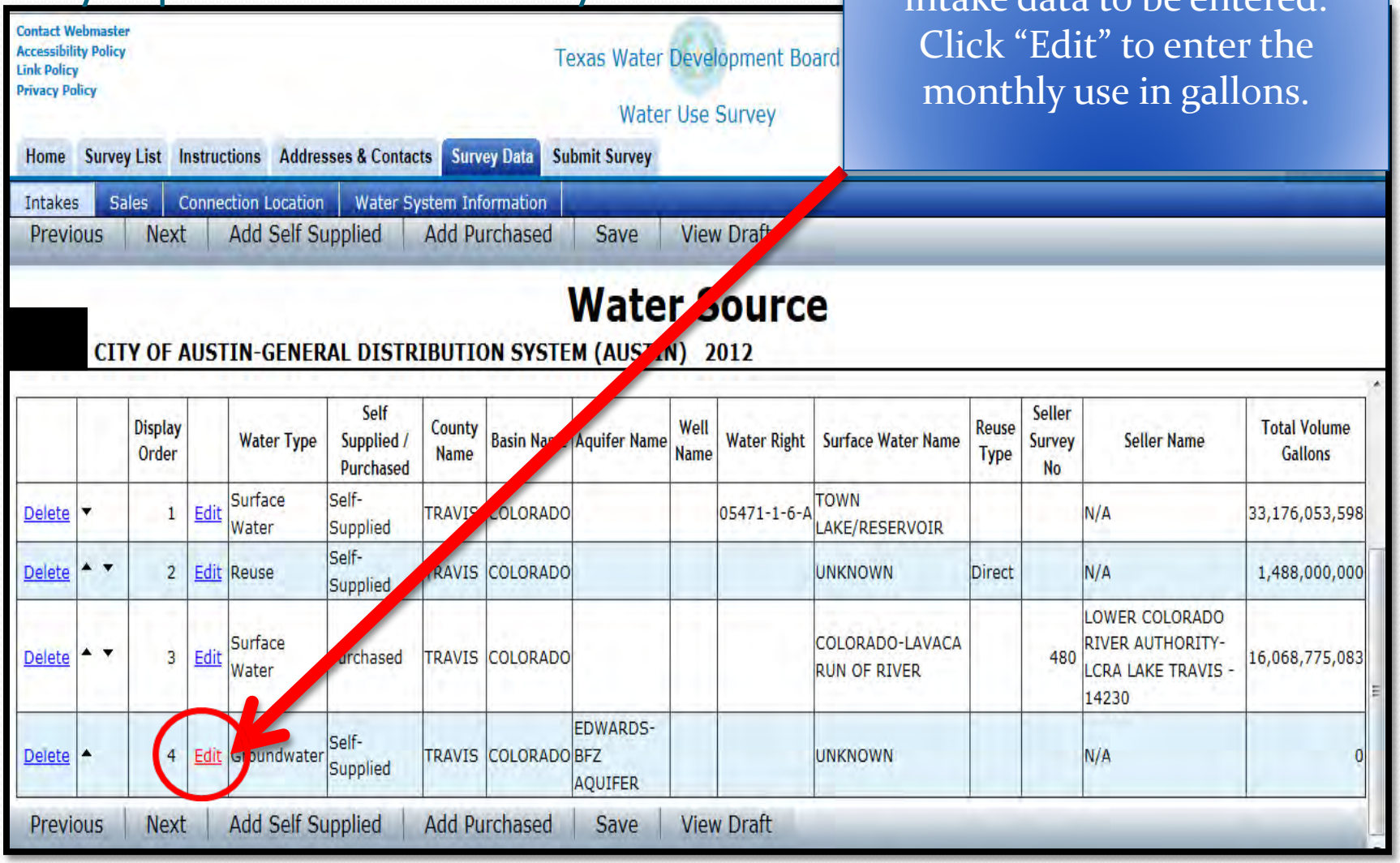
1

If need to add a new intake water source, Click either "Add Self Supplied" or "Add Purchased" button to begin.

2

# The new Self-Supplied Groundwater by Aquifer Source is ready for data

New source is now ready for intake data to be entered. Click "Edit" to enter the monthly use in gallons.



Contact Webmaster
Accessibility Policy
Link Policy
Privacy Policy

Texas Water Development Board

Water Use Survey

Home | Survey List | Instructions | Addresses & Contacts | Survey Data | Submit Survey

Intakes | Sales | Connection Location | Water System Information

Previous | Next | Add Self Supplied | Add Purchased | Save | View Draft

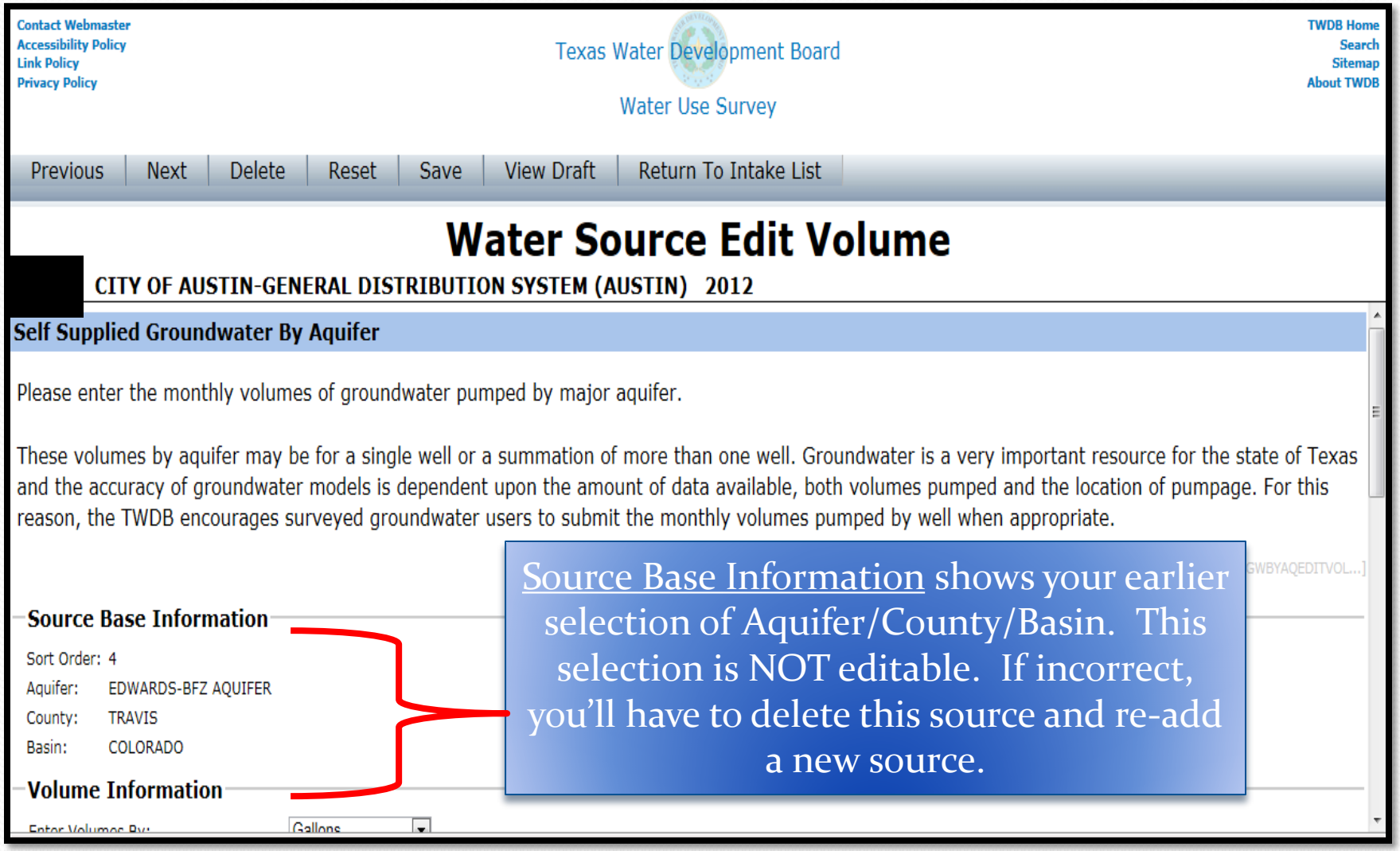
## Water Source

CITY OF AUSTIN-GENERAL DISTRIBUTION SYSTEM (AUSTIN) 2012

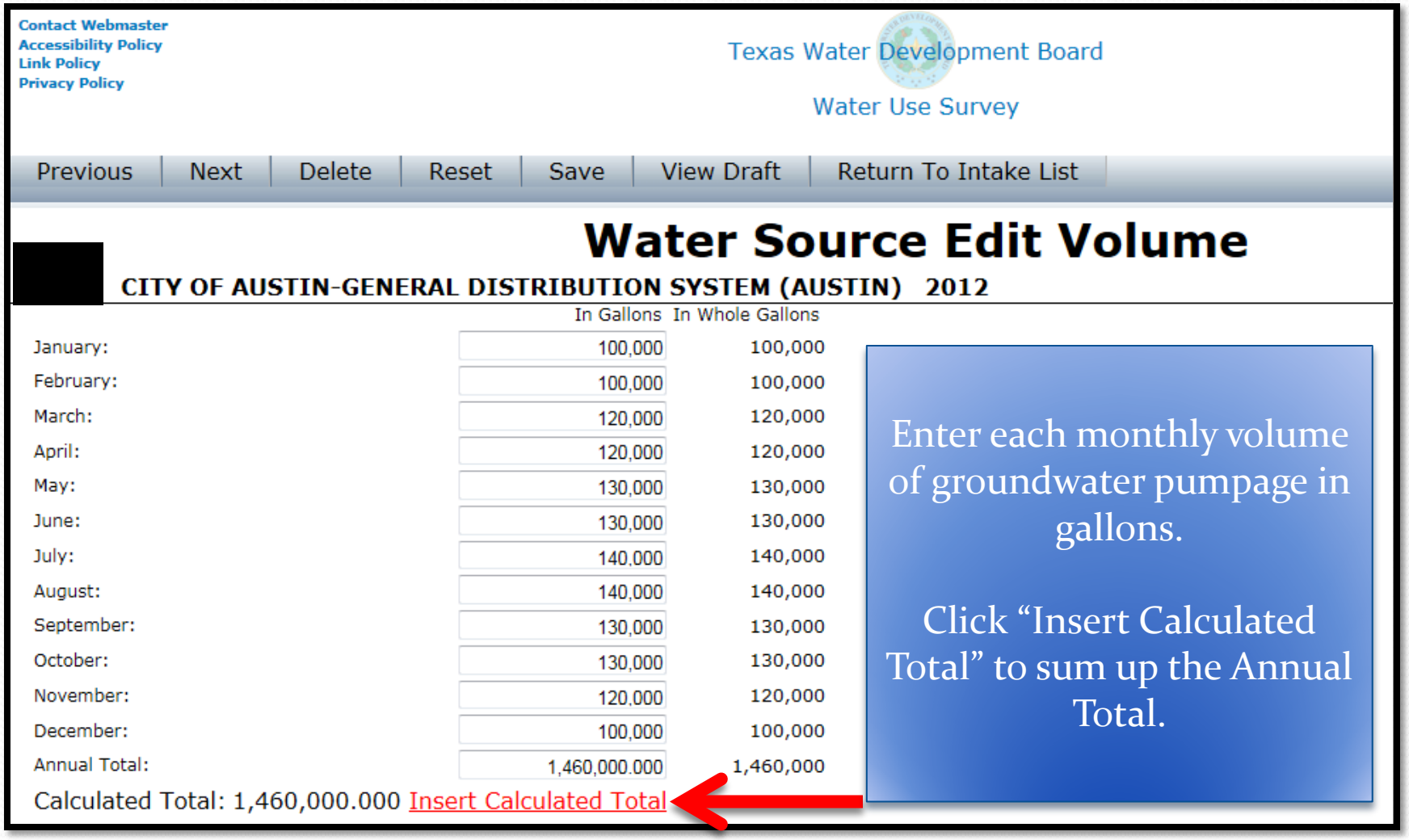
| | | Display Order | | Water Type | Self Supplied / Purchased | County Name | Basin Name | Aquifer Name | Well Name | Water Right | Surface Water Name | Reuse Type | Seller Survey No | Seller Name | Total Volume Gallons |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Delete | ▼ | 1 | Edit | Surface Water | Self-Supplied | TRAVIS | COLORADO | | | 05471-1-6-A | TOWN LAKE/RESERVOIR | | | N/A | 33,176,053,598 |
| Delete | ▲ ▼ | 2 | Edit | Reuse | Self-Supplied | TRAVIS | COLORADO | | | | UNKNOWN | Direct | | N/A | 1,488,000,000 |
| Delete | ▲ ▼ | 3 | Edit | Surface Water | Purchased | TRAVIS | COLORADO | | | | COLORADO-LAVACA RUN OF RIVER | | 480 | LOWER COLORADO RIVER AUTHORITY-LCRA LAKE TRAVIS - 14230 | 16,068,775,083 |
| Delete | ▲ | 4 | Edit | Groundwater | Self-Supplied | TRAVIS | COLORADO | EDWARDS-BFZ AQUIFER | | | UNKNOWN | | | N/A | 0 |

Previous | Next | Add Self Supplied | Add Purchased | Save | View Draft

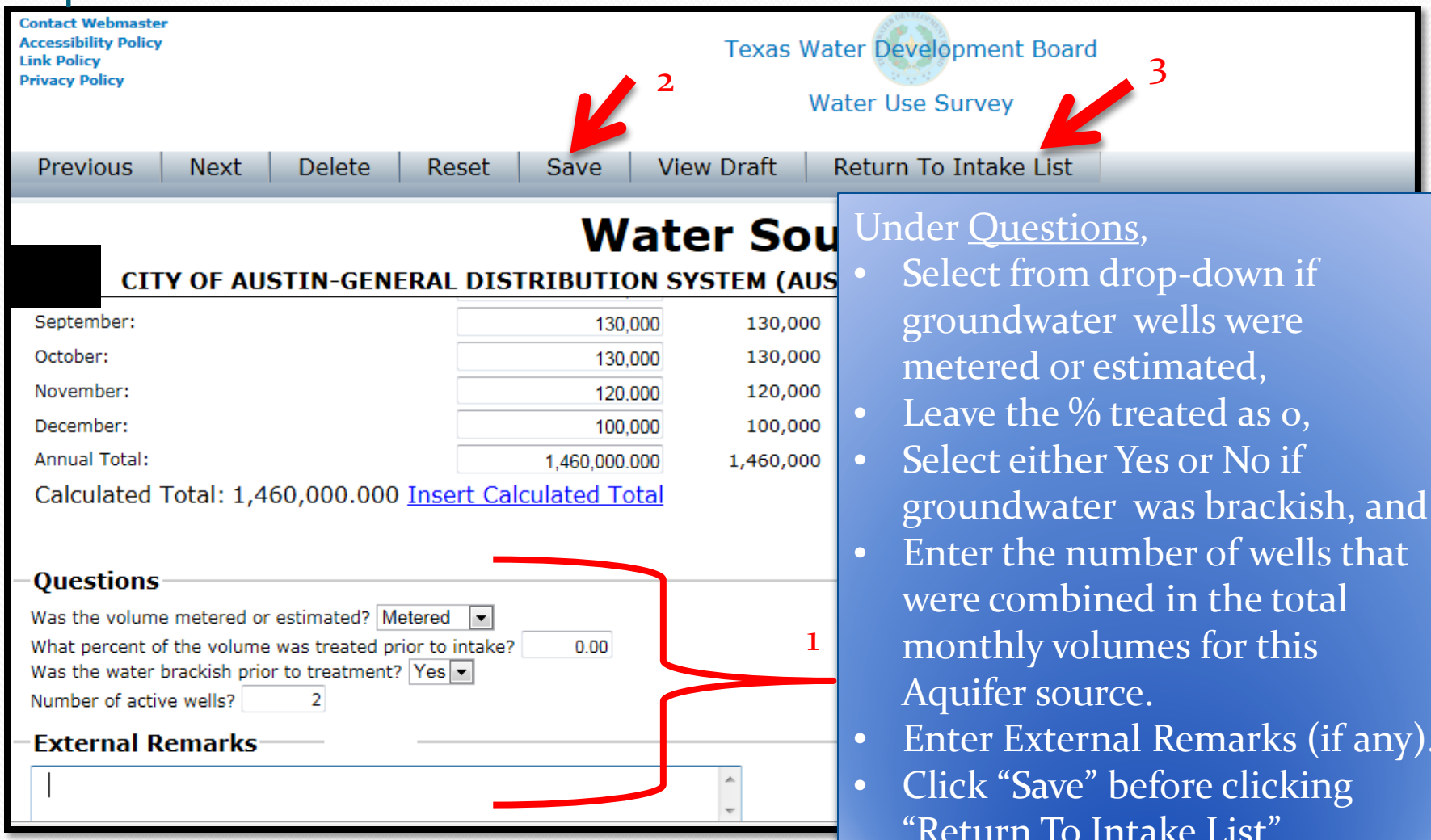
# New ‘Self-Supplied Groundwater by Aquifer’ source page



# Entering the new Self-Supplied Groundwater by Aquifer Intake data monthly volume in gallons



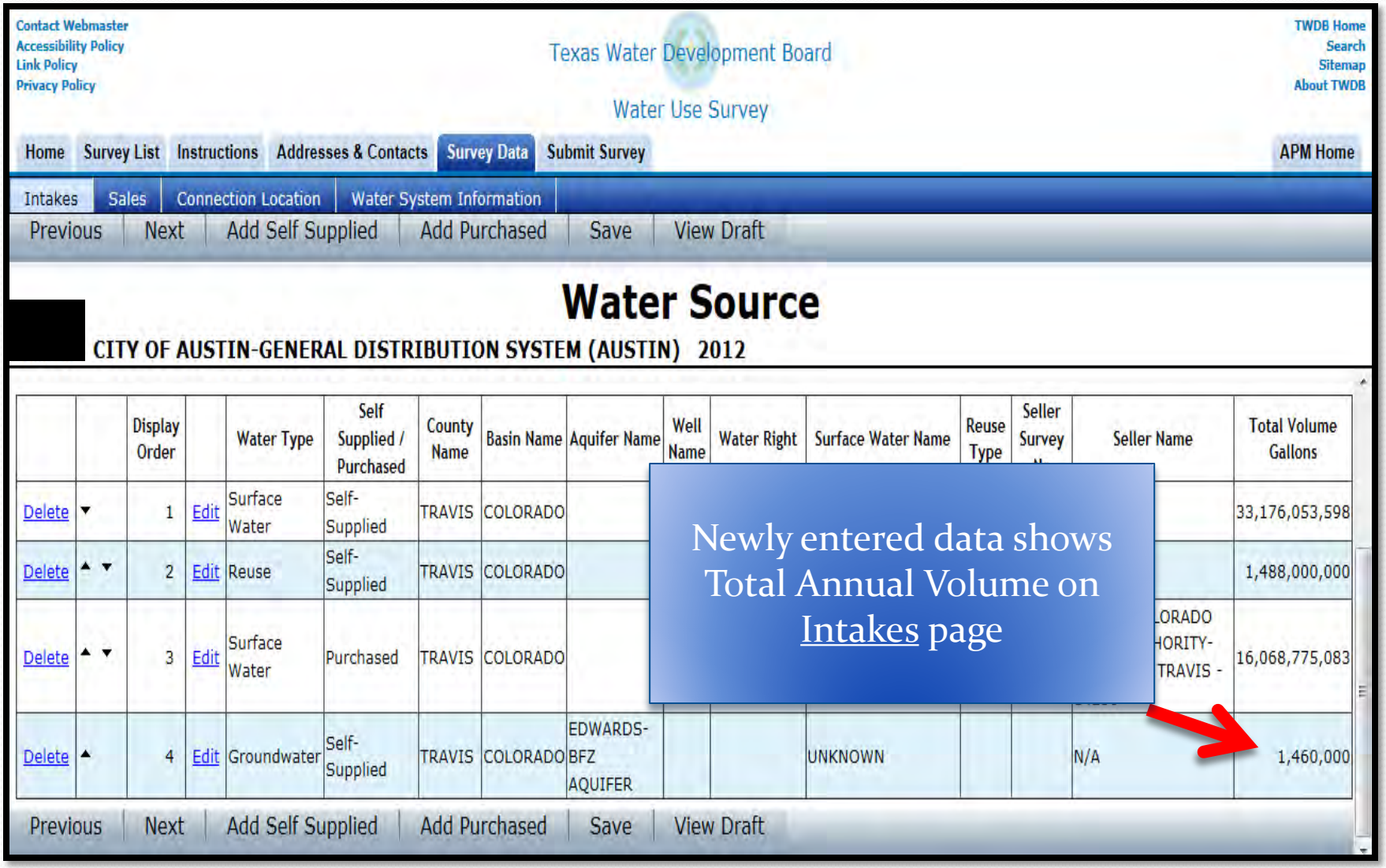
# Questions section in the new Self-Supplied Groundwater by Aquifer Intake data continued




Under Questions,

- Select from drop-down if groundwater wells were metered or estimated,
- Leave the % treated as o,
- Select either Yes or No if groundwater was brackish, and
- Enter the number of wells that were combined in the total monthly volumes for this Aquifer source.
- Enter External Remarks (if any).
- Click “Save” before clicking “Return To Intake List”.

# Back to the Survey Data Intakes page




| | | Display Order | | Water Type | Self Supplied / Purchased | County Name | Basin Name | Aquifer Name | Well Name | Water Right | Surface Water Name | Reuse Type | Seller Survey | Seller Name | Total Volume Gallons |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Delete | ▼ | 1 | Edit | Surface Water | Self-Supplied | TRAVIS | COLORADO | | | | | | | | 33,176,053,598 |
| Delete | ▲ ▼ | 2 | Edit | Reuse | Self-Supplied | TRAVIS | COLORADO | | | | | | | | 1,488,000,000 |
| Delete | ▲ ▼ | 3 | Edit | Surface Water | Purchased | TRAVIS | COLORADO | | | | | | | LORADO HORITY-TRAVIS - | 16,068,775,083 |
| Delete | ▲ | 4 | Edit | Groundwater | Self-Supplied | TRAVIS | COLORADO | EDWARDS-BFZ AQUIFER | | | UNKNOWN | | | N/A | 1,460,000 |

Previous | Next | Add Self Supplied | Add Purchased | Save | View Draft

# Add a new Self-Supplied Reuse source

## Add New Self Supplied Water Source

[redacted] CITY OF AUSTIN-GENERAL DISTRIBUTION SYSTEM 2019

A field with an asterisk (*) before it is a required field.

* Select Water Type: Reuse

Click dropdown arrow to select source Water Type: Reuse.

For a self-treated reuse water source, please select whether this water source is Direct (potable or non-potable) or Indirect (potable or non-potable) reuse.

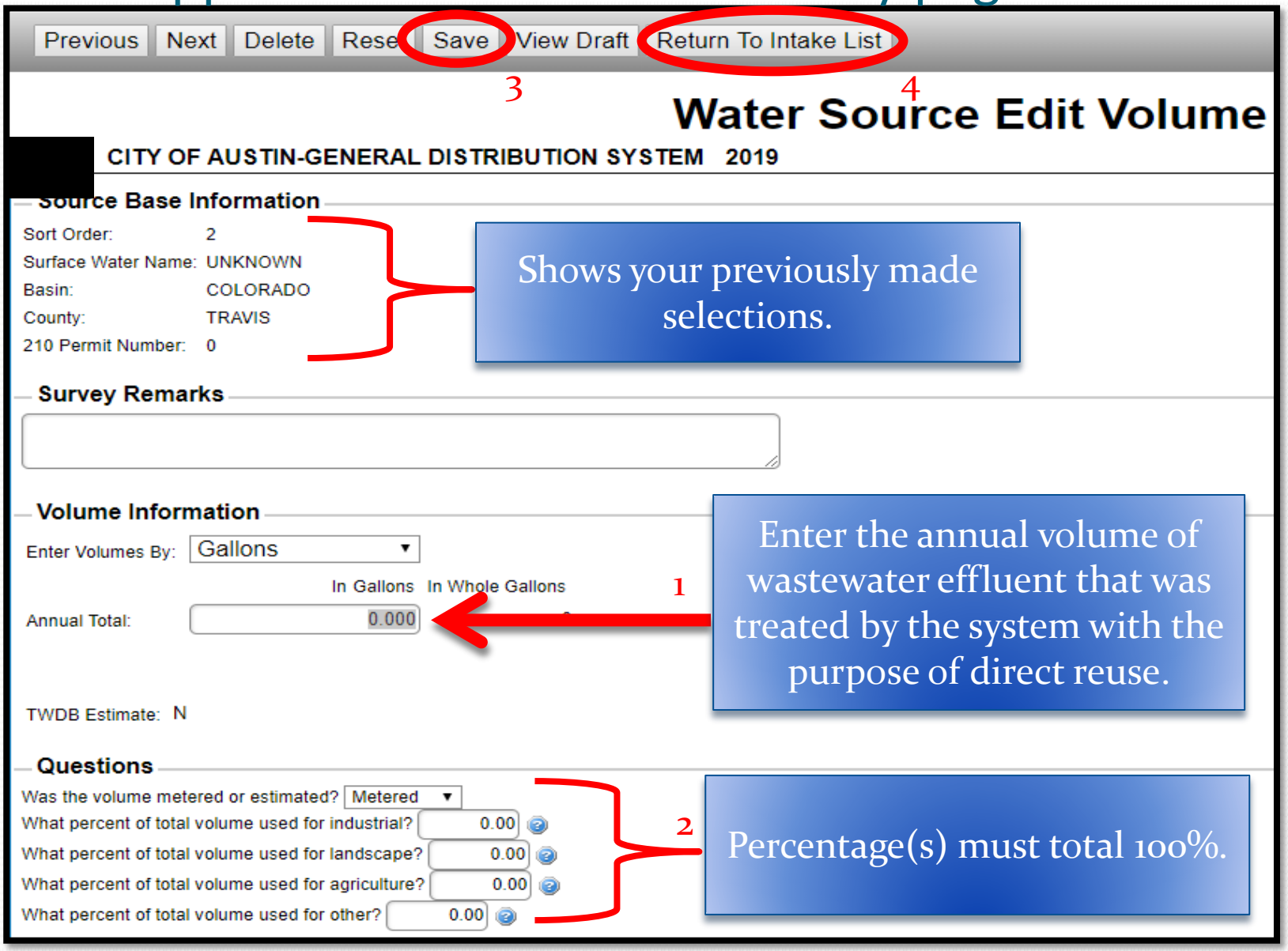
- **Direct Non-potable Reuse:** Adding a new direct nonpotable reuse source will require the major river basin and county where the water was treated. This includes the use of reclaimed water, for non-potable purposes not requiring drinking water quality, that is piped directly from the wastewater treatment plan to the place where it is used. Examples of beneficial uses include golf courses and park irrigation, power plant cooling, and industrial manufacturing.
- **Indirect Non-potable Reuse:** Adding a new indirect reuse source, in which a "Bed and Banks" conveyance is used will requires Water Right from the Texas Commission on Environmental Q… source will represent the location the water is diverted from. This include… is discharged to a surface water (reservoir, river, lake) or groun… water and surface water/groundwater) then are diverted from the water … inking water quality.
- **Direct Potable Reuse (DPR):** Adding a new direct potable r… here the water was treated. This includes the use of reclaimed water, … and introduced either directly into the potable water system or int…
- **Indirect Potable Reuse (IPR):** Adding a new indirect potabl… mission on Environmental Quality. The major river basin and county ass… s diverted from. This includes the use of reclaimed water, for potable pu… discharged to a surface water (reservoir, river, lake) or groundwater (aqu… surface water/groundwater) then receive additional treatment at a wa… ution system.

There are now 5 reuse sources to select from. Definitions of each type are included on this page to assist in determining your system's type of reuse.

[OVERSSRUADD]

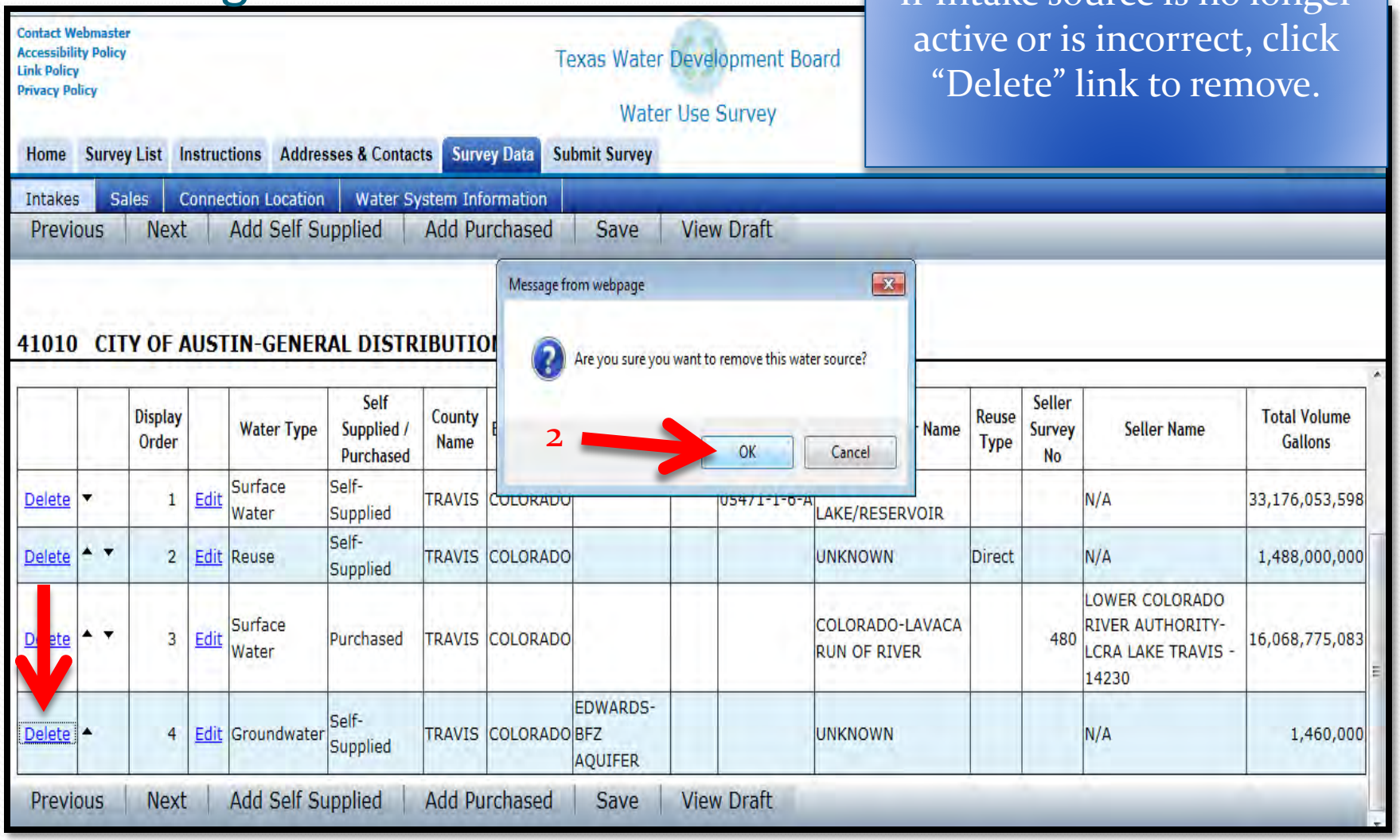
* How should we identify this source? Direct Non-Potable

# Self-Supplied Direct Reuse data-entry page



# Removing Intake Sources

If Intake source is no longer active or is incorrect, click "Delete" link to remove.



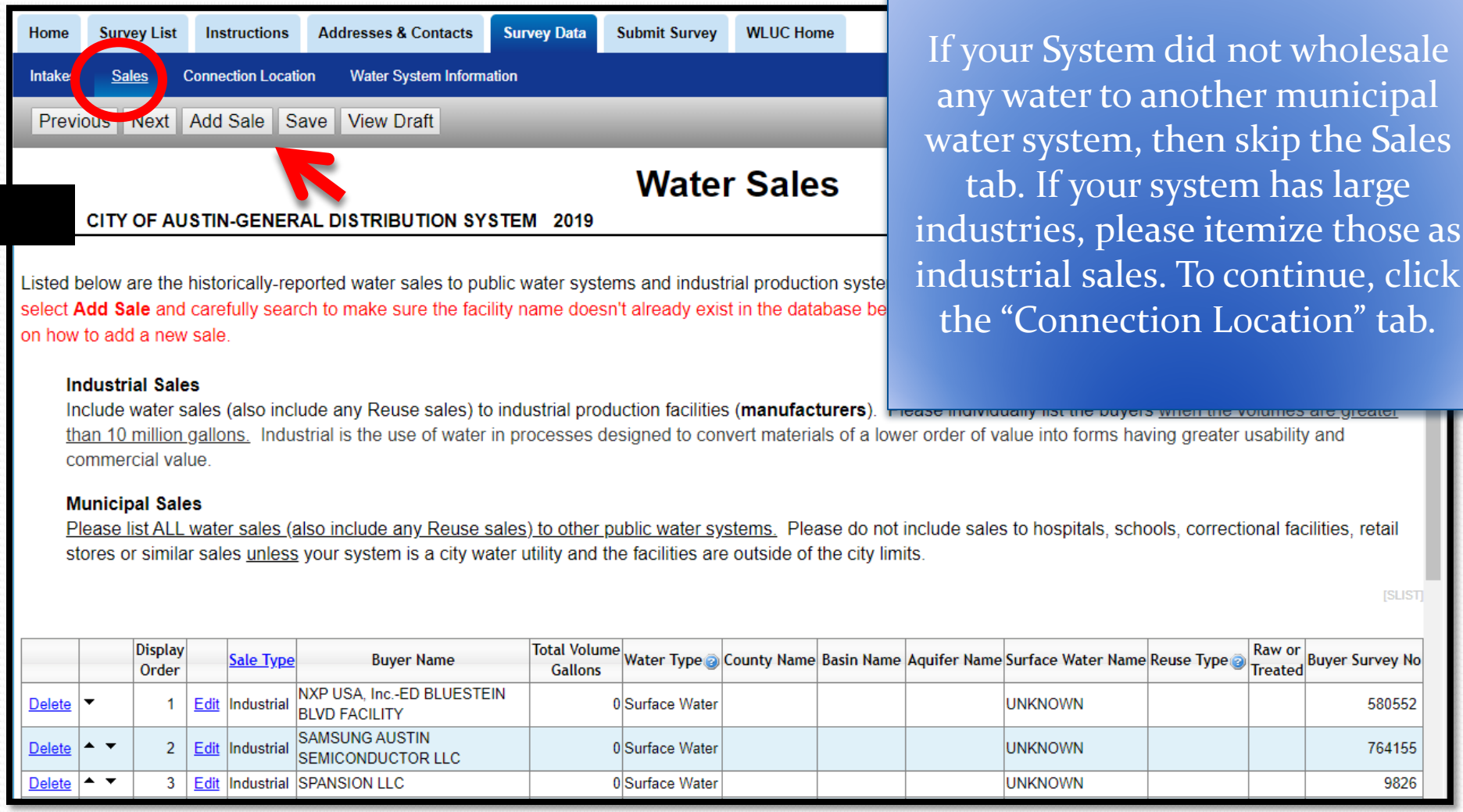

| | | Display Order | | Water Type | Self Supplied / Purchased | County Name | | | | | Name | Reuse Type | Seller Survey No | Seller Name | Total Volume Gallons |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Delete | ▼ | 1 | Edit | Surface Water | Self-Supplied | TRAVIS | COLORADO | | | 05471-1-6-A | LAKE/RESERVOIR | | | N/A | 33,176,053,598 |
| Delete | ▲ ▼ | 2 | Edit | Reuse | Self-Supplied | TRAVIS | COLORADO | | | | UNKNOWN | Direct | | N/A | 1,488,000,000 |
| Delete | ▲ ▼ | 3 | Edit | Surface Water | Purchased | TRAVIS | COLORADO | | | | COLORADO-LAVACA RUN OF RIVER | | 480 | LOWER COLORADO RIVER AUTHORITY-LCRA LAKE TRAVIS - 14230 | 16,068,775,083 |
| Delete | ▲ | 4 | Edit | Groundwater | Self-Supplied | TRAVIS | COLORADO | EDWARDS-BFZ AQUIFER | | | UNKNOWN | | | N/A | 1,460,000 |

Previous | Next | Add Self Supplied | Add Purchased | Save | View Draft

# Survey Data
## Sales

If System sold water to another water system or to an industrial facility, click "Add Sale" button.

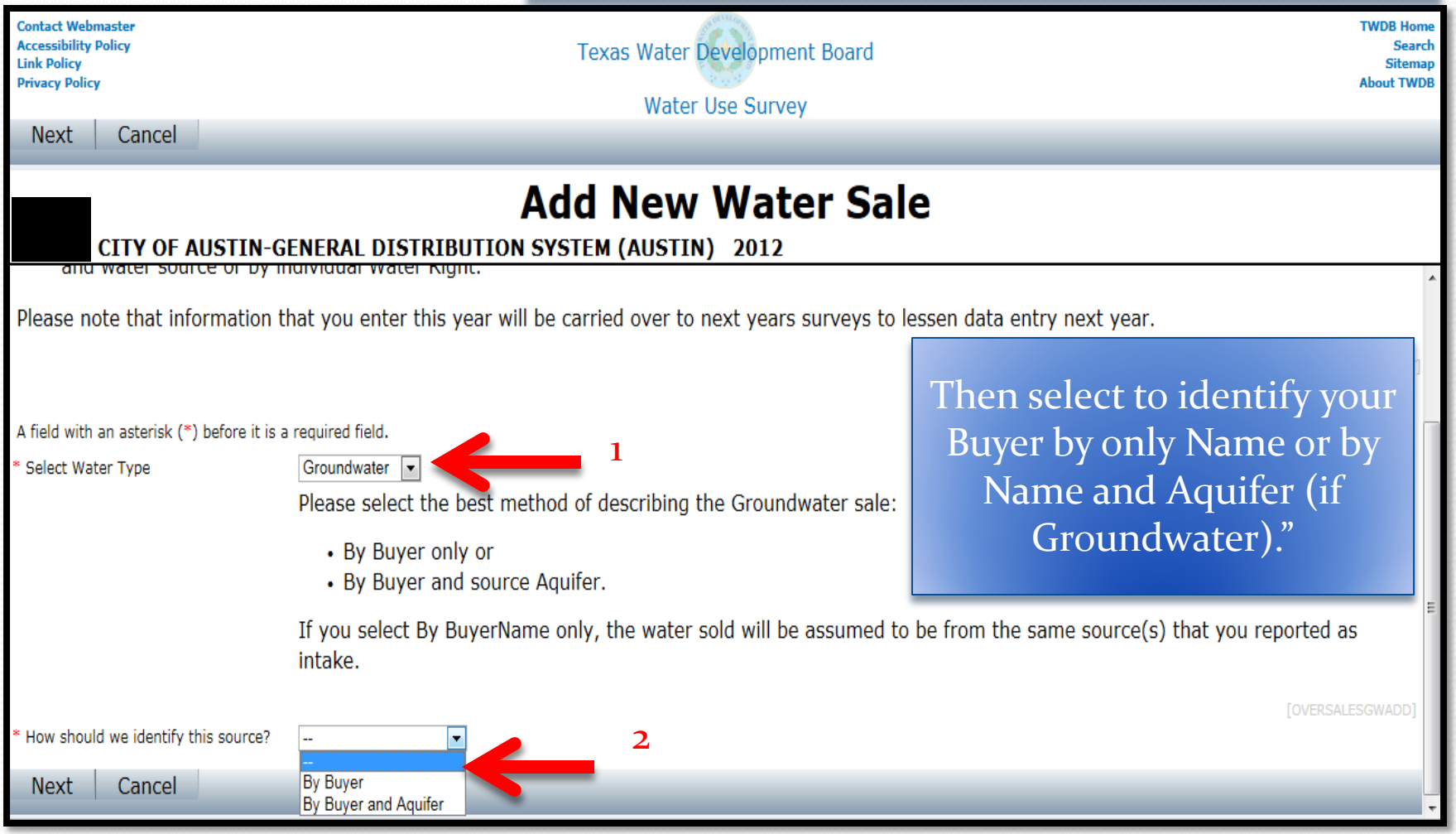
If your System did not wholesale any water to another municipal water system, then skip the Sales tab. If your system has large industries, please itemize those as industrial sales. To continue, click the "Connection Location" tab.




| | | Display Order | | Sale Type | Buyer Name | Total Volume Gallons | Water Type | County Name | Basin Name | Aquifer Name | Surface Water Name | Reuse Type | Raw or Treated | Buyer Survey No |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Delete | ▼ | 1 | Edit | Industrial | NXP USA, Inc.-ED BLUESTEIN BLVD FACILITY | 0 | Surface Water | | | | UNKNOWN | | | 580552 |
| Delete | ▲ ▼ | 2 | Edit | Industrial | SAMSUNG AUSTIN SEMICONDUCTOR LLC | 0 | Surface Water | | | | UNKNOWN | | | 764155 |
| Delete | ▲ ▼ | 3 | Edit | Industrial | SPANSION LLC | 0 | Surface Water | | | | UNKNOWN | | | 9826 |

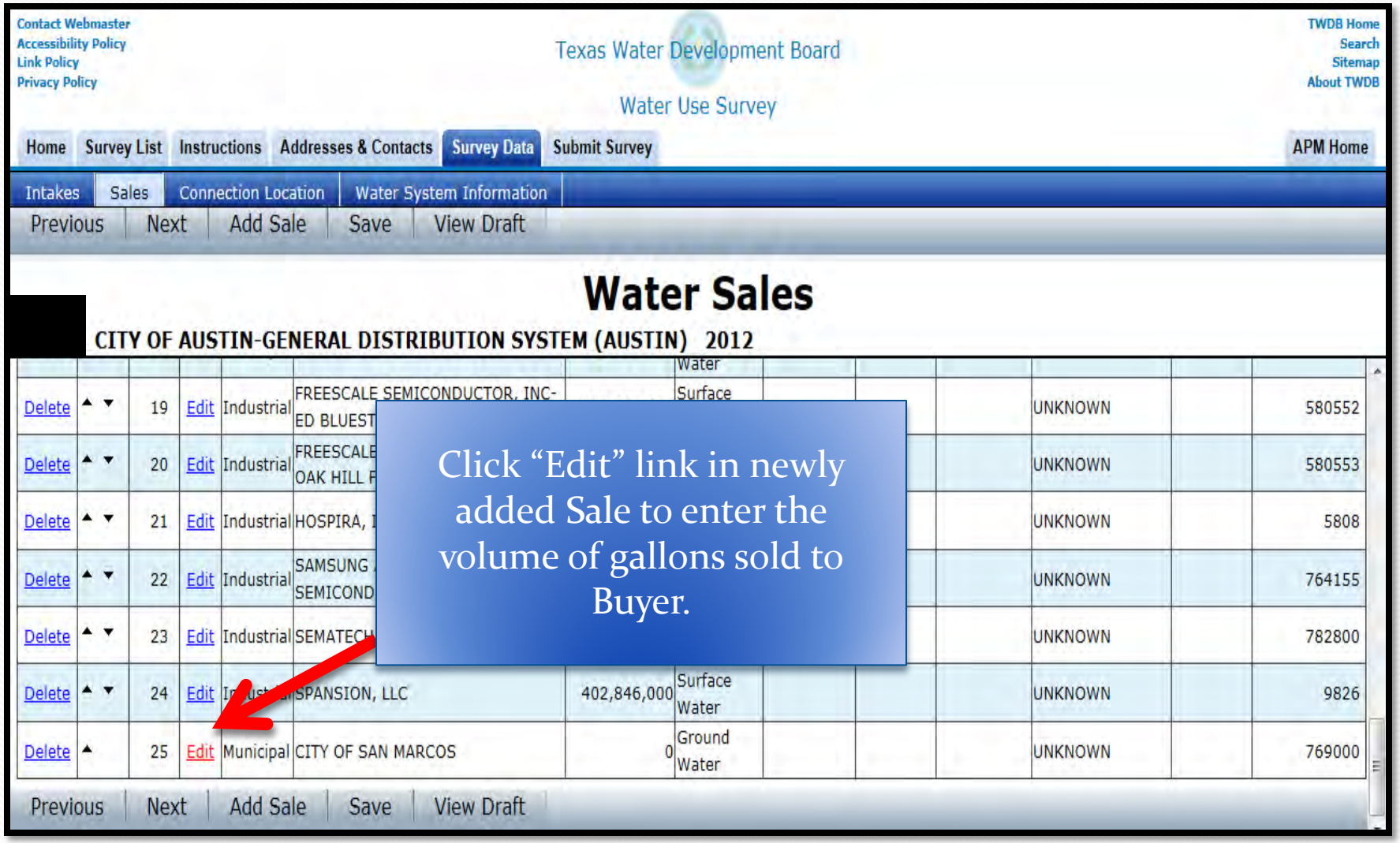
# Survey Data/Sales

Select the type of water that was sold (Groundwater, Surface or Combined) from drop-down menu.

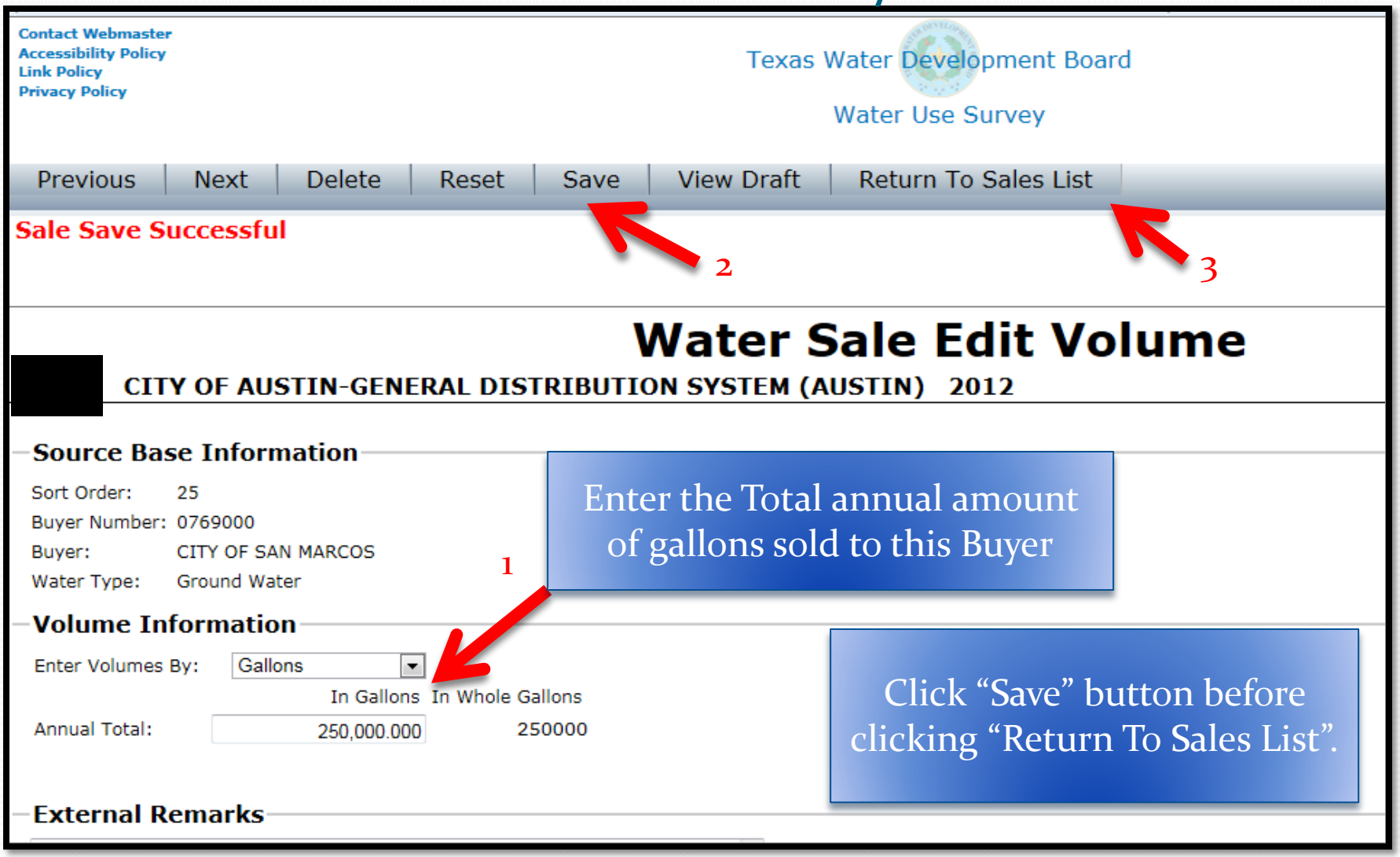



Then select to identify your Buyer by only Name or by Name and Aquifer (if Groundwater)."

# Enter Sale data

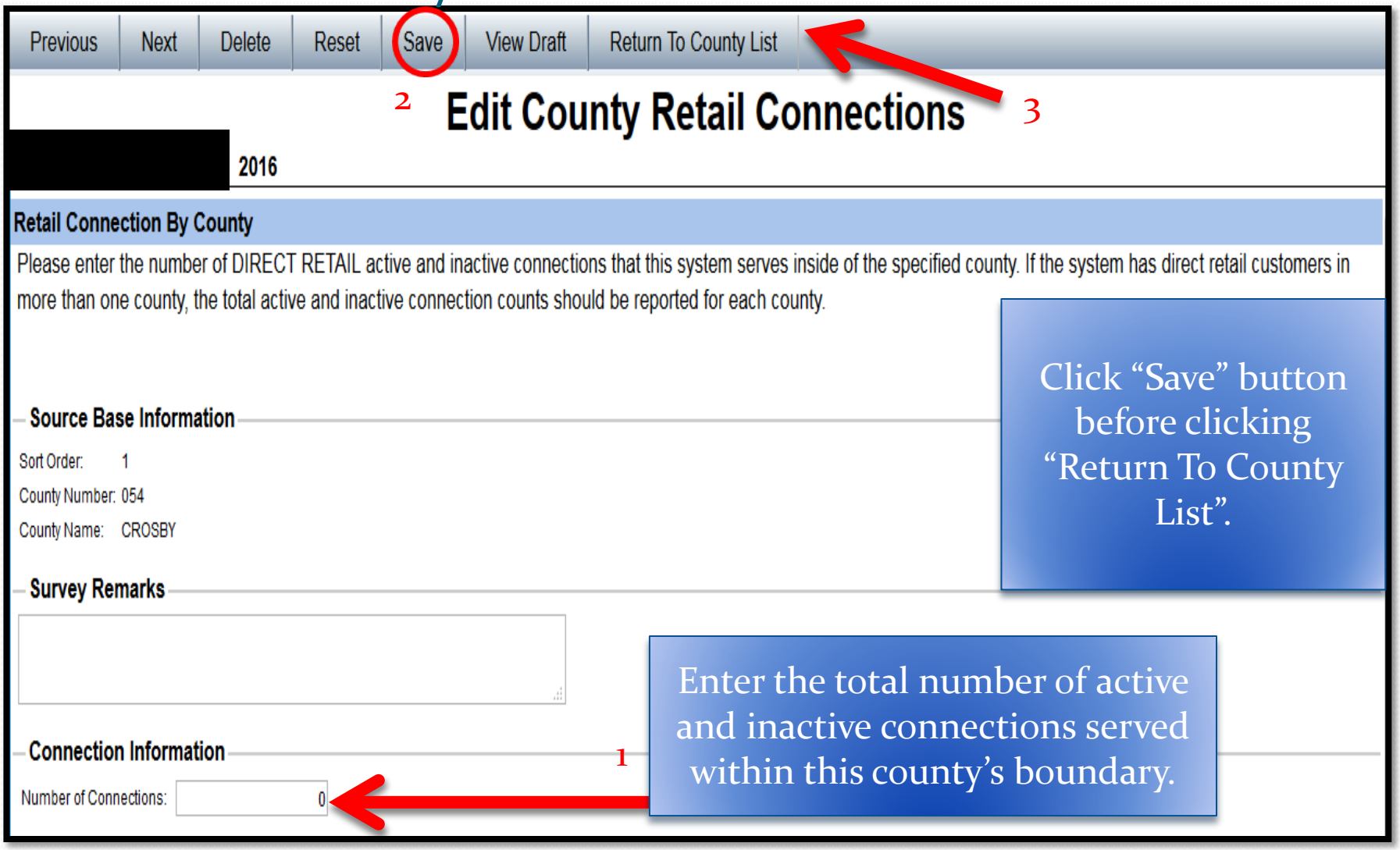


# Enter Total Water Volume Sold to Buyer

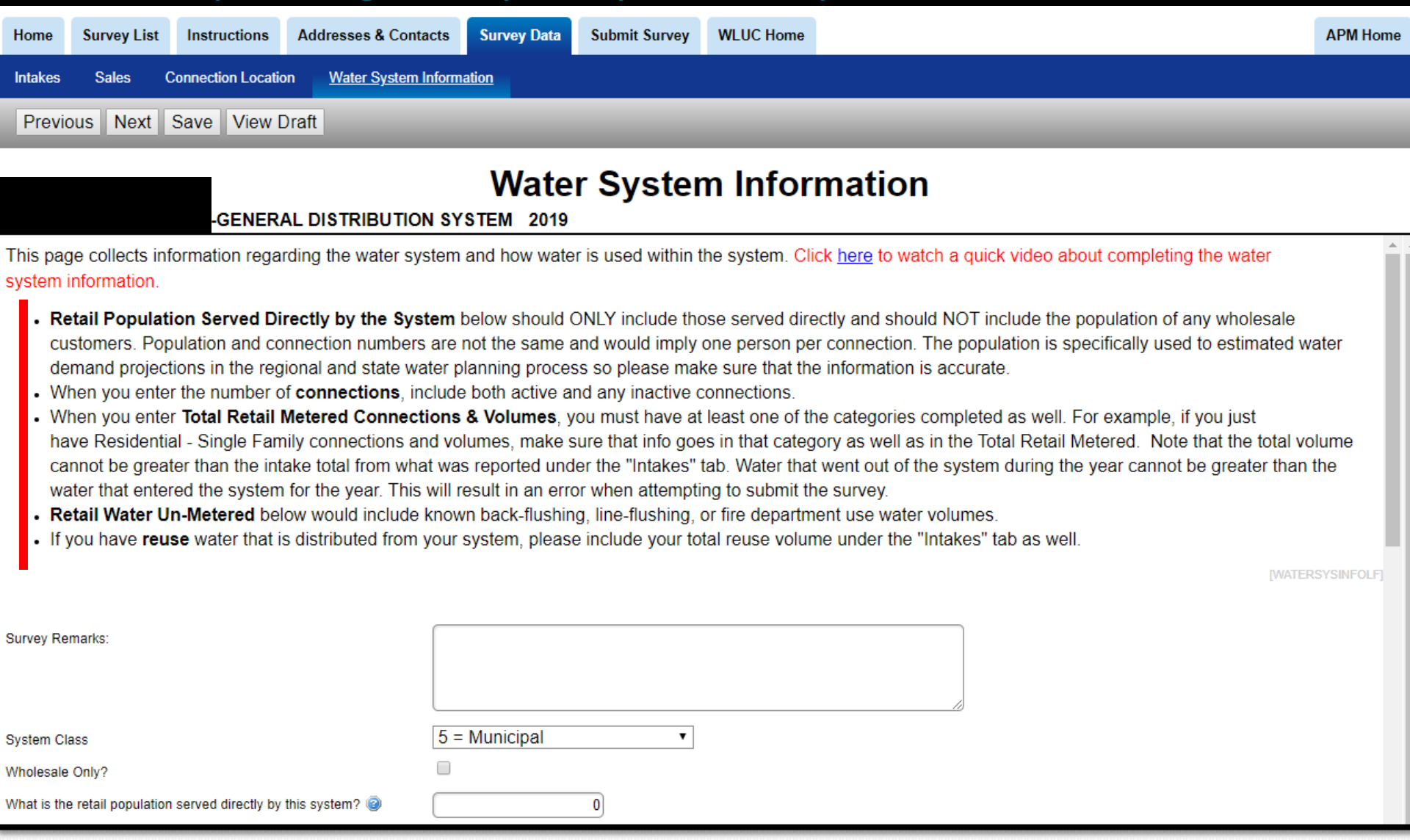


# For Municipal Long surveys only: Entering total connections served within County boundaries

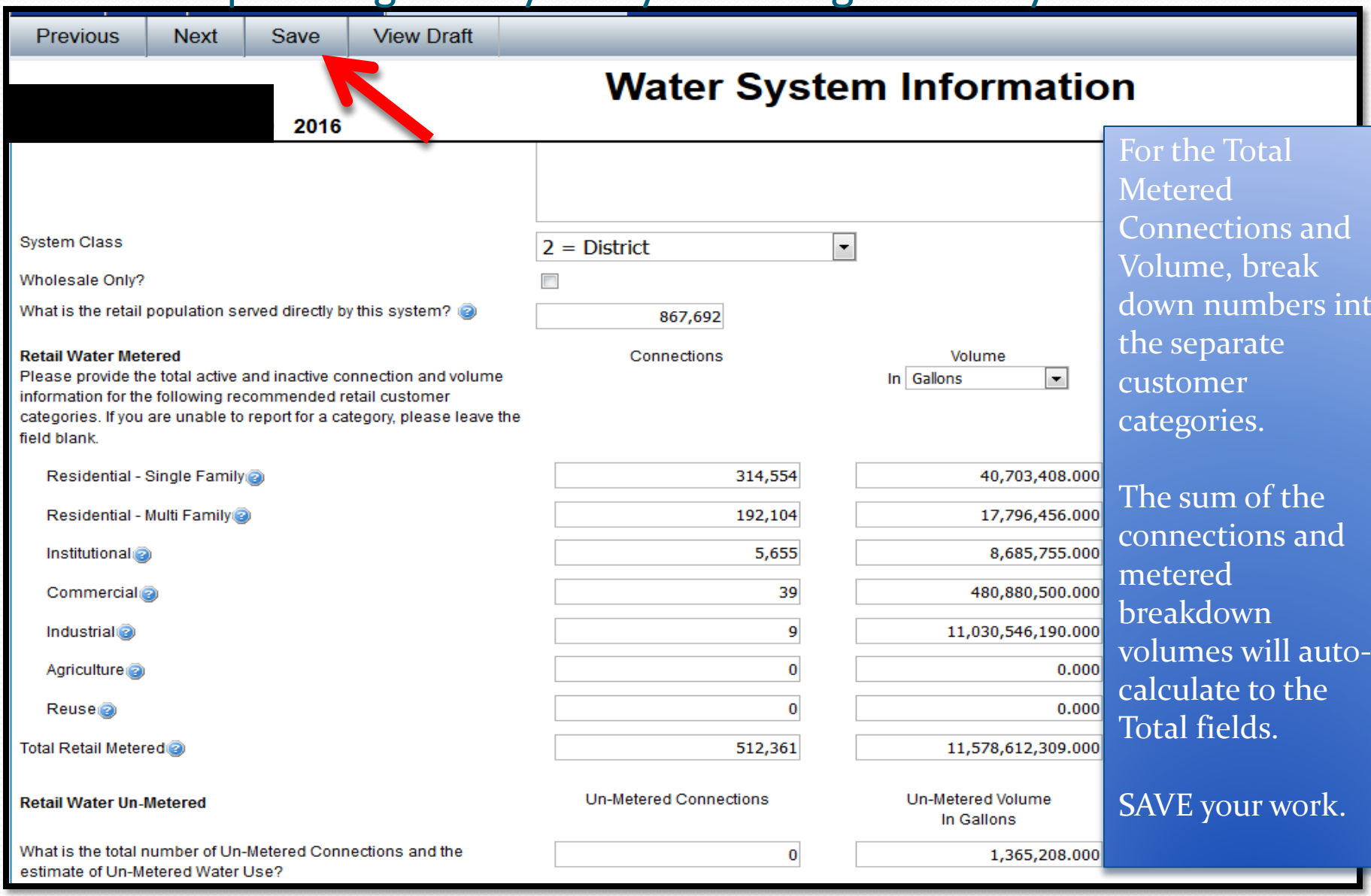
# For Municipal Long surveys only: Entering total connections served within County boundaries



# For Municipal Long surveys only: Water System Information



# For Municipal Long surveys only: Entering Water System Information



Previous | Next | Save | View Draft

## Water System Information

[redacted] 2016

| | | |
|---|---|---|
| System Class | 2 = District | |
| Wholesale Only? | ☐ | |
| What is the retail population served directly by this system? | 867,692 | |

**Retail Water Metered**
Please provide the total active and inactive connection and volume information for the following recommended retail customer categories. If you are unable to report for a category, please leave the field blank.

| | Connections | Volume In Gallons |
|---|---|---|
| Residential - Single Family | 314,554 | 40,703,408.000 |
| Residential - Multi Family | 192,104 | 17,796,456.000 |
| Institutional | 5,655 | 8,685,755.000 |
| Commercial | 39 | 480,880,500.000 |
| Industrial | 9 | 11,030,546,190.000 |
| Agriculture | 0 | 0.000 |
| Reuse | 0 | 0.000 |
| Total Retail Metered | 512,361 | 11,578,612,309.000 |

| **Retail Water Un-Metered** | Un-Metered Connections | Un-Metered Volume In Gallons |
|---|---|---|
| What is the total number of Un-Metered Connections and the estimate of Un-Metered Water Use? | 0 | 1,365,208.000 |

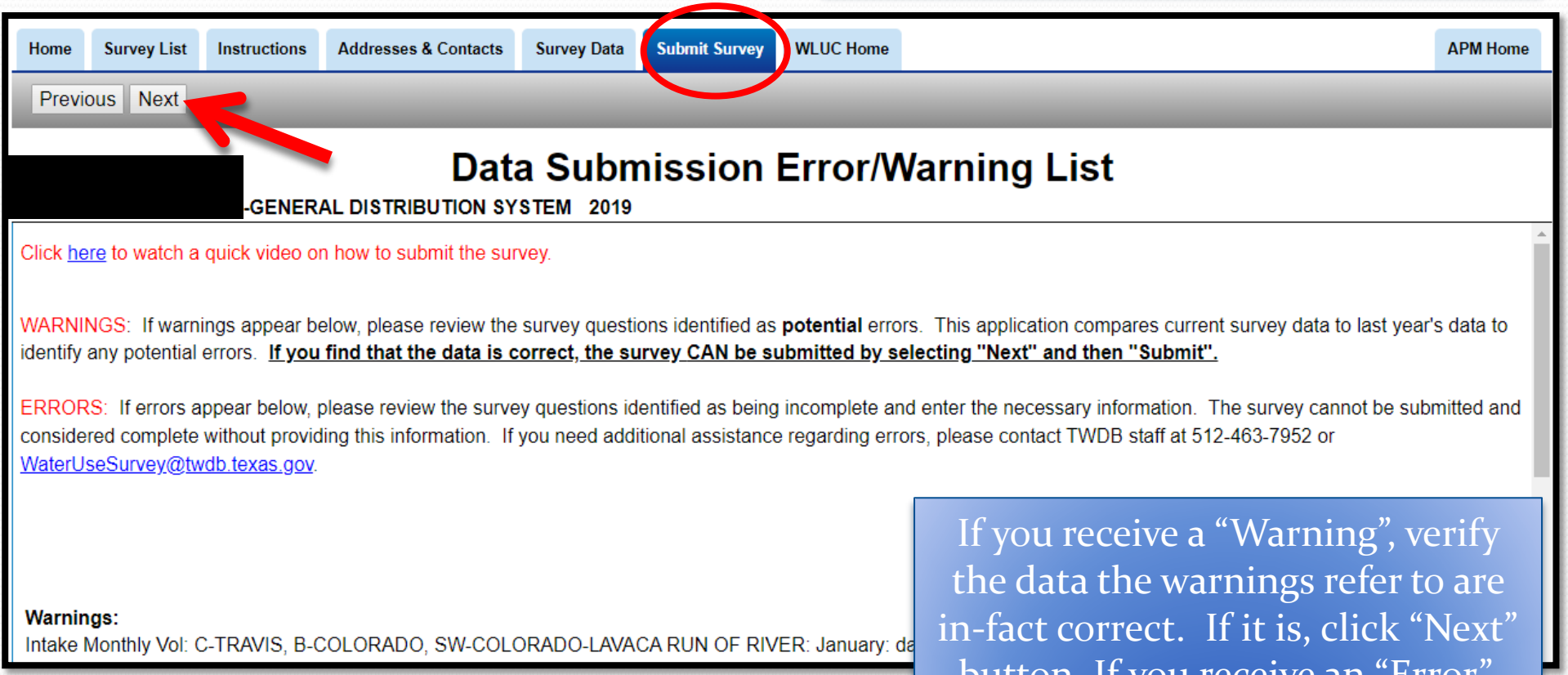
For the Total Metered Connections and Volume, break down numbers into the separate customer categories.

The sum of the connections and metered breakdown volumes will auto-calculate to the Total fields.

SAVE your work.

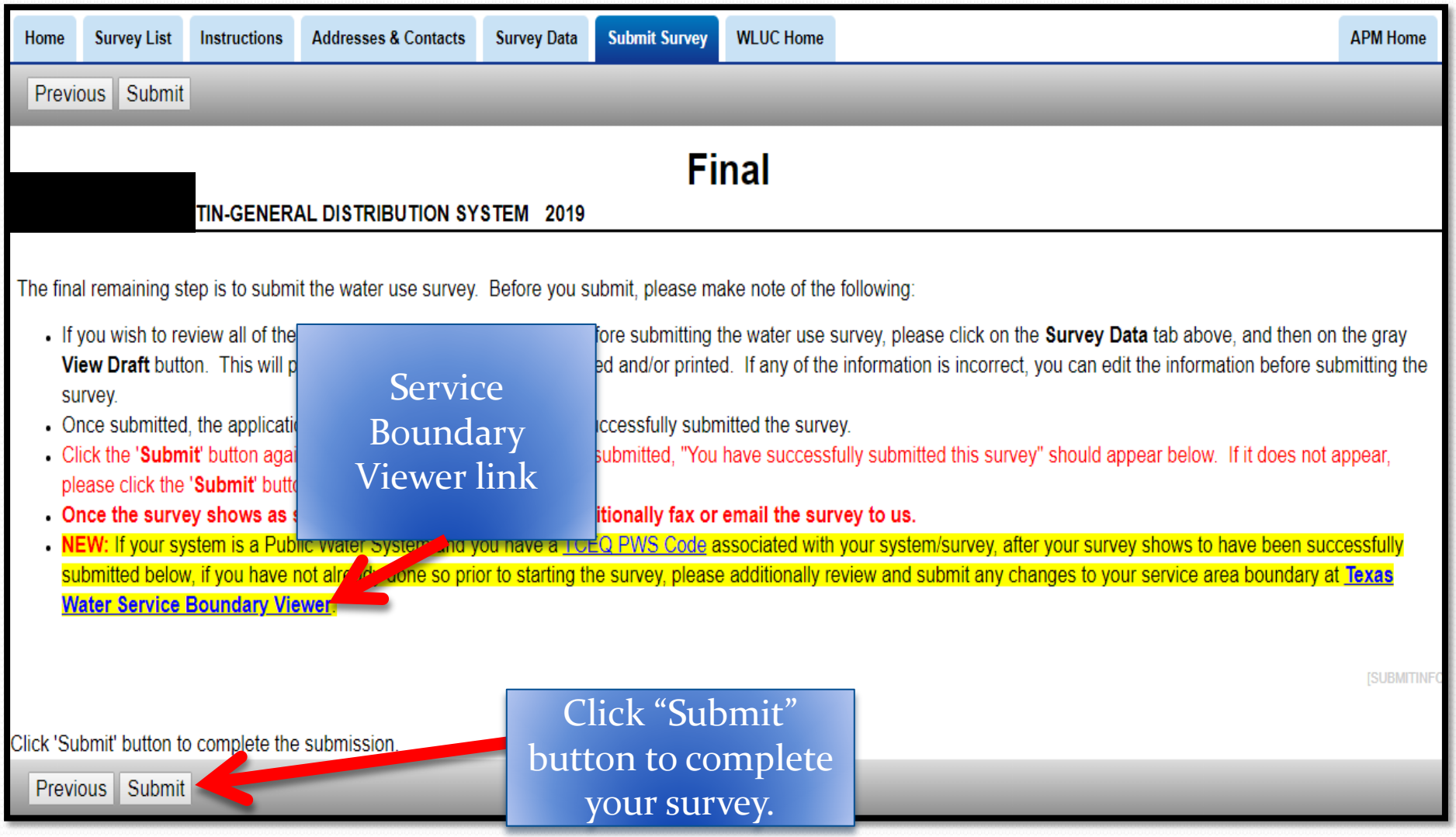
# Submit Survey Warning

Almost done! Click "Submit Survey" tab once previous tabs are complete.




If you receive a "Warning", verify the data the warnings refer to are in-fact correct. If it is, click "Next" button. If you receive an "Error", you will need to make the correction before submitting survey.

# Submit Survey: Final



# Example of Final Draft Copy of Survey

Date/Time Survey Submitted: 4/26/2013 4:27:58 PM

**TEXAS WATER DEVELOPMENT BOARD**
**WATER USE SURVEY**

**WATER USE IN CALENDAR YEAR: 2012**

Congratulations, you have successfully submitted your survey!

**SYSTEM NAME:** GENERAL DISTRIBUTION SYSTEM (AUSTIN)
**OPERATOR NAME:**
**MULTIPLE SURVEY ORG:** CITY OF AUSTIN
**MAILING ADDRESS 1:** PO BOX 1088
**MAILING ADDRESS 2:**

**CITY/STATE/ZIP:** AUSTIN TX 78767-
**WEB:** www.austintexas.gov
**PWS NAME:** CITY OF AUSTIN WATER & WASTEWATER
**PWS CODE:** 2270001

**INTAKE:**

| Water Type | County | B | ckish / (Y or N) | % Treated Prior to Intake | Total Volume (gallons) |
|---|---|---|---|---|---|
| SURFACE WATER SELF SUPPLIED | TRAVIS | COL | N | 0.00 | 33,176,053,598 |

| JANUARY | FEBRUARY | MARCH | A | EMBER | OCTOBER | NOVEMBER | DECEMBER |
|---|---|---|---|---|---|---|---|
| 3,360,973,847 | 3,008,794,086 | 3,342,520,905 | 3,69 | 7,056,471 | 3,360,722,942 | 1,757,203,654 | 2,414,129,045 |

| Water Type | County | B | ckish / (Y or N) | % Treated Prior to Intake | Total Volume (gallons) |
|---|---|---|---|---|---|
| SURFACE WATER PURCHASED | TRAVIS | COL | N | 0.00 | 16,068,775,083 |

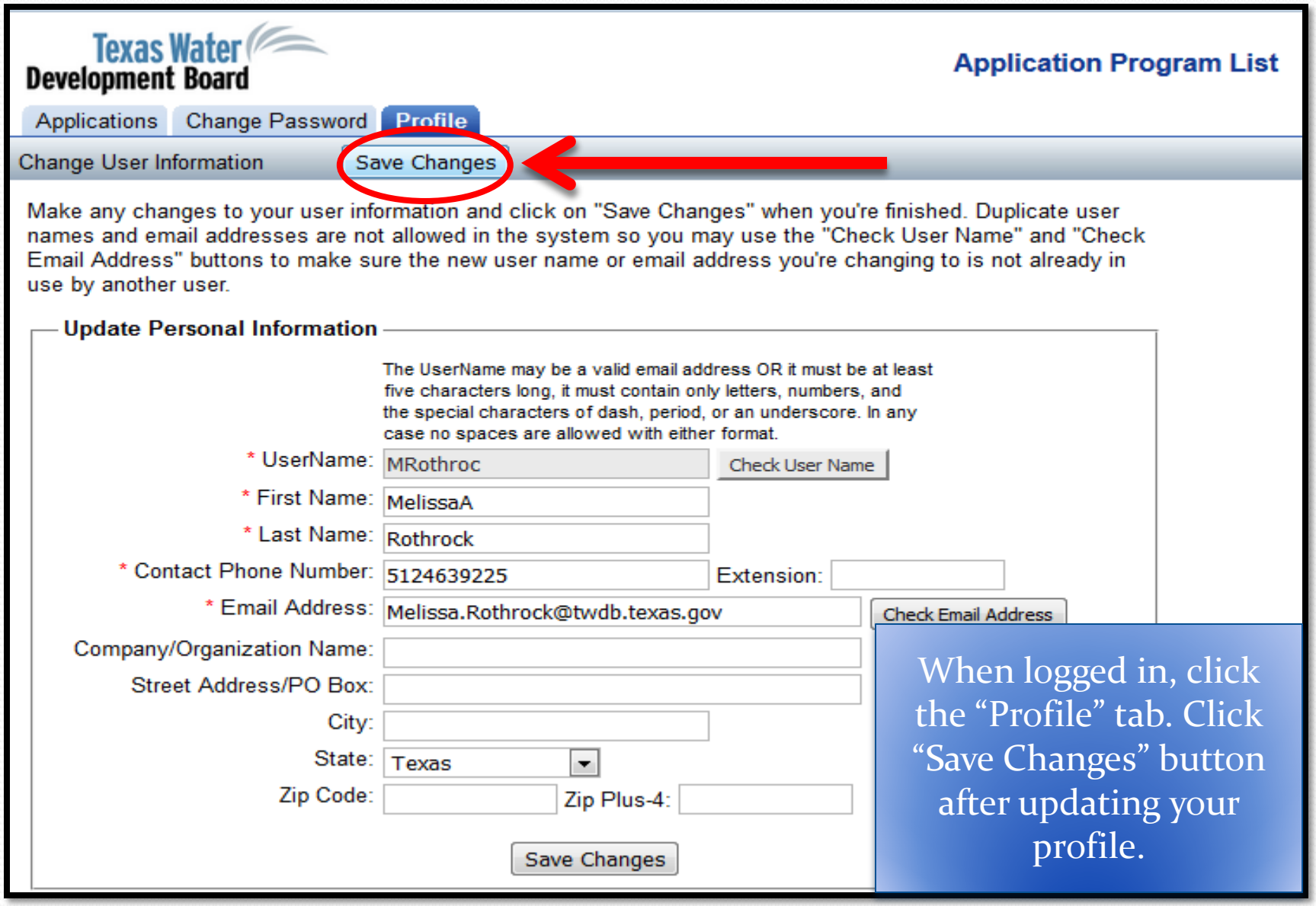
AUTHORITY

| JANUARY | FEBRUARY | MARCH | APRIL | MAY | JUNE | JULY | AUGUST | SEPTEMBER | OCTOBER | NOVEMBER | DECEMBER |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 0 | 0 | 375,595,414 | 320,132,315 | 1,936,802,949 | 2,177,971,791 | 4,586,176,865 | 2,513,640,682 | 718,951,129 | 2,207,969,635 | 1,231,534,303 |

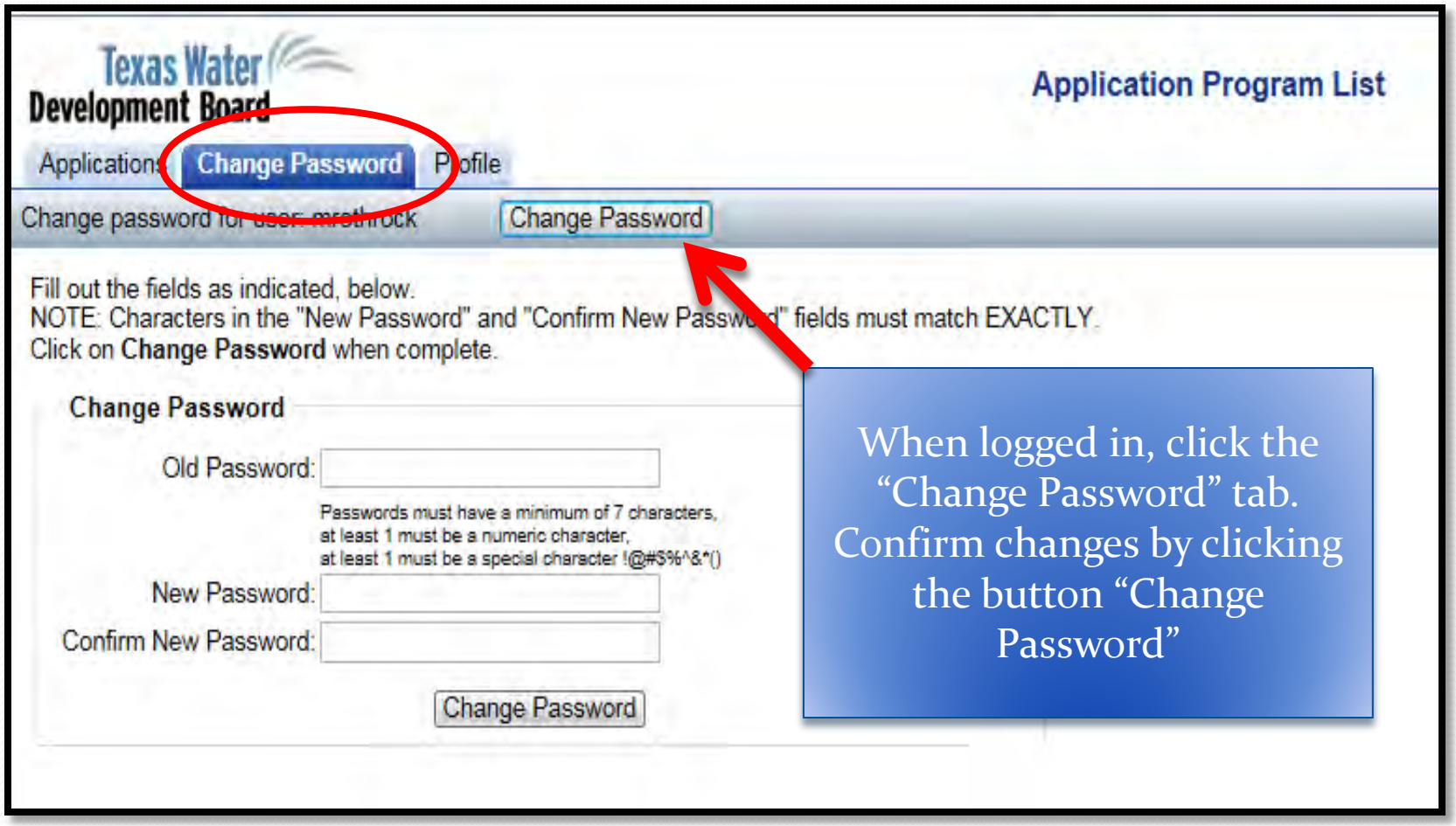
| Water Type | County | Basin | Metered or Estimated | % Reuse for Industrial | % Reuse for Landscape | % Reuse for Agriculture | % Reuse for Other | Total Volume (gallons) |
|---|---|---|---|---|---|---|---|---|
| REUSE SELF SUPPLIED DIRECT | TRAVIS | COLORADO | M | 44.00 | 56.00 | 0.00 | 0.00 | 1,468,000,000 |

PLEASE NOTE:
Save the final draft to your computer and keep for your records.

# Updating your profile



# Changing your Password



# Online Water Use Reports

## Available by Region, County, & Basin

| Year | Region | Population | Municipal | Manu-facturing (Mfg) | Mining | Power | Irrigation | Livestock |
|---|---|---|---|---|---|---|---|---|
| 2017 | A | 392,421 | 86,301 | 31,786 | 2,543 | 10,151 | 1,779,348 | 55,787 |
| 2017 | B | 197,643 | 26,249 | 1,565 | 13 | 3,105 | 72,718 | 8,709 |
| 2017 | C | 7,413,309 | 1,226,289 | 40,260 | 7,508 | 36,694 | 29,795 | 17,941 |
| 2017 | D | 786,558 | 112,250 | 34,076 | 699 | 54,635 | 29,582 | 21,243 |
| 2017 | E | 866,632 | 135,715 | 6,014 | 4,891 | 6,379 | 314,263 | 2,252 |
| 2017 | F | 683,918 | 119,220 | 7,439 | 162,674 | 8,853 | 484,102 | 11,327 |
| 2017 | G | 2,214,184 | 362,506 | 10,821 | 13,730 | 153,229 | 315,648 | 44,035 |
| 2017 | H | 7,076,414 | 1,019,030 | 501,322 | 1,213 | 36,294 | 207,080 | 10,870 |
| 2017 | I | 1,094,113 | 171,843 | 216,792 | 4,168 | 28,399 | 42,504 | 14,776 |
| 2017 | J | 132,403 | 23,258 | 9 | 179 | 0 | 10,556 | 1,619 |
| 2017 | K | 1,649,246 | 250,836 | 21,608 | 3,740 | 88,792 | 343,006 | 10,747 |
| 2017 | L | 2,920,137 | 452,652 | 70,967 | 63,641 | 83,225 | 268,431 | 23,076 |
| 2017 | M | 1,722,958 | 266,101 | 3,350 | 8,511 | 8,404 | 1,241,370 | 3,794 |
| 2017 | N | 590,407 | 76,992 | 50,509 | 5,422 | 3,335 | 14,779 | 4,658 |
| 2017 | O | 513,463 | 85,045 | 5,636 | 8,122 | 11,943 | 2,213,321 | 54,093 |
| 2017 | P | 50,790 | 6,023 | 1,029 | 1,035 | 1,683 | 123,558 | 2,852 |
| **2017** | **STATE TOTAL** | **28,304,596** | **4,420,310** | **1,003,183** | **288,089** | **535,121** | **7,490,061** | **287,779** |

# Questions?

Hotline 8am-5pm M-F: **512-463-7952**

Email: **WaterUseSurvey@twdb.texas.gov**

# Water Service Boundary Viewer

## Mapping Application

To collect and provide the most up-to-date and best data available on the water service areas for all community Public Water Systems within Texas.

# Overview

- Purpose & Benefits
- Background
- Application Overview
- Response & Outreach
- Potential Future Plans

# Purpose & Benefits

- Create & maintain a clearinghouse of all drinking water service area boundaries
- Geographically display state-collected water data & system information to the public
- Better estimate population & projections for the State Water Plan

# Background

- Original map produced in 2009 through a TWDB research grant

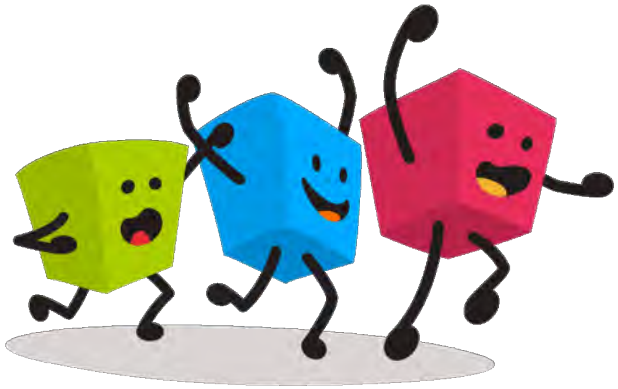
- Grant from USGS Water Use Data & Research Program:
  - Identify, update, & maintain the retail water service area boundaries of all active community public water systems (4,500+) in Texas
  - December 2016 – Contract between USGS & TWDB
  - **January 2019 – Application Deployed**

# Application Overview
# Three Components

- Public: View, create a map, or download a shapefile of the water system boundaries & view linked reports

- Editor: Allow system representatives to update or verify boundaries

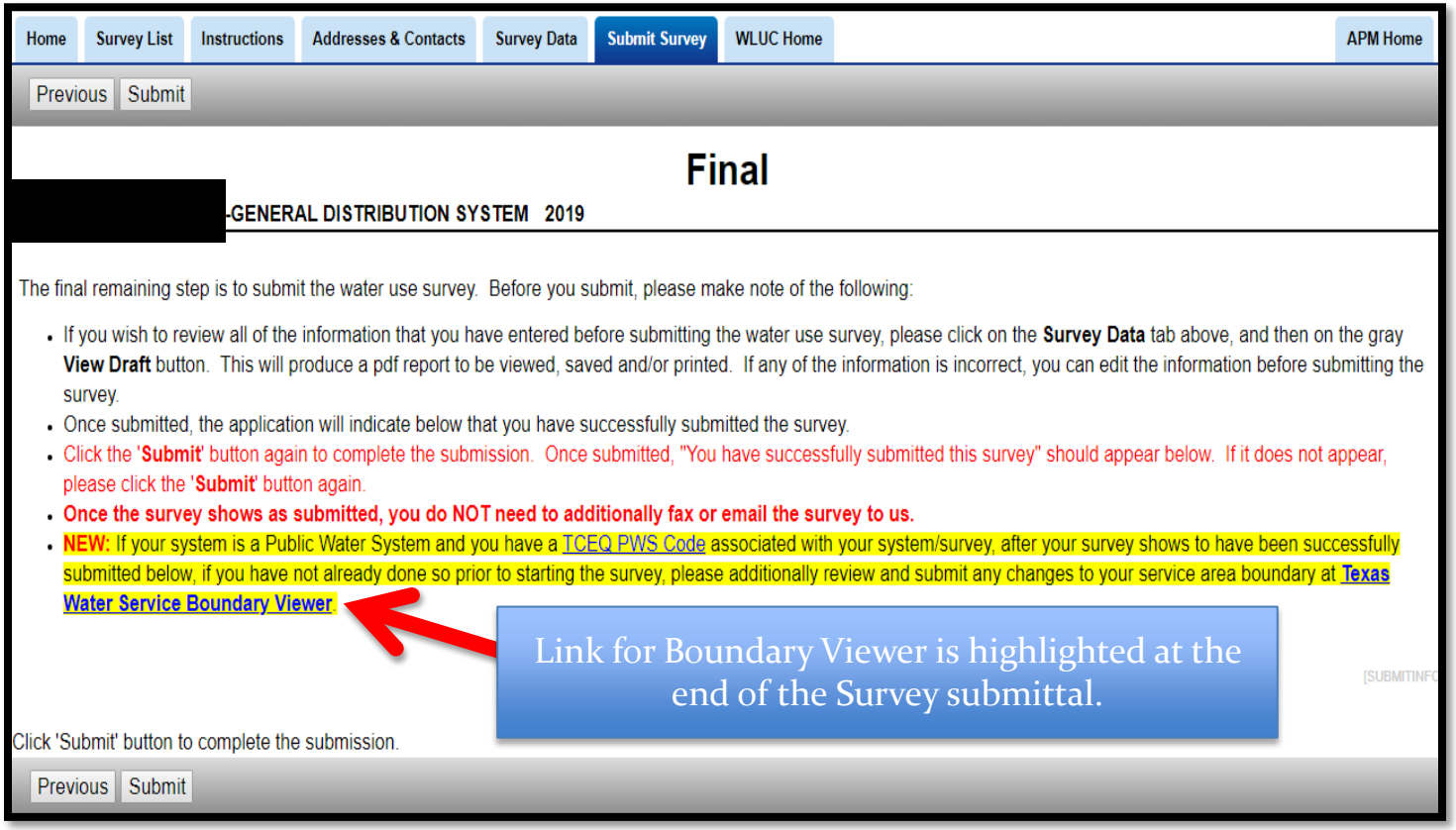
- Admin: Review & provide customer support



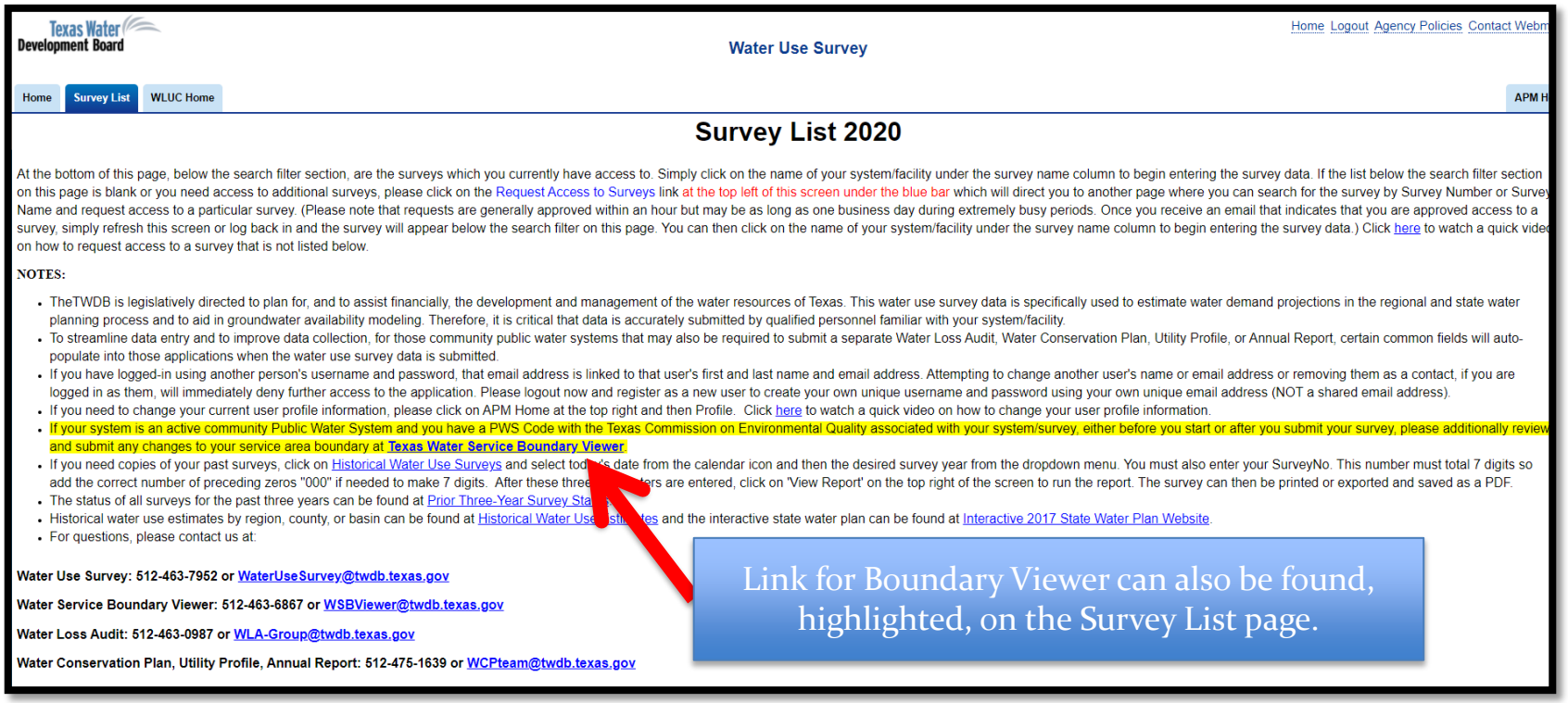
# What is a Water Service Boundary?

- Where a utility serves customers. The boundary encompasses all the resident locations the utility serves
- Is not necessarily the same at the CCN boundary

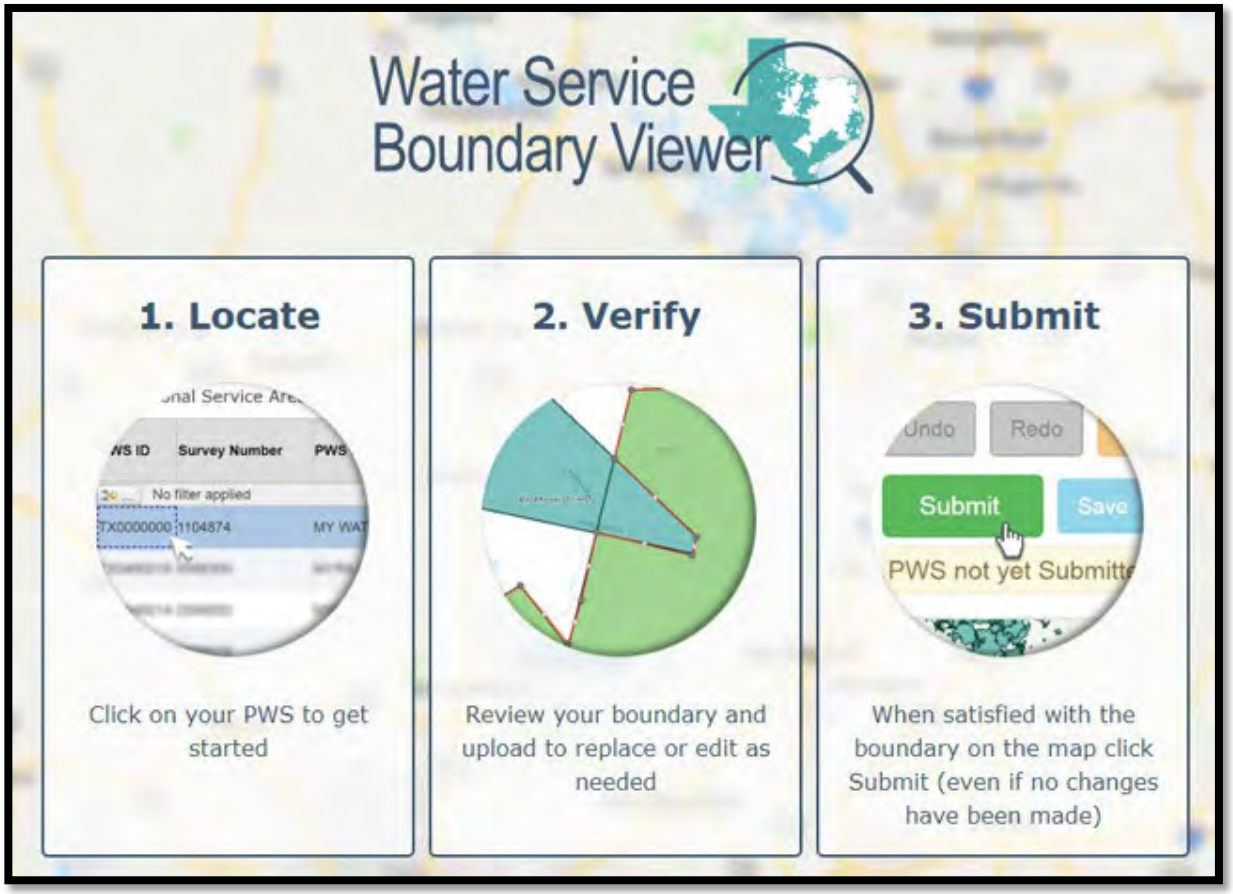
# Where to find Boundary Viewer



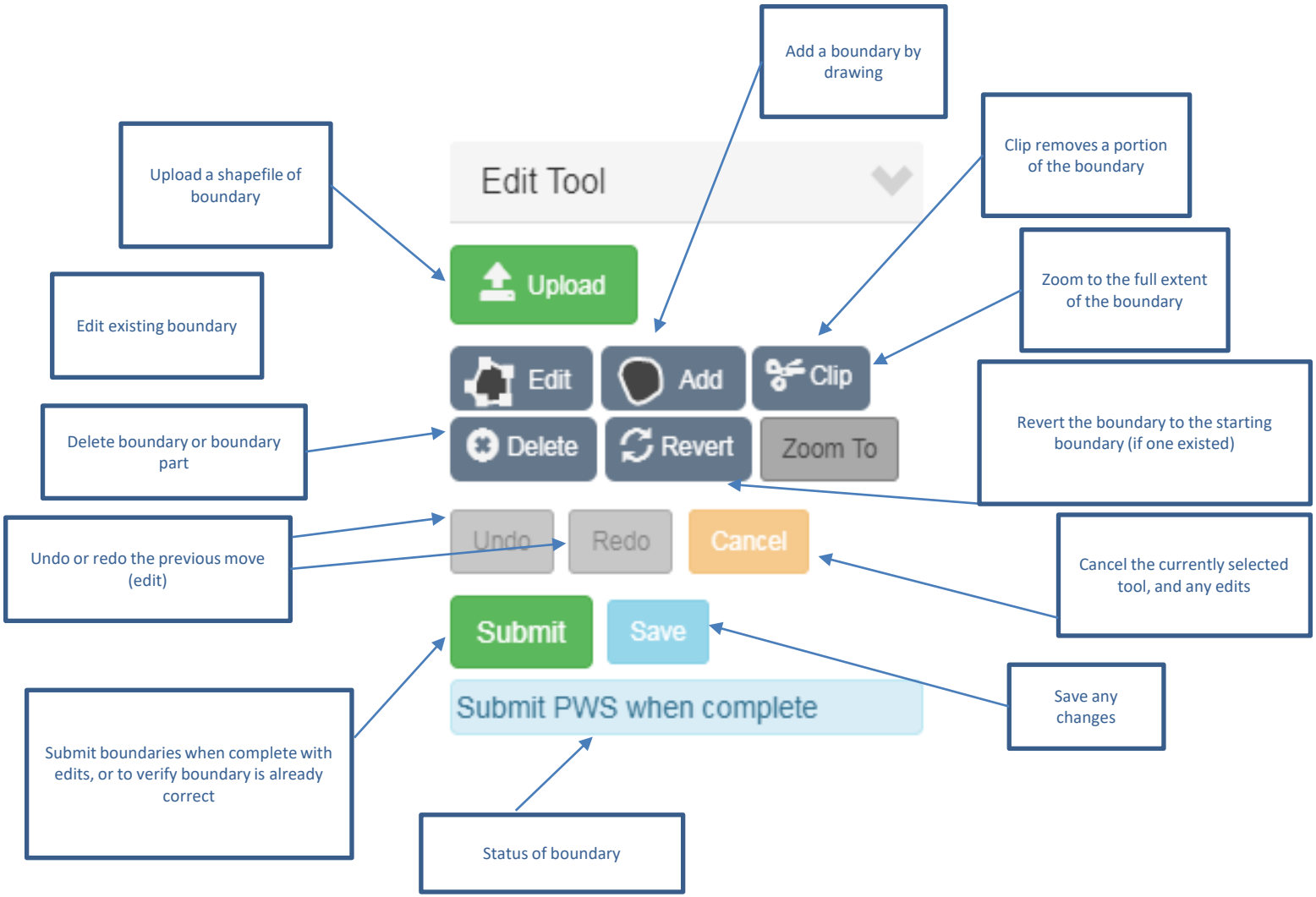
# Where to find Boundary Viewer



# Editor


Water Service Boundary Viewer
1. Locate
Survey Number
No filter applied
Click on your PWS to get started
2. Verify
Review your boundary and upload to replace or edit as needed
3. Submit
Undo
Redo
Submit
Save
PWS not yet Submitte
When satisfied with the boundary on the map click Submit (even if no changes have been made)

# Editor


Add a boundary by drawing
Upload a shapefile of boundary
Clip removes a portion of the boundary
Edit Tool
Upload
Zoom to the full extent of the boundary
Edit existing boundary
Edit
Add
Clip
Revert the boundary to the starting boundary (if one existed)
Delete boundary or boundary part
Delete
Revert
Zoom To
Undo or redo the previous move (edit)
Undo
Redo
Cancel
Cancel the currently selected tool, and any edits
Submit
Save
Save any changes
Submit PWS when complete
Submit boundaries when complete with edits, or to verify boundary is already correct
Status of boundary

# Potential Future Plans

- Phase II of the viewer is scheduled for completion in the next year
- New features will include providing links to historical and Census data, as well as making the editor more user-friendly
- We welcome any user feedback that helps us improve the viewer!

# Questions?

**Braniff Davis**
Water Service Boundary Viewer Administrator

Office: 512-463-6867
Email: Braniff.davis@twdb.texas.gov

# Water Loss, Use, and Conservation (WLUC) Workshop

## Water Loss Audit – Part 1 – Data

Municipal Water Conservation

Texas Water Development Board (TWDB)

*Unless specifically noted, this presentation does not necessarily reflect official Board positions or decisions.*

# Why Complete a WLA?

- System efficiency
- Extend supply
- Target mitigation
- Save money
- Public Health
- Required
  - Loan/Grant
- Regional Water Planning

# Who Completes the WLA?

- 3,300 or > connections?
- Active financial obligation?
- All retail public water systems by May 1, 2021
- Recommend annually

# WLA Training Requirement

## 31 TEXAS ADMINISTRATIVE CODE (TAC) § 358.6(b)(4)

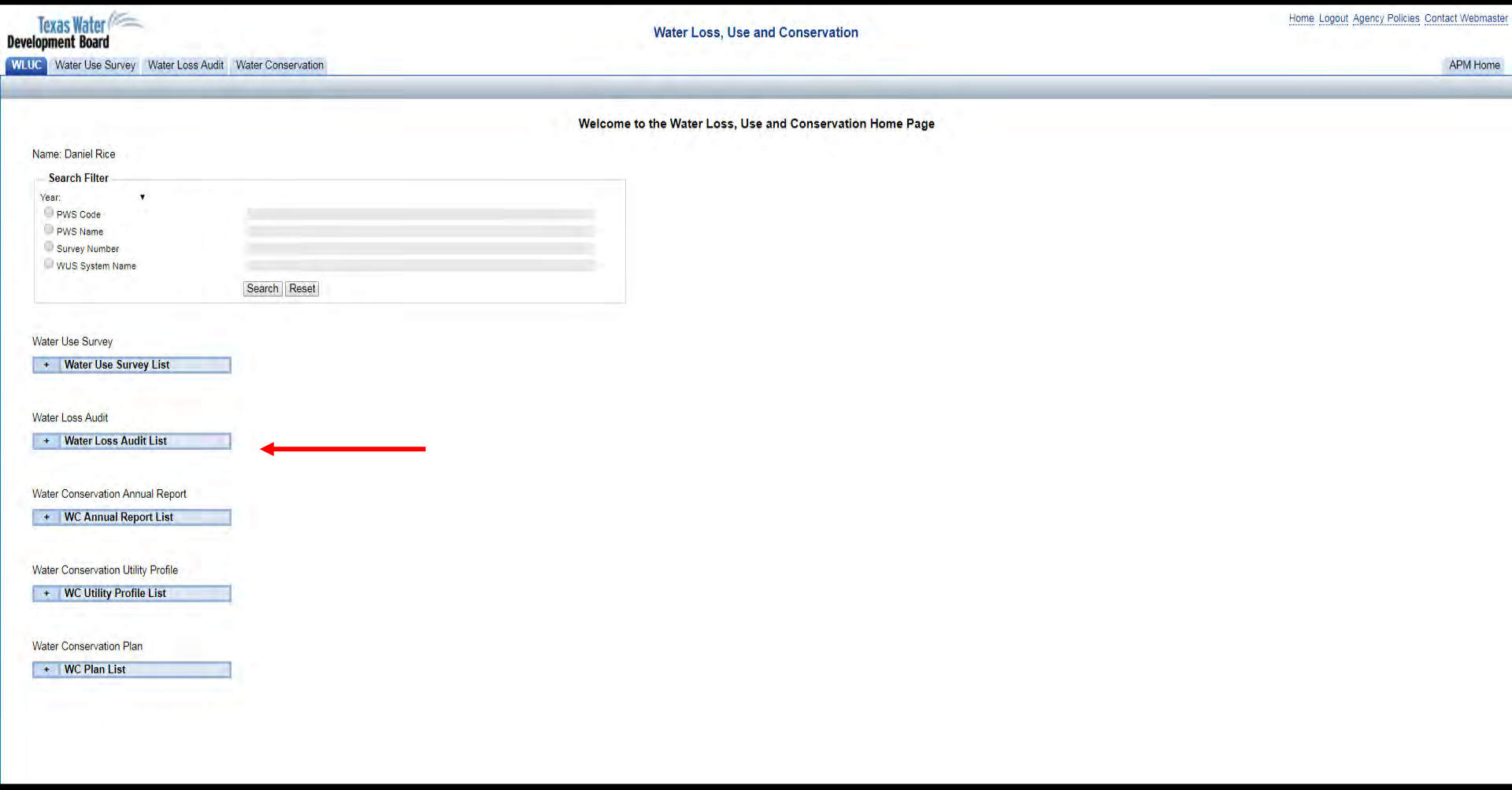
- *Effective January 1, 2019, the water loss audit must be performed by a person who has completed water loss audit training……..agency website, and may also provide such training in person or by video.*

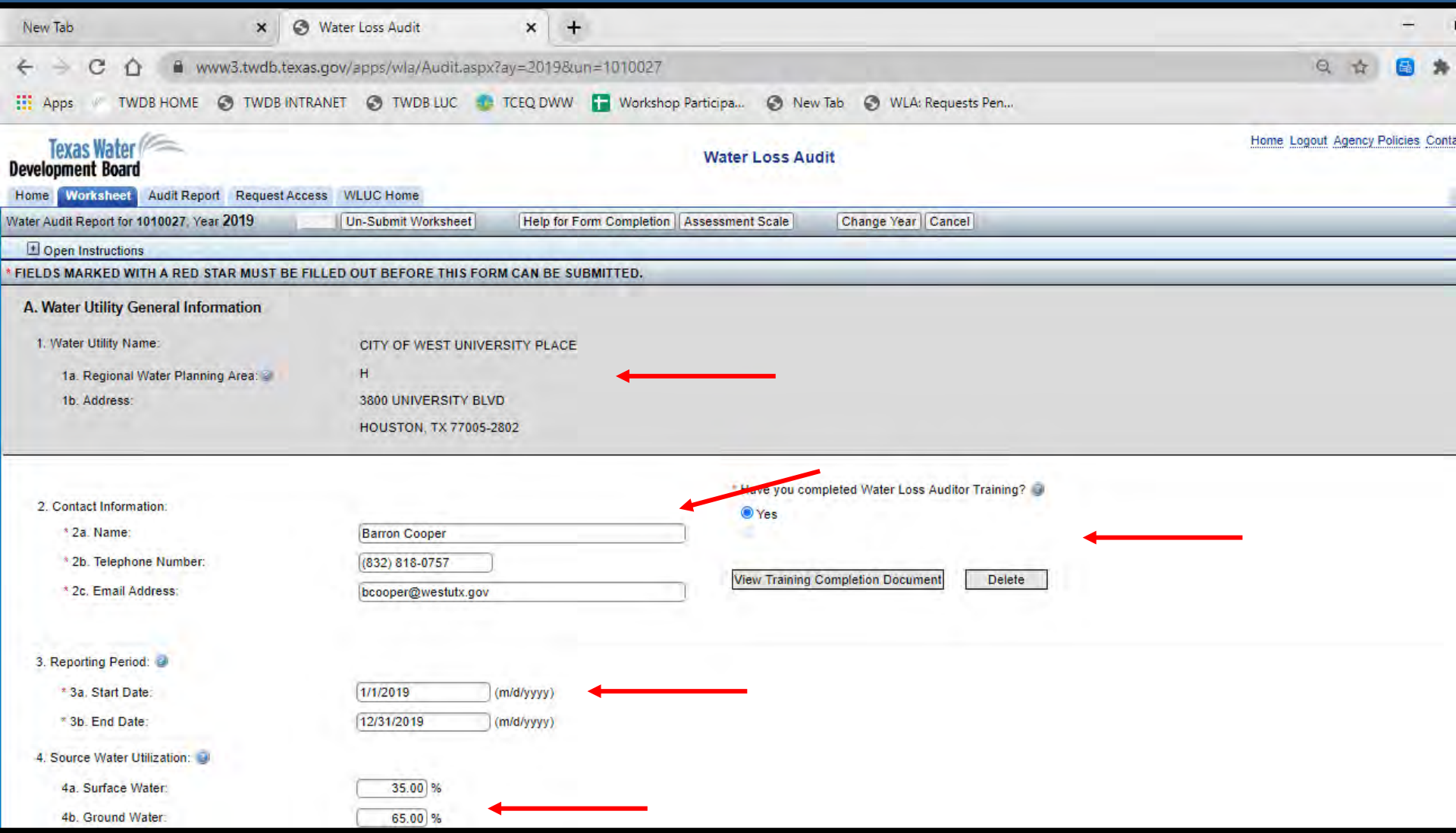
- *The person who completes the water loss audit is required to upload the training acknowledgement with their name on it – not someone else's acknowledgement.*

# TWDB Website

***www.twdb.texas.gov/conservation/municipal/waterloss/index.asp***

- Accessing the Water Loss Audit application
- Registered user instructions
- Email address and contact information
- Training webinar


Texas Water Development Board
Water Loss, Use and Conservation
Home Logout Agency Policies Contact Webmaster
WLUC Water Use Survey Water Loss Audit Water Conservation
APM Home
Welcome to the Water Loss, Use and Conservation Home Page
Name: Daniel Rice
Search Filter
Year:
PWS Code
PWS Name
Survey Number
WUS System Name
Search Reset
Water Use Survey
+ Water Use Survey List
Water Loss Audit
+ Water Loss Audit List
Water Conservation Annual Report
+ WC Annual Report List
Water Conservation Utility Profile
+ WC Utility Profile List
Water Conservation Plan
+ WC Plan List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Water Audit Report for 1010027, Year 2019
Un-Submit Worksheet
Help for Form Completion
Assessment Scale
Change Year
Cancel
Open Instructions
* FIELDS MARKED WITH A RED STAR MUST BE FILLED OUT BEFORE THIS FORM CAN BE SUBMITTED.
A. Water Utility General Information
1. Water Utility Name: CITY OF WEST UNIVERSITY PLACE
1a. Regional Water Planning Area: H
1b. Address: 3800 UNIVERSITY BLVD
HOUSTON, TX 77005-2802
2. Contact Information:
* 2a. Name: Barron Cooper
* 2b. Telephone Number: (832) 818-0757
* 2c. Email Address: bcooper@westutx.gov
* Have you completed Water Loss Auditor Training?
Yes
View Training Completion Document
Delete
3. Reporting Period:
* 3a. Start Date: 1/1/2019 (m/d/yyyy)
* 3b. End Date: 12/31/2019 (m/d/yyyy)
4. Source Water Utilization:
4a. Surface Water: 35.00 %
4b. Ground Water: 65.00 %

Texas Water Development Board

# Water Loss Audit

Home | Worksheet | Audit Report | Request Access | WLUC Home

Water Audit Report for **1010027**, Year **2019** | Save | Un-Submit Worksheet | Help for Form Completion | Assessment Scale | Change Year | Cancel

Close Instructions

The **Save** button will save any data you enter for retrieval on future visits to this site.
Use the **Submit Worksheet** button to save your data and indicate that your form is completed and ready for TWDB review.

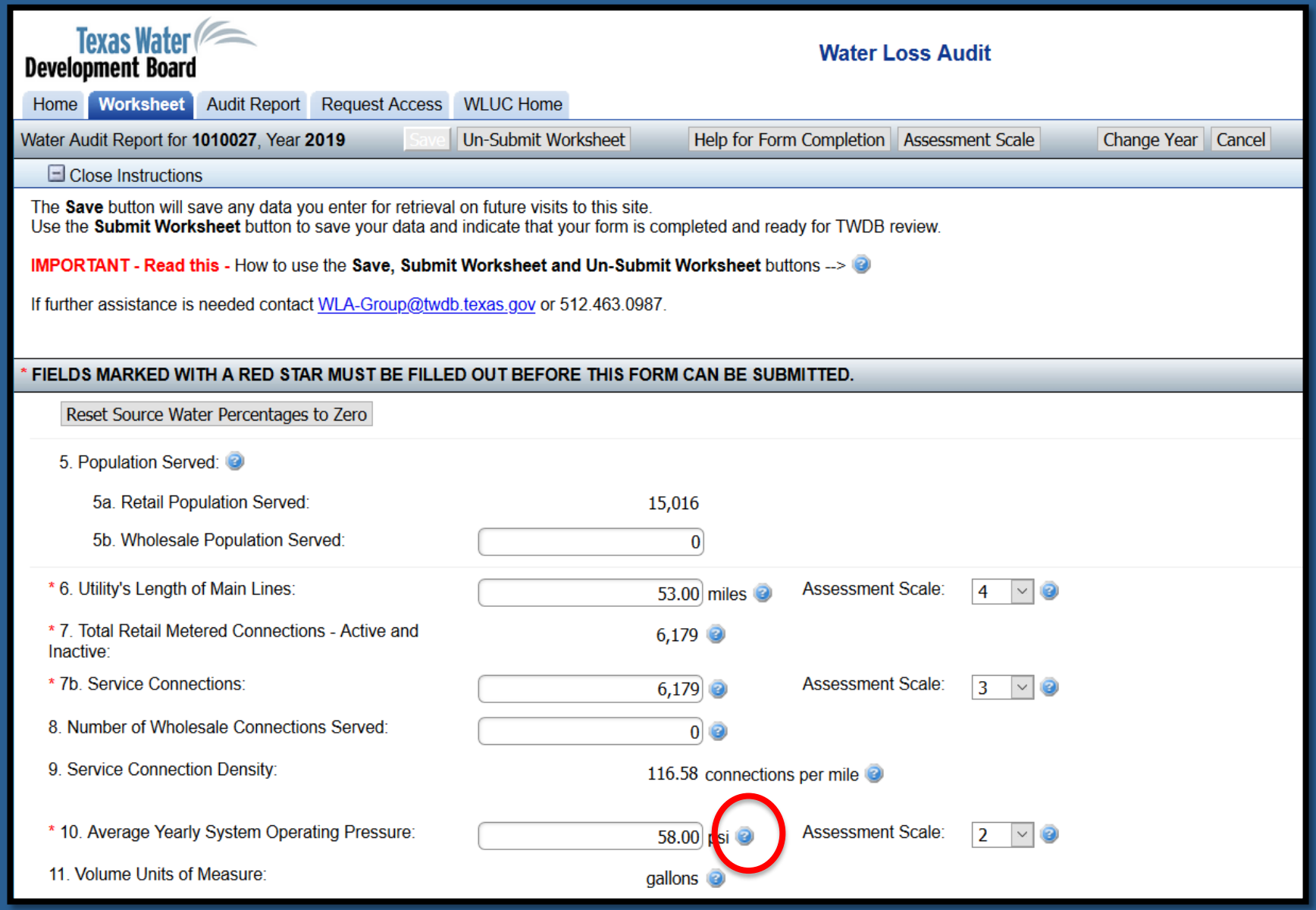
**IMPORTANT - Read this -** How to use the **Save, Submit Worksheet and Un-Submit Worksheet** buttons -->

If further assistance is needed contact WLA-Group@twdb.texas.gov or 512.463.0987.

* **FIELDS MARKED WITH A RED STAR MUST BE FILLED OUT BEFORE THIS FORM CAN BE SUBMITTED.**

Reset Source Water Percentages to Zero

| | | | |
|---|---|---|---|
| 5. Population Served: | | | |
| 5a. Retail Population Served: | 15,016 | | |
| 5b. Wholesale Population Served: | 0 | | |
| * 6. Utility's Length of Main Lines: | 53.00 miles | Assessment Scale: | 4 |
| * 7. Total Retail Metered Connections - Active and Inactive: | 6,179 | | |
| * 7b. Service Connections: | 6,179 | Assessment Scale: | 3 |
| 8. Number of Wholesale Connections Served: | 0 | | |
| 9. Service Connection Density: | 116.58 connections per mile | | |
| * 10. Average Yearly System Operating Pressure: | 58.00 psi | Assessment Scale: | 2 |
| 11. Volume Units of Measure: | gallons | | |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Water Loss Audit
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Water Audit Report for 1010027, Year 2019
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Un-Submit Worksheet
Help for Form Completion
Assessment Scale
Change Year
Cancel
Close Instructions
The Save button will save any data you enter for retrieval on future visits to this site.
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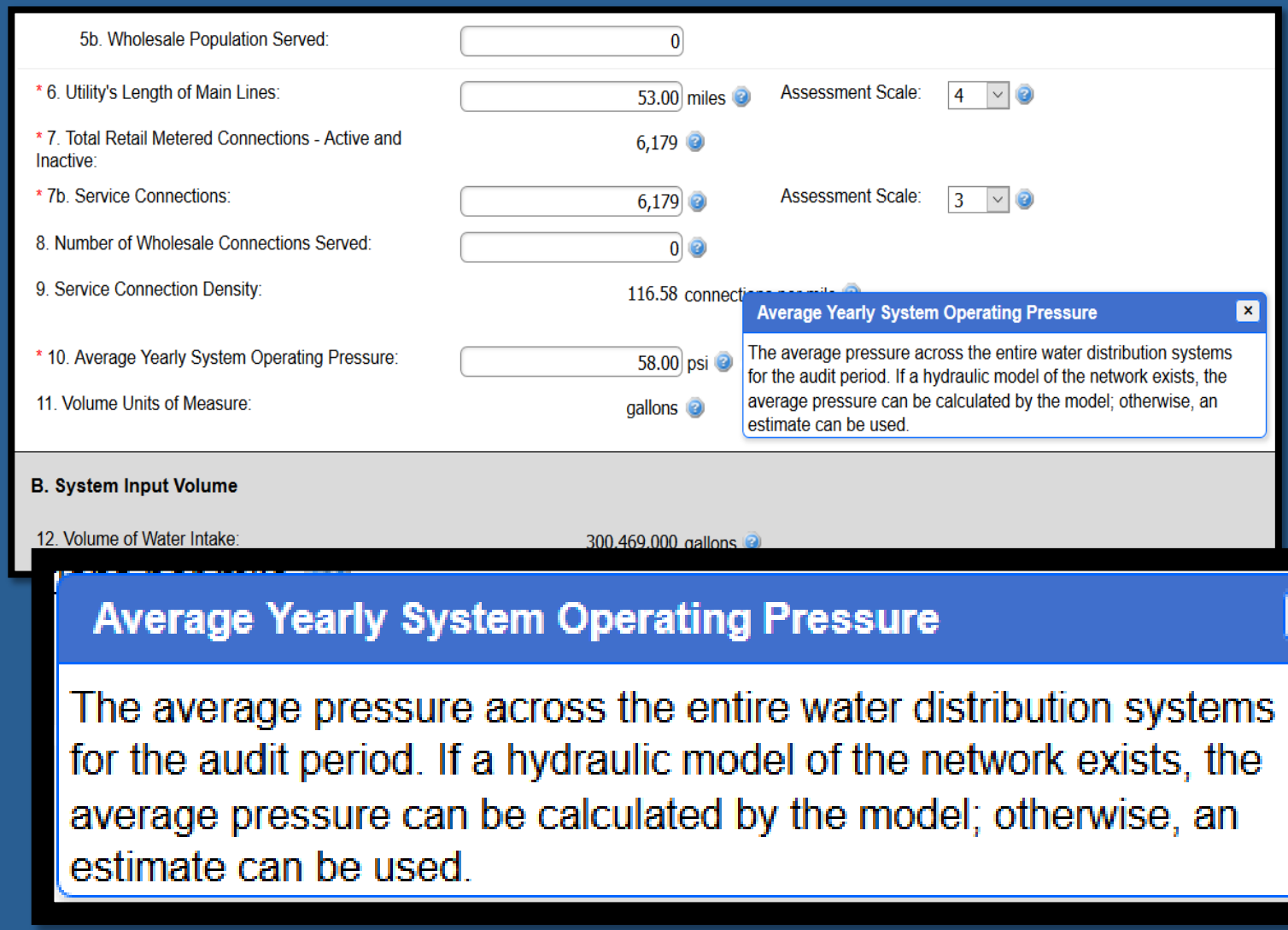
IMPORTANT - Read this - How to use the Save, Submit Worksheet and Un-Submit Worksheet buttons -->
If further assistance is needed contact WLA-Group@twdb.texas.gov or 512.463.0987.
* FIELDS MARKED WITH A RED STAR MUST BE FILLED OUT BEFORE THIS FORM CAN BE SUBMITTED.
Reset Source Water Percentages to Zero
5. Population Served:
5a. Retail Population Served: 15,016
5b. Wholesale Population Served: 0
* 6. Utility's Length of Main Lines: 53.00 miles Assessment Scale: 4
* 7. Total Retail Metered Connections - Active and Inactive: 6,179
* 7b. Service Connections: 6,179 Assessment Scale: 3
8. Number of Wholesale Connections Served: 0
9. Service Connection Density: 116.58 connections per mile
* 10. Average Yearly System Operating Pressure: 58.00 psi Assessment Scale: 2
11. Volume Units of Measure: gallons



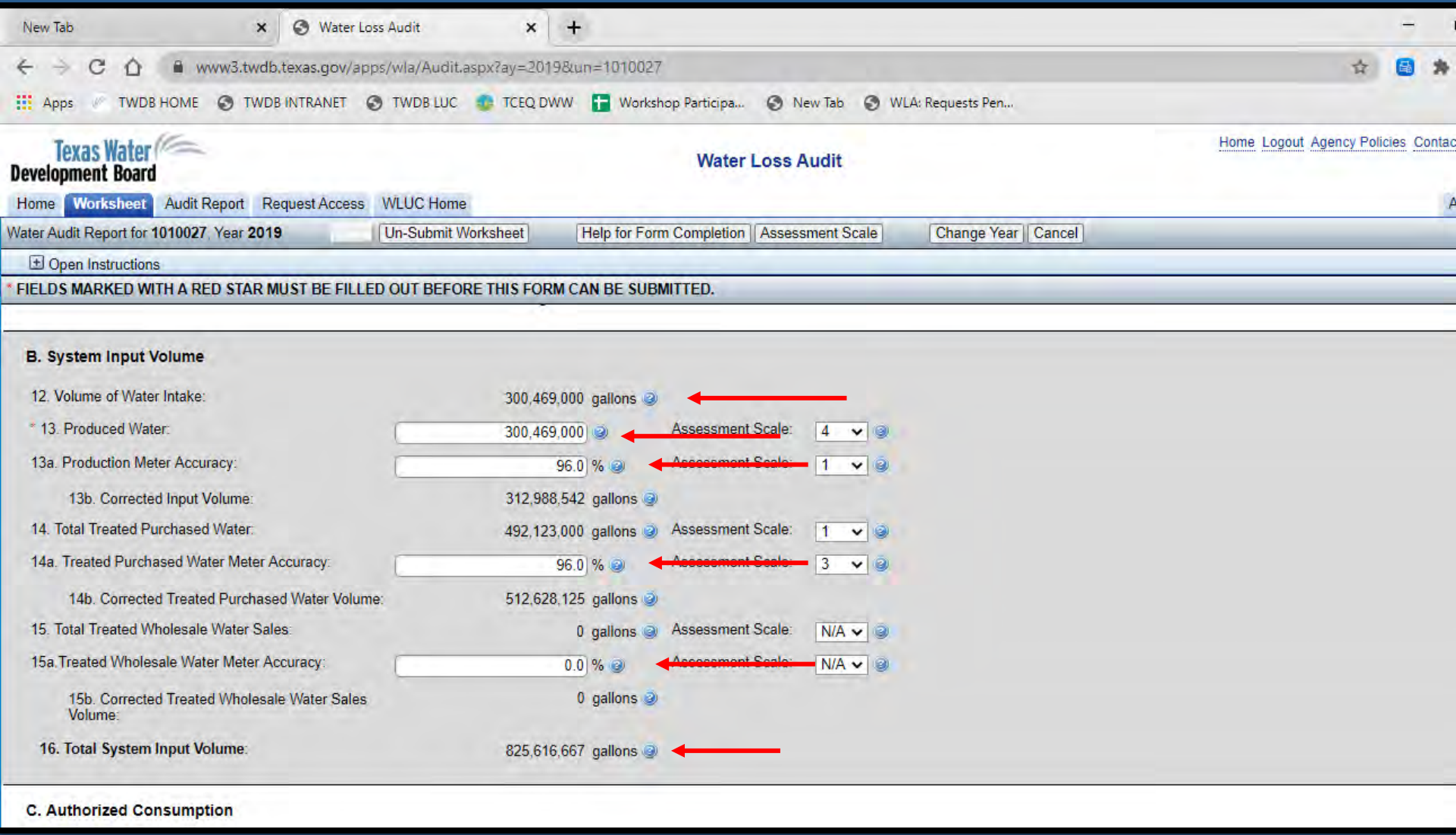


## Average Yearly System Operating Pressure

The average pressure across the entire water distribution systems for the audit period. If a hydraulic model of the network exists, the average pressure can be calculated by the model; otherwise, an estimate can be used.

# System Input Volume

Total amount of water supplied to the distribution system and should be validated and should include an adjustment for master meter inaccuracy.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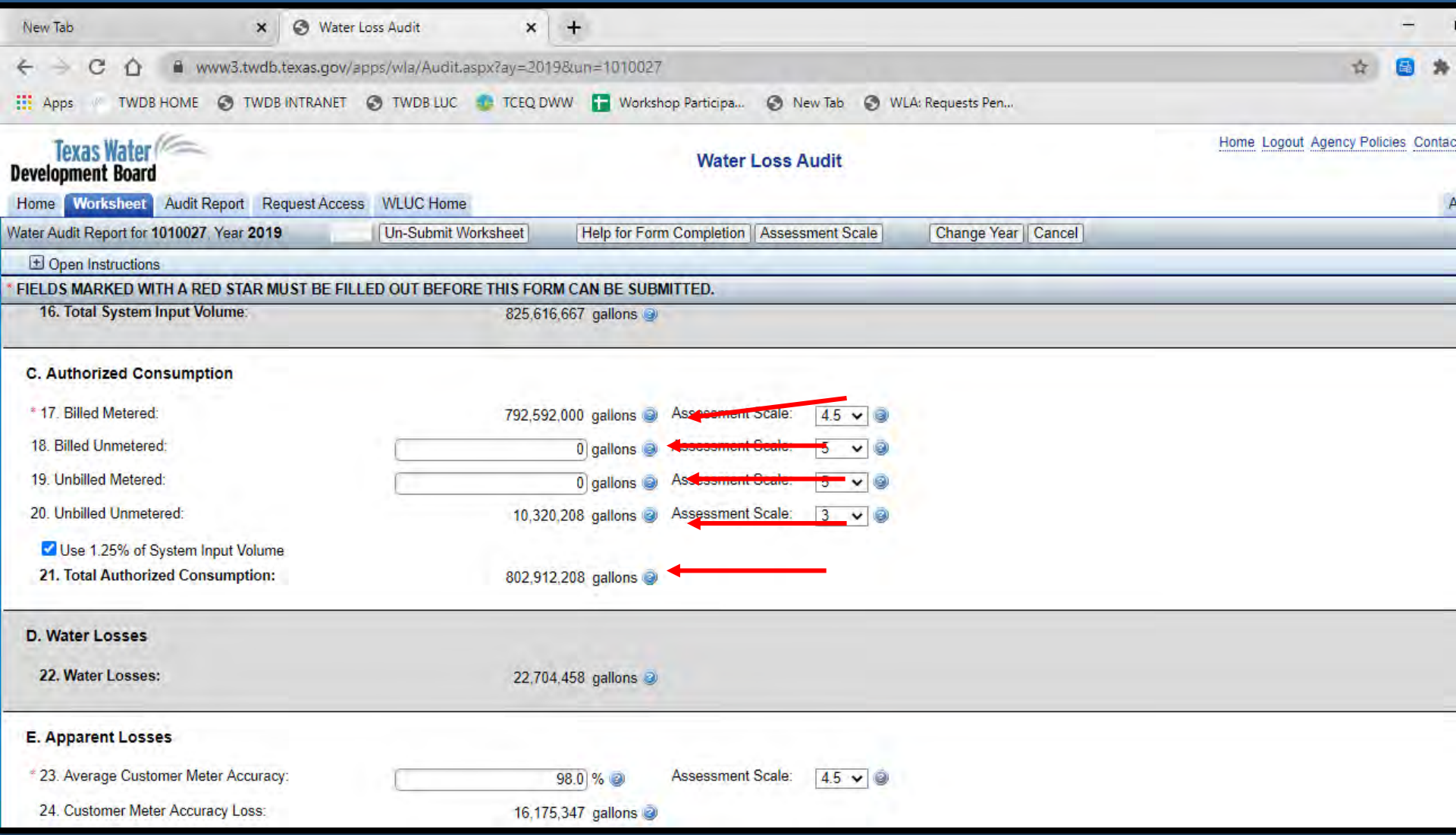
Open Instructions
* FIELDS MARKED WITH A RED STAR MUST BE FILLED OUT BEFORE THIS FORM CAN BE SUBMITTED.
B. System Input Volume
12. Volume of Water Intake: 300,469,000 gallons
* 13. Produced Water: 300,469,000 Assessment Scale: 4
13a. Production Meter Accuracy: 96.0 % Assessment Scale: 1
13b. Corrected Input Volume: 312,988,542 gallons
14. Total Treated Purchased Water: 492,123,000 gallons Assessment Scale: 1
14a. Treated Purchased Water Meter Accuracy: 96.0 % Assessment Scale: 3
14b. Corrected Treated Purchased Water Volume: 512,628,125 gallons
15. Total Treated Wholesale Water Sales: 0 gallons Assessment Scale: N/A
15a. Treated Wholesale Water Meter Accuracy: 0.0 % Assessment Scale: N/A
15b. Corrected Treated Wholesale Water Sales Volume: 0 gallons
16. Total System Input Volume: 825,616,667 gallons
C. Authorized Consumption

# Authorized Consumption

Water that is used by customers that are known to the water system.

Billed Metered
\+ Billed Unmetered
\+ Unbilled Metered
\+ Unbilled Unmetered
= Authorized Consumption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Open Instructions
* FIELDS MARKED WITH A RED STAR MUST BE FILLED OUT BEFORE THIS FORM CAN BE SUBMITTED.
16. Total System Input Volume: 825,616,667 gallons
C. Authorized Consumption
* 17. Billed Metered: 792,592,000 gallons Assessment Scale: 4.5
18. Billed Unmetered: 0 gallons Assessment Scale: 5
19. Unbilled Metered: 0 gallons Assessment Scale: 5
20. Unbilled Unmetered: 10,320,208 gallons Assessment Scale: 3
Use 1.25% of System Input Volume
21. Total Authorized Consumption: 802,912,208 gallons
D. Water Losses
22. Water Losses: 22,704,458 gallons
E. Apparent Losses
* 23. Average Customer Meter Accuracy: 98.0 % Assessment Scale: 4.5
24. Customer Meter Accuracy Loss: 16,175,347 gallons

# Water Losses

Water losses in the distribution system are categorized as either apparent or real loss.

System Input Volume
- Authorized Consumption
= Water Loss

# Apparent Loss

*Financial Losses - water that is lost that could have been sold.*
*Non-Revenue Water, Water Theft, Slow Meters and Billing Issues*

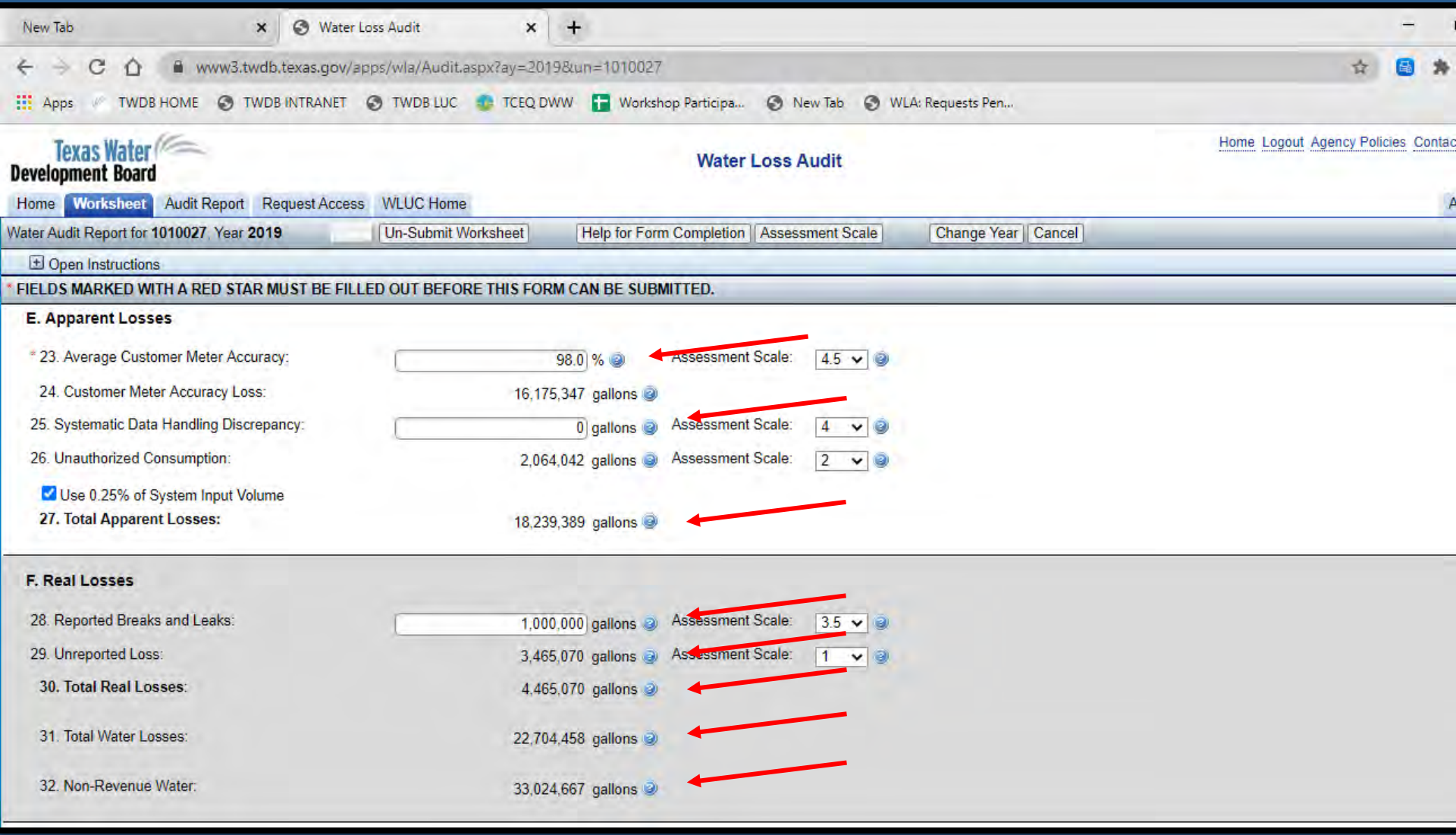
Unauthorized Consumption
\+ Customer Meter Inaccuracies
\+ Systematic Data handling Errors
= Apparent Loss

# Real Loss

*Physical Losses – water that enters the distribution system but never reaches a user. Leakage on transmission and distribution mains, storage tank overflows, and service line leak to customer meter.*

- *Non revenue water*

Water Loss
- Apparent Loss
= Real Loss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* FIELDS MARKED WITH A RED STAR MUST BE FILLED OUT BEFORE THIS FORM CAN BE SUBMITTED.
E. Apparent Losses
* 23. Average Customer Meter Accuracy: 98.0 % Assessment Scale: 4.5
24. Customer Meter Accuracy Loss: 16,175,347 gallons
25. Systematic Data Handling Discrepancy: 0 gallons Assessment Scale: 4
26. Unauthorized Consumption: 2,064,042 gallons Assessment Scale: 2
Use 0.25% of System Input Volume
27. Total Apparent Losses: 18,239,389 gallons
F. Real Losses
28. Reported Breaks and Leaks: 1,000,000 gallons Assessment Scale: 3.5
29. Unreported Loss: 3,465,070 gallons Assessment Scale: 1
30. Total Real Losses: 4,465,070 gallons
31. Total Water Losses: 22,704,458 gallons
32. Non-Revenue Water: 33,024,667 gallons

# Indicators

- Technical & Financial Performance Indicators
  - Quantitative measures of key aspects within your water system.
  - Use these indicators to develop history and track your performance from year to year.

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# Water Loss Audit

Home Logout Agency Policies Contac

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## G. Technical Performance Indicator for Apparent Loss

33. Apparent Losses Normalized: 8.09 gallons lost per connection per day

## H. Technical Performance Indicators for Real Loss

34. Real Loss Volume: 4,465,070 gallons

35. Unavoidable Annual Real Losses Volume: 25,691,489 gallons

36. Infrastructure Leakage Index: 0.17 I.L.I.

37. Real Losses Normalized - Service Connections: 1.98 gallons lost per connection per day

38. Real Losses Normalized - Main Lines: 0.00 gallons lost per mile per day

## I. Financial Performance Indicators

39. Total Apparent Losses: 18,239,389 gallons

* 40. Retail Price of Water: 0.00232 $ per gallon Assessment Scale: 3

41. Cost of Apparent Losses: $42,315

Texas Water Development Board

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Open Instructions

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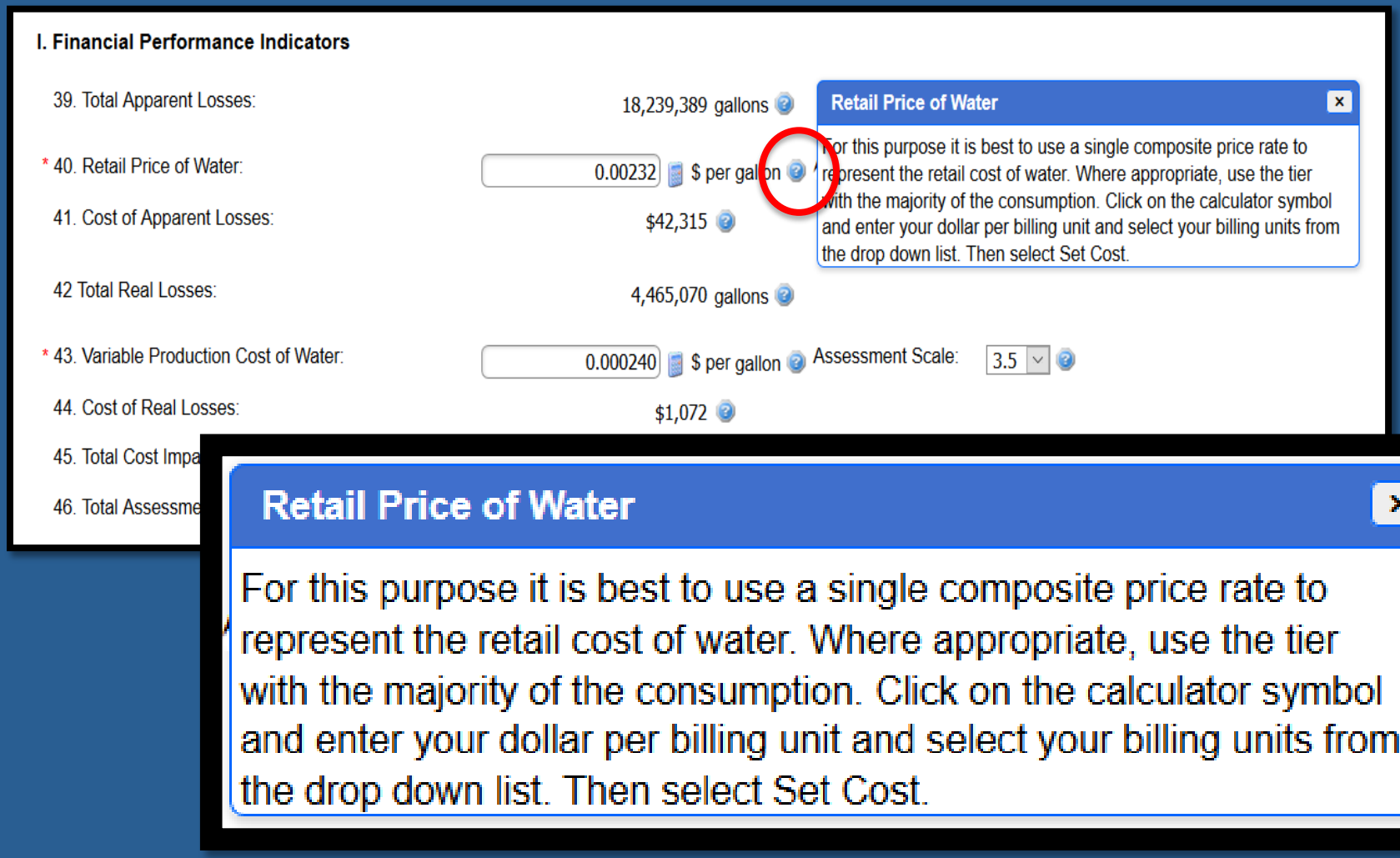
## I. Financial Performance Indicators

| | | | |
|---|---|---|---|
| 39. Total Apparent Losses: | 18,239,389 gallons | | |
| * 40. Retail Price of Water: | 0.00232 $ per gallon | Assessment Scale: | 3 |
| 41. Cost of Apparent Losses: | $42,315 | | |
| 42 Total Real Losses: | 4,465,070 gallons | | |
| * 43. Variable Production Cost of Water: | 0.000240 $ per gallon | Assessment Scale: | 3.5 |
| 44. Cost of Real Losses: | $1,072 | | |
| 45. Total Cost Impact of Apparent and Real Losses | $43,387 | | |
| 46. Total Assessment Score: | 67 | | |

## J. System Losses and Gallons Per Capita per Day (GPCD)


I. Financial Performance Indicators
39. Total Apparent Losses:
18,239,389 gallons
* 40. Retail Price of Water:
0.00232
$ per gallon
41. Cost of Apparent Losses:
$42,315
42 Total Real Losses:
4,465,070 gallons
* 43. Variable Production Cost of Water:
0.000240
$ per gallon
Assessment Scale:
3.5
44. Cost of Real Losses:
$1,072
45. Total Cost Impa
46. Total Assessme
Retail Price of Water
For this purpose it is best to use a single composite price rate to represent the retail cost of water. Where appropriate, use the tier with the majority of the consumption. Click on the calculator symbol and enter your dollar per billing unit and select your billing units from the drop down list. Then select Set Cost.
Retail Price of Water
For this purpose it is best to use a single composite price rate to represent the retail cost of water. Where appropriate, use the tier with the majority of the consumption. Click on the calculator symbol and enter your dollar per billing unit and select your billing units from the drop down list. Then select Set Cost.

# Water Loss Indicators

- Line 36 - Infrastructure Leakage Index: performance indicator used by large system > 3,000 connections.
- Lines 41 and Line 44 - Costs of Apparent (revenue) and Real Losses - $$ + $$
- Line 45 – Cost of Total Water Loss - $$$$
- Line 48 & 49 - GPCD (gallons per capita per day) becomes important if you are completing a Water Conservation Plan

If further assistance is needed contact WLA-Group@twdb.texas.gov or 512.463.0987.

* FIELDS MARKED WITH A RED STAR MUST BE FILLED OUT BEFORE THIS FORM CAN BE SUBMITTED.

## J. System Losses and Gallons Per Capita per Day (GPCD)

| | |
|---|---|
| 47. Total Water Loss per Connection per Day: | 10.07 gallons |
| 48. GPCD Input: | 151 |
| 49. GPCD Loss: | 4 |

## K. Wholesale Factor Adjustments

| | |
|---|---|
| 50. Percent of Treated Wholesale Water Traveling through General Distribution System: | 0.00 % |
| 51. Volume of Treated Wholesale Water Traveling through General Distribution System: | 0 |
| 52. Wholesale Factor: | 0.00 |
| 53. Adjusted Real Loss Volume: | 4,465,070 |
| 54. Adjusted Cost of Real Losses: | $1,072 |
| 55. Adjusted Total Water Loss Volume: | 22,704,458 |

# Performance Tracking - Total Water Loss Percentage

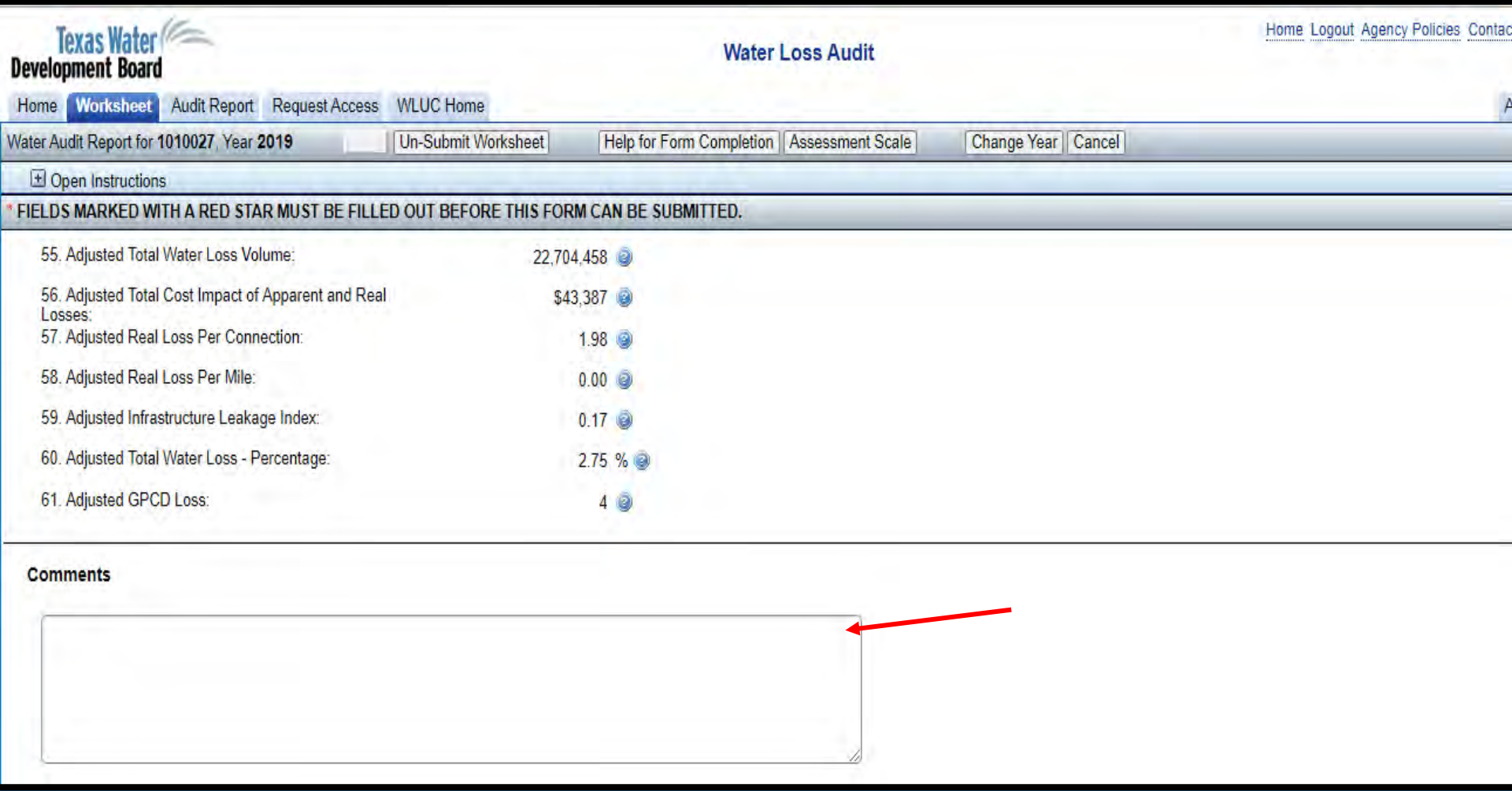
## City of Water vs. City of Ice

| Field on Audit | City of Water | City of Ice |
|---|---|---|
| Total System Input Volume | 2,000,000,000 gallons | 1,000,000,000 gallons |
| Total Authorized Consumption | 1,650,000,000 gallons | 825,000,000 gallons |
| **Total Water Loss** | **350,000,000 gallons** | **175,000,000 gallons** |
| **Percent of Water Loss** | **17.5%** | **17.5%** |
| Real Loss per Connection per Day | 56.7 gallons per connection per day | 79.4 gallons per connection per day |
| Apparent Loss per Connection per Day | 9.8 gallons per connection per day | 13.7 gallons per connection per day |
| Connections | 14,000 | 5,000 |
| Miles of Main Line | 215 | 100 |

# Performance Tracking - Total Water Loss Percentage

## City of Water

| Field on Audit | 2019 | 2020 |
|---|---|---|
| Total System Input Volume | 2,000,000,000 gallons | 2,100,000,000 gallons |
| Total Authorized Consumption | 1,650,000,000 gallons | 1,750,000,000 gallons |
| Total Water Loss | 350,000,000 gallons | 350,000,000 gallons |
| Percent of Water Loss | 17.5% | 16.7% |
| Real Loss per Connection per Day | 56.7 gallons per connection per day | 56.7 gallons per connections per day |
| Apparent Loss per Connection per Day | 9.8 gallons per connection per day | 9.8 gallons per connection per day |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* FIELDS MARKED WITH A RED STAR MUST BE FILLED OUT BEFORE THIS FORM CAN BE SUBMITTED.
55. Adjusted Total Water Loss Volume: 22,704,458
56. Adjusted Total Cost Impact of Apparent and Real Losses: $43,387
57. Adjusted Real Loss Per Connection: 1.98
58. Adjusted Real Loss Per Mile: 0.00
59. Adjusted Infrastructure Leakage Index: 0.17
60. Adjusted Total Water Loss - Percentage: 2.75 %
61. Adjusted GPCD Loss: 4
Comments

# Water Loss Audit - Common Data Issues

## Negative or Zero Values

- Total Water Loss
  - Sold more or same as put into the system
- Apparent Loss
  - Meters under-registering
- Real Loss
  - Apparent too high or,
  - Total water loss too low
- Unreported Loss
  - Reported breaks and leaks too high

# Water Loss Audit – Data Review

## Infrastructure Leakage Index

- I.L.I. below 1
- Not possible – obvious data issue

## Very High Water Loss

- Indicates a possible data issue

## Water Use Survey Errors

- Input=Billed
- Wrong Units
- Connections
- Affects water loss volume and performance indicators

## System Information Errors

- Main Lines or Pressure
- Creates error in performance indicators

# Water Loss Resources

- Troubleshooting, guidance, assessment scales, leak detection loan form, WUS and WLA checklist, monthly water loss report, and more:

- http://www.twdb.texas.gov/conservation/resources/waterloss-resources.asp

# Contacts

**Water Loss Audit**

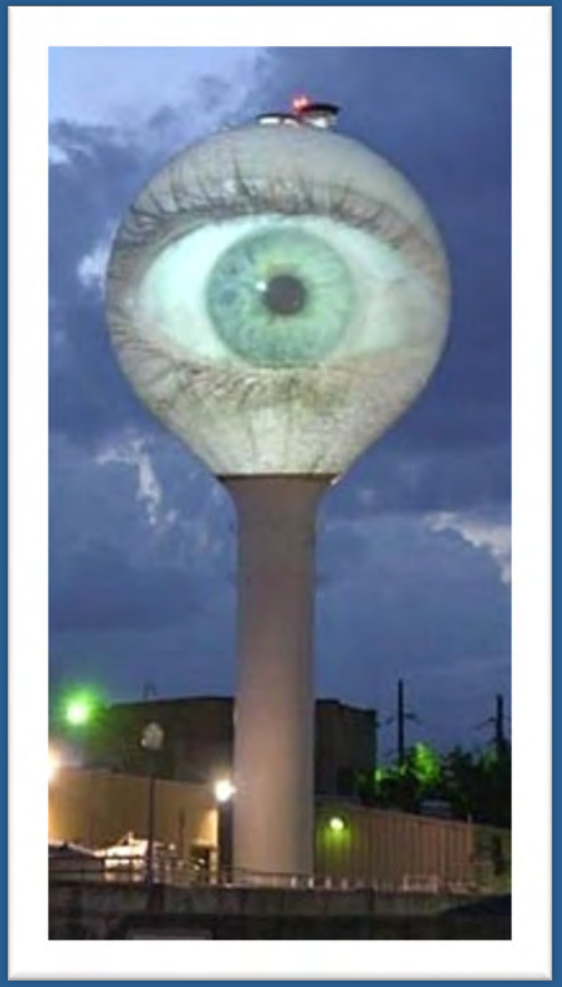
- **Mark Mathis**
- **512-463-0987**

**mark.mathis@twdb.texas.gov**

**John Sutton**

- **512-463-7988**

**john.sutton@twdb.texas.gov**



# Water Loss, Use, and Conservation (WLUC) Workshop

## Water Loss Audit – Part 2 - Assessments

Municipal Water Conservation

Texas Water Development Board (TWDB)

*Unless specifically noted, this presentation does not necessarily reflect official Board positions or decisions.*

# Assessment Scale Benefits

- Self-reported Assessments complete the WLA to determine how accurate your data is
- Consider your options and **take action**
- Also known as Water Loss Audit validation
- Bridge from WLA to Action to Conservation Plans

# Assessment Scales Tips

- Self-reported validation of the reported data
- Recommend completing after the water loss audit is done but before the final submittal
- No right or wrong answers
- Cover conditions during the reporting period

- Lower scores = less confidence in your water loss audit data
- Higher scores = greater confidence in your water loss data

- There are 20 assessment scales overall

Texas Water Development Board

**Water Loss Audit**

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Use the **Submit Worksheet** button to save your data and indicate that your form is completed and ready for TWDB review.

**IMPORTANT - Read this -** How to use the **Save, Submit Worksheet and Un-Submit Worksheet** buttons -->

If further assistance is needed contact WLA-Group@twdb.texas.gov or 512.463.0987.

*** FIELDS MARKED WITH A RED STAR MUST BE FILLED OUT BEFORE THIS FORM CAN BE SUBMITTED.**

| | | | |
|---|---|---|---|
| 5. Population Served: | | | |
| 5a. Retail Population Served: | 15,016 | | |
| 5b. Wholesale Population Served: | 0 | | |
| * 6. Utility's Length of Main Lines: | 53.00 miles | Assessment Scale: | 4 |
| * 7. Total Retail Metered Connections - Active and Inactive: | 6,179 | | |
| * 7b. Service Connections: | 6,179 | Assessment Scale: | 3 |
| 8. Number of Wholesale Connections Served: | 0 | | |
| 9. Service Connection Density: | 116.58 connections per mile | | |
| * 10. Average Yearly System Operating Pressure: | 58.00 psi | Assessment Scale: | 2 |
| 11. Volume Units of Measure: | gallons | | |

## B. System Input Volume

| | |
|---|---|
| 12. Volume of Water Intake: | 300,469,000 gallons |

| Component | Length of Main Lines Assessment Scale Table<br>Adapted from American Water Works Association Free Water Audit Software© | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SYSTEM DATA | 0.5 | 1 | 1.5 | 2 | 2.5 | 3 | 3.5 | 4 | 4.5 | 5 | N/A |
| *Line 6*<br>*Length of main lines, miles* | *Current condition:*<br>Poorly assembled and maintained paper as-built records of existing water main installations makes accurate determination of system pipe length impossible. Length of mains is estimated. | *Current condition:*<br>Paper records in poor or uncertain condition (no annual tracking of installations & abandonments). Poor procedures to ensure that new water mains installed by developers are accurately documented. | *Conditions between 1 and 2* | *Current condition:*<br>Sound written policy and procedures exist for documenting new water main installations, but gaps in management result in a uncertain degree of error in tabulation of mains length. | *Conditions between 2 and 3* | *Current condition:*<br>Sound written policy and procedures exist for permitting and commissioning new water mains. Highly accurate paper records with regular field validation; or electronic records and asset management system in good condition. Includes system backup. | *Conditions between 3 and 4* | *Current condition:*<br>Sound written policy and procedures exist for permitting and commissioning new water mains. Electronic recordkeeping such as a Geographical Information System (GIS) and asset management system are used to store and manage data. | *Conditions between 4 and 5* | *Current condition:*<br>Sound written policy exists for managing water mains extensions and replacements. Geographic Information System (GIS) data and asset management database agree and random field validation proves truth of databases. Records of annual field validation should be available for review. | Not a choice |
| *Improvements in quantifying the length of mains* | *To improve to 1:*<br>Assign personnel to inventory current as-built records and compare with customer billing system records and highway plans in order to verify poorly documented pipelines. Assemble policy documents regarding permitting and documentation of water main installations by the utility and building developers; identify gaps in procedures that result in poor | *To improve to 2:*<br>Complete inventory of paper records of water main installations for several years prior to audit year. Review policy and procedures for commissioning and documenting new water main installation. | | *To improve to 3:*<br>Finalize updates/improvements to written policy and procedures for permitting/commissioning new main installations. Confirm inventory of records for five years prior to audit year; correct any errors or omissions. | | *To improve to 4:*<br>Launch random field checks of limited number of locations. Convert to electronic database such as a Geographic Information System (GIS) with backup as justified. Develop written policy and procedures. | | *To improve to 5:*<br>Link Geographic Information System (GIS) and asset management databases, conduct field verification of data. Record field verification information at least annually. | | *To maintain a 5:*<br>Continue with standardization and random field validation to improve the completeness and accuracy of the system. | Not a choice |

| Component | Number of Retail Connections Assessment Scale Table<br>Adapted from American Water Works Association Free Water Audit Software© | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SYSTEM DATA | 0.5 | 1 | 1.5 | 2 | 2.5 | 3 | 3.5 | 4 | 4.5 | 5 | N/A |
| *Line 7 Number of retail connections, active and inactive*<br><br>*Value for Line 7 is populated from the Water Use Survey* | *Current condition:* Vague permitting (of new service connections) policy and poor paper recordkeeping of customer connections/billings result in suspect determination of the number of service connections, which may be 10-15% in error from actual count. | *Current condition:* General permitting policy exists but paper records, procedural gaps, and weak oversight result in questionable total for number of connections, which may vary 5-10% of actual count. | *Conditions between 1 and 2* | *Current condition:* Written account activation policy and procedures exist, but with some gaps in performance and oversight. Computerized information management system is being brought online to replace dated paper recordkeeping system. Reasonably accurate tracking of service connection installations & abandonments; but count can be up to 5% in error from actual total. | *Conditions between 2 and 3* | *Current condition:* Written new account activation and overall billing policies and procedures are adequate and reviewed periodically. Computerized information management system is in use with annual installations & abandonments totaled. Very limited field verifications and audits. Error in count of number of service connections is believed to be no more than 3%. | *Conditions between 3 and 4* | *Current condition:* Policies and procedures for new account activation and overall billing operations are written, well-structured and reviewed at least biannually. Well-managed computerized information management system exists and routine, periodic field checks and internal system audits are conducted. Counts of connections are no more than 2% in error. | *Conditions between 4 and 5* | *Current condition:* Sound written policy and well managed and audited procedures ensure reliable management of service connection population. Computerized information management system, Customer Billing System, and Geographic Information System (GIS) information agree; field validation proves truth of databases. Count of connections recorded as being in error is less than 1% of the entire population. | Not a choice |
| *Improvements in quantifying the number of retail connections, active and inactive* | *To improve to 1:* Draft new policy and procedures for new account activation and overall billing operations. Research and collect paper records of installations & abandonments for several years prior to audit year. | *To improve to 2:* Refine policy and procedures for new account activation and overall billing operations. Research computerized recordkeeping system (Customer Information System or Customer Billing System) to improve documentation format for service connections. | | *To improve to 3:* Refine procedures to ensure consistency with new account activation and overall billing policy to establish new service connections or decommission existing connections. Improve process to include all totals for at least five years prior to audit year. | | *To improve to 4:* Formalize regular review of new account activation and overall billing operations policies and procedures. Launch random field checks of limited number of locations. Develop reports and auditing mechanisms for computerized information management system. | | *To improve to 5:* Close any procedural loopholes that allow installations to go undocumented. Link computerized information management system with Geographic Information System (GIS) and formalize field inspection and information system auditing processes. Documentation of new or decommissioned service connections encounters several levels of checks and balances. | | *To maintain a 5:* Continue with standardization and random field validation to improve knowledge of system. | Not a choice |

| Component | Average Yearly System Operating Pressure Assessment Scale Table<br>Adapted from American Water Works Association Free Water Audit Software© | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SYSTEM DATA | 0.5 | 1 | 1.5 | 2 | 2.5 | 3 | 3.5 | 4 | 4.5 | 5 | N/A |
| *Line 10 Average yearly system operating pressure* | *Current condition:* Available records are poorly assembled and maintained paper records of supply pump characteristics and water distribution system operating conditions. Average pressure is estimated based upon this information and ground elevations from crude topographical maps. Widely varying distribution system pressures due to undulating terrain, high system head loss and weak/erratic pressure controls further compromise the validity of the average pressure calculation. | *Current condition:* Limited telemetry monitoring of scattered pumping station and water storage tank sites provides some static pressure data, which is recorded in handwritten logbooks. Pressure data is gathered at individual sites only when low pressure complaints arise. Average pressure is determined by averaging relatively crude data, and is affected by significant variation in ground elevations, system head loss and gaps in pressure controls in the distribution system. | *Conditions between 1 and 2* | *Current condition:* Effective pressure controls separate different pressure zones; moderate pressure variation across the system, occasional open boundary valves are discovered that breech pressure zones. Basic telemetry monitoring of the distribution system logs pressure data electronically. Pressure data gathered by gauges or dataloggers at fire hydrants or buildings when low pressure complaints arise, and during fire flow tests and system flushing. Reliable topographical data exists. Average pressure is calculated using this mix of data. | *Conditions between 2 and 3* | *Current condition:* Reliable pressure controls separate distinct pressure zones; only very occasional open boundary valves are encountered that breech pressure zones. Well-covered telemetry monitoring of the distribution system (not just pumping at source treatment plants or wells) logs extensive pressure data electronically. Pressure gathered by gauges/dataloggers at fire hydrants and buildings when low pressure complaints arise, and during fire flow tests and system flushing. Average pressure is determined by using this mix of reliable data. | *Conditions between 3 and 4* | *Current condition:* Well-managed, discrete pressure zones exist with generally predictable pressure fluctuations. A current full-scale SCADA System or similar realtime monitoring system exists to monitor the water distribution system and collect data, including real time pressure readings at representative sites across the system. The average system pressure is determined from reliable monitoring system data. | *Conditions between 4 and 5* | *Current condition:* Well-managed pressure districts/zones, SCADA System and hydraulic model exist to give very precise pressure data across the water distribution system. Average system pressure is reliably calculated from extensive, reliable, and cross-checked data. Calculations are reported on an annual basis as a minimum. | Not a choice |
| *Improvements in quantifying the average* | *To improve to 1:* Employ pressure gauging and/or datalogging equipment to obtain pressure measurements from fire hydrants. Locate accurate topographical maps of service area in | *To improve to 2:* Formalize a procedure to use pressure gauging/datalogging equipment to gather pressure data during various system events such as low pressure complaints, or operational testing. Gather pump pressure and flow data at different flow regimes. Identify faulty pressure controls (pressure reducing valves, altitude valves, partially open boundary valves) and plan | | *To improve to 3:* Expand the use of pressure gauging/datalogging equipment to gather scattered pressure data at a representative set of sites, based upon pressure zones or areas. Utilize pump pressure and flow data to determine supply head entering each pressure zone or district. Correct any faulty pressure controls (pressure reducing valves | | *To improve to 4:* Install a Supervisory Control and Data Acquisition (SCADA) System, or similar realtime monitoring system, to monitor system parameters and control operations. Set regular calibration schedule for instrumentation to insure data accuracy. Obtain accurate topographical data and utilize pressure data gathered from field surveys to | | *To improve to 5:* Annually, obtain a system-wide average pressure value from the hydraulic model of the distribution system that has been calibrated via field measurements in the water distribution system and confirmed in comparisons with SCADA System data. | | *To maintain a 5:* Continue to refine the hydraulic model of the distribution system and consider linking it with SCADA System for real-time pressure data calibration, and averaging. | Not a choice |

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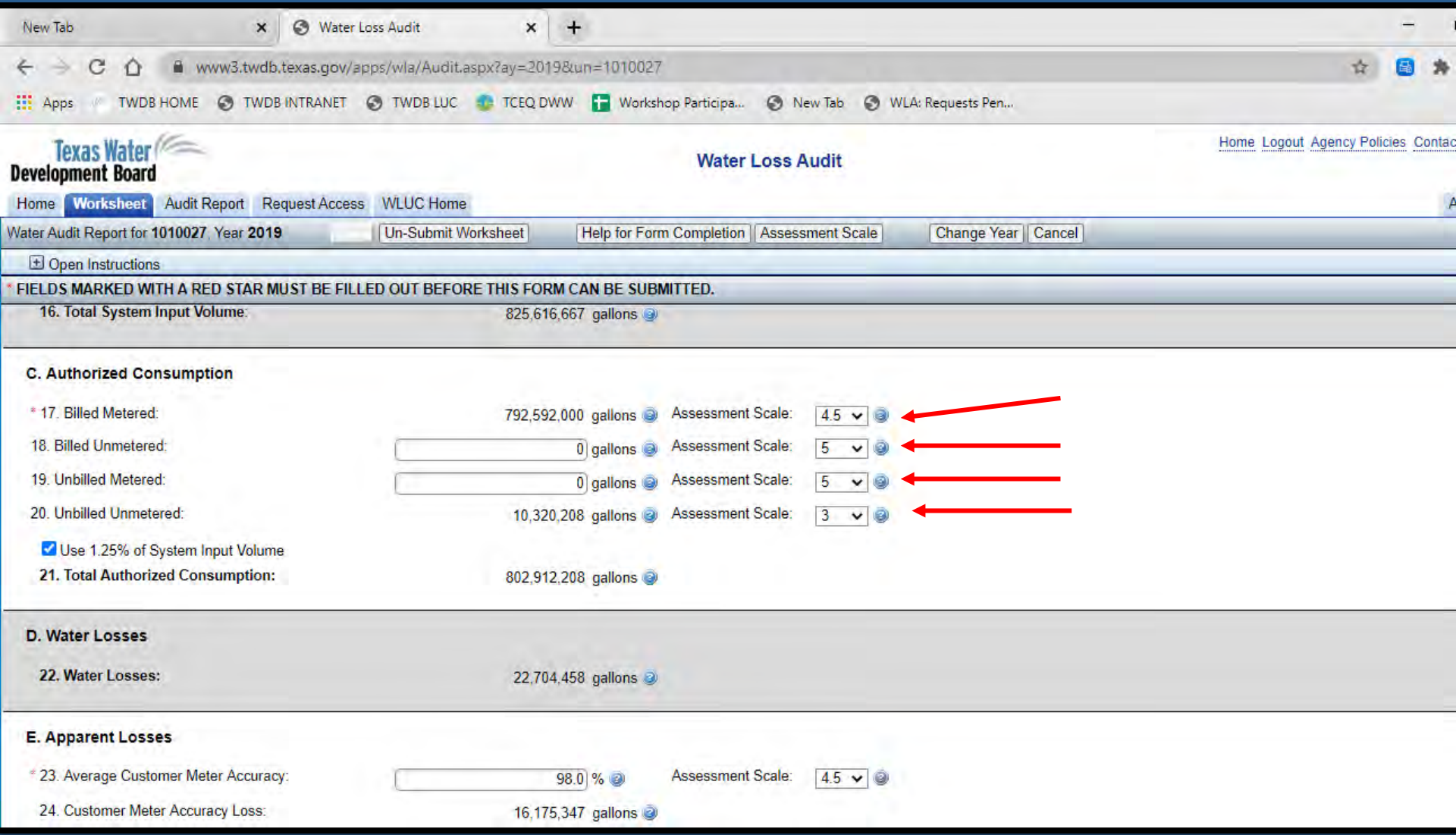
## B. System Input Volume

| | | | | |
|---|---|---|---|---|
| 12. Volume of Water Intake: | 300,469,000 gallons | | | |
| * 13. Produced Water: | 300,469,000 | | Assessment Scale: | 4 |
| 13a. Production Meter Accuracy: | 96.0 % | | Assessment Scale: | 1 |
| 13b. Corrected Input Volume: | 312,988,542 gallons | | | |
| 14. Total Treated Purchased Water: | 492,123,000 gallons | | Assessment Scale: | 1 |
| 14a. Treated Purchased Water Meter Accuracy: | 96.0 % | | Assessment Scale: | 3 |
| 14b. Corrected Treated Purchased Water Volume: | 512,628,125 gallons | | | |
| 15. Total Treated Wholesale Water Sales: | 0 gallons | | Assessment Scale: | N/A |
| 15a. Treated Wholesale Water Meter Accuracy: | 0.0 % | | Assessment Scale: | N/A |
| 15b. Corrected Treated Wholesale Water Sales Volume: | 0 gallons | | | |
| **16. Total System Input Volume:** | 825,616,667 gallons | | | |

## C. Authorized Consumption

| Component | Produced Water Assessment Scale Table<br>Adapted from American Water Works Association Free Water Audit Software© | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WATER SUPPLIED | 0.5 | 1 | 1.5 | 2 | 2.5 | 3 | 3.5 | 4 | 4.5 | 5 | |
| *Line 13 Produced water (volume of treated water entering distribution system from own sources)* | *Current condition:* Less than 25% of water production sources are metered, remaining sources are estimated. No regular meter accuracy testing or electronic calibration conducted. | *Current condition:* 25% - 50% of treated water production sources are metered; other sources estimated. No regular meter accuracy testing or electronic calibration conducted. | *Conditions between 1 and 2* | *Current condition:* 50% - 75% of treated water production sources are metered, other sources estimated. Occasional meter accuracy testing or electronic calibration conducted. | *Conditions between 2 and 3* | *Current condition:* At least 75% of treated water production sources are metered, or at least 90% of the source flow is derived from metered sources. Meter accuracy testing and/or electronic calibration of related instrumentation is conducted annually. Less than 25% of tested meters are found outside of +/- 6% accuracy. | *Conditions between 3 and 4* | *Current condition:* 100% of treated water production sources are metered, meter accuracy testing and electronic calibration of related instrumentation is conducted annually, less than 10% of meters are found outside of +/- 6% accuracy. | *Conditions between 4 and 5* | *Current condition:* 100% of treated water production sources are metered, meter accuracy testing and electronic calibration of related instrumentation is conducted semi-annually, with less than 10% found outside of +/- 3% accuracy. Procedures are reviewed by a third party knowledgeable in the M36 methodology. | Sele the p imp wat (i so |
| *Improvements in quantifying produced water volume* | *To improve to 1:* Organize and launch efforts to collect data for determining volume from own sources | *To improve to 2:* Locate all water production sources on maps and in the field, launch meter accuracy testing for existing meters, begin to install meters on unmetered water production sources and replace any obsolete/defective meters. | | *To improve to 3:* Formalize annual meter accuracy testing for all source meters; specify the frequency of testing. Complete installation of meters on unmetered water production sources and complete replacement of all obsolete/defective meters. | | *To improve to 4:* Conduct annual meter accuracy testing and calibration of related instrumentation on all meter installations on a regular basis. Complete project to install new, or replace defective existing, meters so that entire production meter population is metered. Repair or replace meters outside of +/- 6% accuracy. | | *To improve to 5:* Maintain annual meter accuracy testing and calibration of related instrumentation for all meter installations. Repair or replace meters outside of +/- 3% accuracy. Investigate new meter technology; pilot one or more replacements with innovative meters in attempt to further improve meter accuracy. | | *To maintain a 5:* Standardize meter accuracy test frequency to semi-annual, or more frequent, for all meters. Repair or replace meters outside of +/- 3% accuracy. Continually investigate/pilot improving metering technology. | |

| Component | Adapted from American Water Works Association Free Water Audit Software© | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WATER SUPPLIED | 0.5 | 1 | 1.5 | 2 | 2.5 | 3 | 3.5 | 4 | 4.5 | 5 | N/A |
| *Line 13a Production meter accuracy* | *Current condition:* Inventory information on meters and paper records of measured volumes exist but are incomplete and/or in a very crude condition; data error cannot be determined | *Current condition:* No automatic datalogging of production volumes; daily readings are scribed on paper records without any accountability controls. Flows are not balanced across the water distribution system: tank/storage elevation changes are not employed in calculating the "Volume from own sources" component and archived flow data is adjusted only when grossly evident data error occurs. | *Conditions between 1 and 2* | *Current condition:* Production meter data is logged automatically in electronic format and reviewed at least on a monthly basis with necessary corrections implemented. "Volume from own sources" tabulations include estimate of daily changes in tanks/storage facilities. Meter data is adjusted when gross data errors occur, or occasional meter testing deems this necessary. | *Conditions between 2 and 3* | *Current condition:* Hourly production meter data logged automatically & reviewed on at least a weekly basis. Data is adjusted to correct gross error when meter/instrumentation equipment malfunction is detected; and/or error is confirmed by meter accuracy testing. Tank/storage facility elevation changes are automatically used in calculating a balanced "Volume from own sources" component, and data gaps in the archived data are corrected on at least a weekly basis. | *Conditions between 3 and 4* | *Current condition:* Continuous production meter data is logged automatically & reviewed each business day. Data is adjusted to correct gross error from detected meter/instrumentation equipment malfunction and/or results of meter accuracy testing. Tank/storage facility elevation changes are automatically used in "Volume from own sources" tabulations and data gaps in the archived data are corrected on a daily basis. | *Conditions between 4 and 5* | *Current condition:* Computerized system (SCADA or similar) automatically balances flows from all sources and storages; results are reviewed each business day. Tight accountability controls ensure that all data gaps that occur in the archived flow data are quickly detected and corrected. Regular calibrations between SCADA and sources meters ensures minimal data transfer error. | Select n/a only if the water utility fails to have meters on its sources of supply AND did not provide a volume for Line 13. |
| *Improvements to production meter accuracy* | *To improve to 1:* Develop a plan to restructure recordkeeping system to capture all flow data; set a procedure to review flow data on a daily basis to detect input errors. Obtain more reliable information about existing meters by conducting field inspections of meters and related instrumentation, and obtaining | *To improve to 2:* Install automatic datalogging equipment on production meters. Complete installation of level instrumentation at all tanks/storage facilities and include tank level data in automatic calculation routine in a computerized system. Construct a computerized listing or spreadsheet to archive input volumes, tank/storage volume changes and import/export flows in order to determine the composite "Water Supplied" volume for the distribution system. Set a procedure to review this data on a monthly basis to detect gross anomalies and data gaps. | | *To improve to 3:* Refine computerized data collection and archive to include hourly production meter data that is reviewed at least on a weekly basis to detect specific data anomalies and gaps. Use daily net storage change to balance flows in calculating "Water Supplied" volume. Necessary corrections to data errors are implemented on a weekly basis. | | *To improve to 4:* Ensure that all flow data is collected and archived on at least an hourly basis. All data is reviewed and detected errors corrected each business day. Tank/storage levels variations are employed in calculating balanced "Water Supplied" component. Adjust production meter data for gross error and inaccuracy confirmed by testing. | | *To improve to 5:* Link all production and tank/storage facility elevation change data to a Supervisory Control & Data Acquisition (SCADA) System, or similar computerized monitoring/control system, and establish automatic flow balancing algorithm and regularly calibrate between SCADA and source meters. Data is reviewed and corrected each business day. | | *To maintain a 5:* Monitor meter innovations for development of more accurate and less expensive flowmeters. Continue to replace or repair meters as they perform outside of desired accuracy limits. Stay abreast of new and more accurate water level instruments to better record tank/storage levels and archive the variations in storage | |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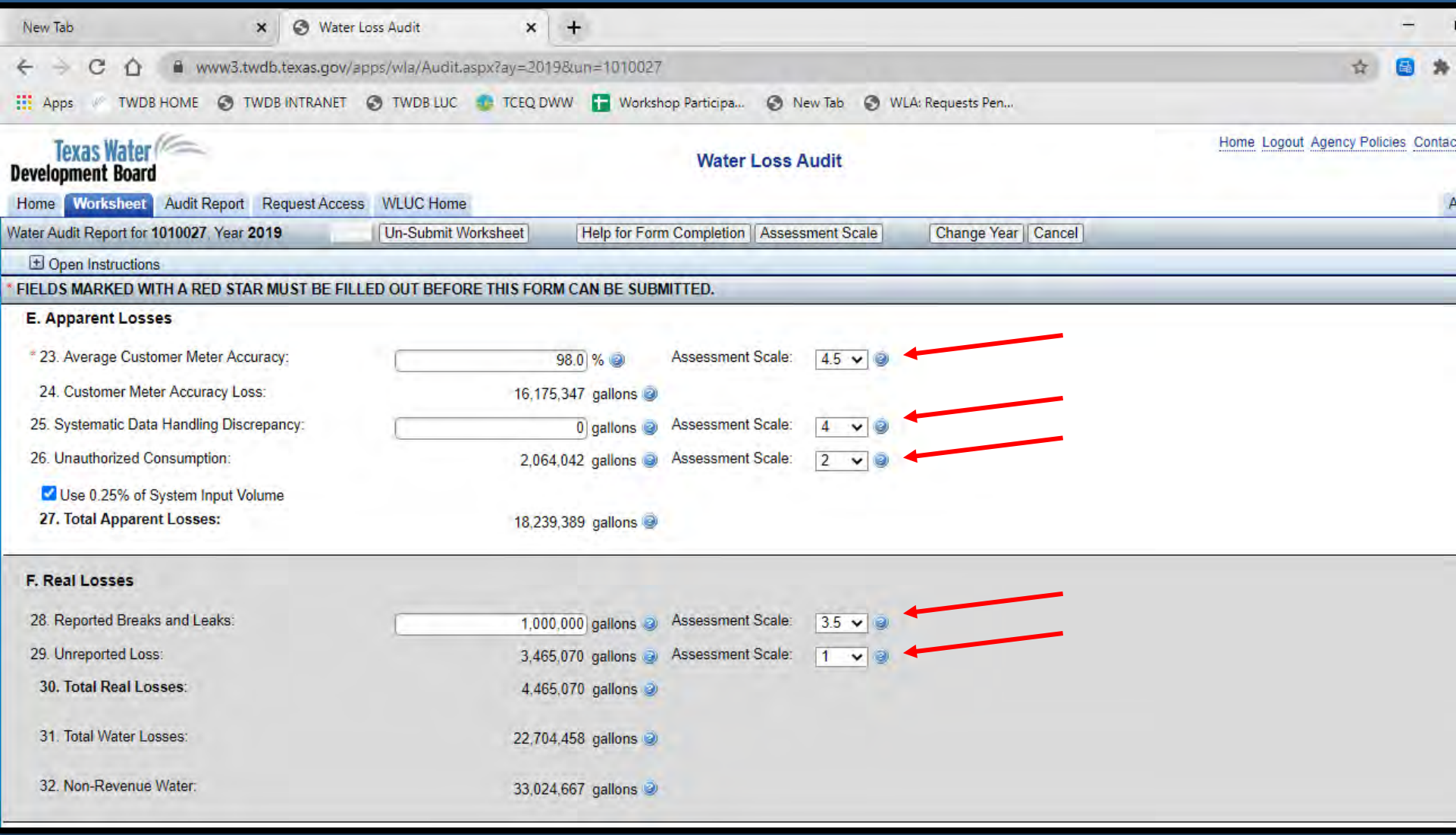
* FIELDS MARKED WITH A RED STAR MUST BE FILLED OUT BEFORE THIS FORM CAN BE SUBMITTED.
16. Total System Input Volume: 825,616,667 gallons
C. Authorized Consumption
* 17. Billed Metered: 792,592,000 gallons Assessment Scale: 4.5
18. Billed Unmetered: 0 gallons Assessment Scale: 5
19. Unbilled Metered: 0 gallons Assessment Scale: 5
20. Unbilled Unmetered: 10,320,208 gallons Assessment Scale: 3
Use 1.25% of System Input Volume
21. Total Authorized Consumption: 802,912,208 gallons
D. Water Losses
22. Water Losses: 22,704,458 gallons
E. Apparent Losses
* 23. Average Customer Meter Accuracy: 98.0 % Assessment Scale: 4.5
24. Customer Meter Accuracy Loss: 16,175,347 gallons

| Component | Billed Metered Assessment Scale Table<br>Adapted from American Water Works Association Free Water Audit Software© | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| AUTHORIZED CONSUMPTION | 0.5 | 1 | 1.5 | 2 | 2.5 | 3 | 3.5 | 4 | 4.5 | 5 | N/A |
| *Line 17 Billed metered*<br><br>*Volume for Line 17 is populated from the Water Use Survey* | *Current condition:* Less than 50% of customers with volume-based billings from meter readings; flat or fixed rate billing exist for the majority of the customer population. | *Current condition:* At least 50% of customers with volume-based billing from meter reads; flat rate billing for others. Manual meter reading is conducted, with less than 50% meter read success rate, remaining accounts' consumption is estimated. Limited meter records, no regular meter testing or replacement. Billing data maintained on paper records, with no auditing. | *Conditions between 1 and 2* | *Current condition:* At least 75% of customers with volume-based, billing from meter reads; flat or fixed rate billing for remaining accounts. Manual meter reading is conducted with at least 50% meter read success rate; consumption for accounts with failed reads is estimated. Purchase records verify age of customer meters; only very limited meter accuracy testing is conducted. Customer meters are replaced only upon complete failure. Computerized billing records exist, but only sporadic internal auditing conducted. | *Conditions between 2 and 3* | *Current condition:* At least 90% of customers with volume-based billing from meter reads; consumption for remaining accounts is estimated. Manual customer meter reading gives at least 80% customer meter reading success rate; consumption for accounts with failed reads is estimated. Good customer meter records exist, but only limited meter accuracy testing is conducted. Regular replacement is conducted for the oldest meters. Computerized billing records exist with annual auditing of summary statistics conducting by utility personnel. | *Conditions between 3 and 4* | *Current condition:* At least 97% of customers exist with volume-based billing from meter reads. At least 90% customer meter reading success rate; or at least 80% read success rate with planning and budgeting for trials of Automatic Meter Reading (AMR) or Advanced Metering Infrastructure (AMI) in one or more pilot areas. Good customer meter records. Regular meter accuracy testing guides replacement of statistically significant number of meters each year. Routine auditing of computerized billing records for global and detailed statistics occurs annually by utility personnel, and is verified by third party at least once every five years. | *Conditions between 4 and 5* | *Current condition:* At least 99% of customers exist with volume-based billing from meter reads. At least 95% customer meter reading success rate; or minimum 80% meter reading success rate, with Automatic Meter Reading (AMR) or Advanced Metering Infrastructure (AMI) trials underway. Statistically significant customer meter testing and replacement program in place on a continuous basis. Computerized billing with routine, detailed auditing, including field investigation of representative sample of accounts undertaken annually by utility personnel. Audit is conducted by third party auditors at least once every three years. | Not a choice |
| *Improvements in quantifying volume of billed* | *To improve to 1:* Conduct investigations or trials of customer meters to select appropriate meter models. Budget funding for meter installations. Investigate volume based water rate structures. | *To improve to 2:* Purchase and install meters on unmetered accounts. Implement policies to improve meter reading success. Catalog meter information during meter read visits to identify age/model of existing meters. Test a minimal number of meters for accuracy. Install computerized billing system. | | *To improve to 3:* Purchase and install meters on unmetered accounts. Eliminate flat fee billing and establish appropriate water rate structure based upon measured consumption. Continue to achieve verifiable success in removing manual meter reading barriers. Expand meter accuracy testing. Launch regular meter replacement program. Launch a program of annual auditing of global billing statistics by utility personnel. | | *To improve to 4:* Purchase and install meters on unmetered accounts. If customer meter reading success rate is less than 97%, assess cost-effectiveness of Automatic Meter Reading (AMR) or Advanced Metering Infrastructure (AMI) system for portion or entire system; or otherwise achieve ongoing improvements in manual meter reading success rate to 97% or higher. Refine meter accuracy testing program. Set meter replacement goals based upon accuracy test results. | | *To improve to 5:* Purchase and install meters on unmetered accounts. Launch Automatic Meter Reading (AMR) or Advanced Metering Infrastructure (AMI) system trials if manual meter reading success rate of at least 99% is not achieved within a five-year program. Continue meter accuracy testing program. Conduct planning and budgeting for large scale meter replacement based upon meter life cycle analysis using cumulative flow target. Continue annual detailed billing data auditing by utility personnel and | | *To maintain a 5:* Continue annual internal billing data auditing, and third party auditing at least every three years. Continue customer meter accuracy testing to ensure that accurate customer meter readings are obtained and entered as the basis for volume based billing. Stay abreast of improvements in | Not a choice |

| Component | Unbilled Unmetered Assessment Scale Table<br>Adapted from American Water Works Association Free Water Audit Software© | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| AUTHORIZED CONSUMPTION | 0.5 | 1 | 1.5 | 2 | 2.5 | 3 | 3.5 | 4 | 4.5 | 5 | N/A |
| *Line 20 Unbilled unmetered* | *Current condition:* Extent of unbilled, unmetered consumption is unknown due to unclear policies and poor recordkeeping. Total consumption is quantified based upon a purely subjective estimate. | *Current condition:* Clear extent of unbilled, unmetered consumption is unknown, but a number of events are randomly documented each year, confirming existence of such consumption, but without sufficient documentation to quantify an accurate estimate of the annual volume consumed. | *Conditions between 1 and 2* | *Current condition:* Extent of unbilled, unmetered consumption is partially known, and procedures exist to document certain events such as miscellaneous fire hydrant uses. Formulae are used to quantify the consumption from such events (time running multiplied by typical flowrate, multiplied by number of events). | Default value of 1.25% of system input volume is employed. | *Current condition:* Coherent policies exist for some forms of unbilled, unmetered consumption but others await closer evaluation. Reasonable recordkeeping for the managed uses exists and allows for annual volumes to be quantified by inference, but unsupervised uses are estimated. | *Conditions between 3 and 4* | *Current condition:* Clear policies and good recordkeeping exist for some uses (ex: water used in periodic testing of unmetered fire connections), but other uses (ex: miscellaneous uses of fire hydrants) have limited oversight. Total consumption is a mix of well quantified use such as from formulae (time running multiplied by typical flow, multiplied by number of events) or temporary meters, and relatively subjective estimates of less regulated use. | *Conditions between 4 and 5* | *Current condition:* Clear policies exist to identify permitted use of water in unbilled, unmetered fashion, with the intention of minimizing this type of consumption. Good records document each occurrence and consumption is quantified via formulae (time running multiplied by typical flow, multiplied by number of events) or use of temporary meters. | Not a choice |
| *Improvements in quantifying volume of unbilled unmetered consumption* | *To improve to 2.5:* Utilize the accepted default value of 1.25% of the volume of water supplied as an expedient means to gain a reasonable quantification of this use.<br><br>*To improve to 1:* Establish a policy regarding what water uses should be allowed to remain as unbilled and unmetered. | To improve to 2.5: Utilize the accepted default value of 1.25% of the volume of water supplied as an expedient means to gain a reasonable quantification of this use.<br><br>*To improve to 2:* Evaluate the documentation of events that have been observed. Meet with user groups (ex: for fire hydrants - fire departments, contractors to ascertain their need and/or volume requirements for water from fire hydrants). | | *To improve to 2.5:* Utilize accepted default value of 1.25% of the volume of water supplied as an expedient means to gain a reasonable quantification of all such use. This is particularly appropriate for water utilities that are in the early stages of the water auditing process, and should focus on other | *To improve to 3:* Finalize policy and begin to conduct field checks to better establish and quantify such usage. Proceed if top-down audit exists and/or a great volume of such use is suspected. | *To improve to 4:* Assess water utility policy and procedures for various unmetered usages. For example, ensure that a policy exists and permits are issued for use of fire hydrants by persons outside of the utility. Create written procedures for use and documentation of fire hydrants by water utility personnel. Use same approach for other types of unbilled, unmetered water usage. | | *To improve to 5:* Refine written procedures to ensure that all uses of unbilled, unmetered water are overseen by a structured permitting process managed by water utility personnel. Reassess policy to determine if some of these uses have value in being converted to billed and/or metered status. | | *To maintain a 5:* Continue to refine policy and procedures with intention of reducing the number of allowable uses of water in unbilled and unmetered fashion. Any uses that can feasibly become billed and metered should be converted eventually. | Not a choice |

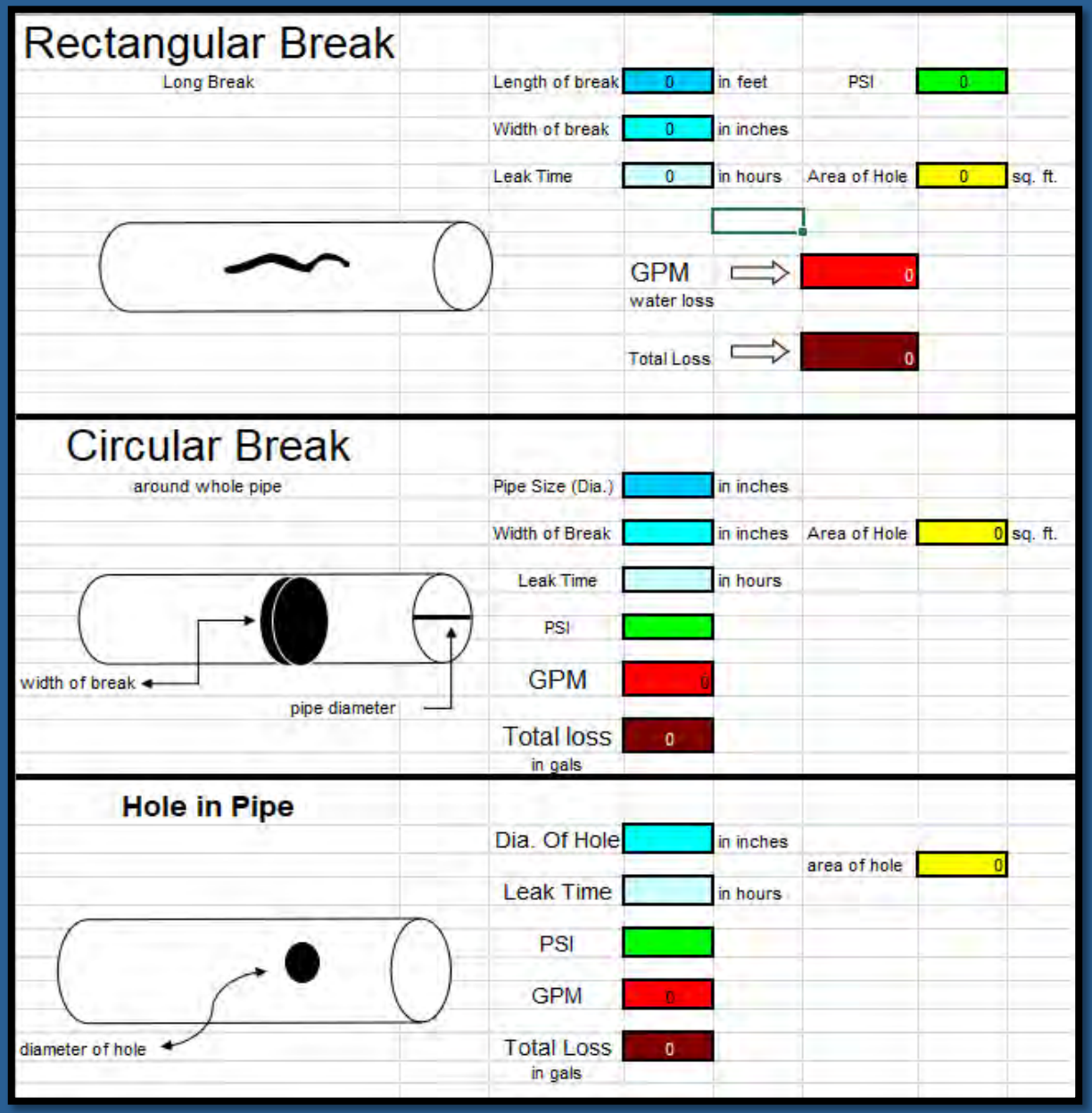

New Tab
Water Loss Audit
www3.twdb.texas.gov/apps/wla/Audit.aspx?ay=2019&un=1010027
Apps
TWDB HOME
TWDB INTRANET
TWDB LUC
TCEQ DWW
Workshop Participa...
New Tab
WLA: Requests Pen...
Texas Water Development Board
Water Loss Audit
Home Logout Agency Policies Contac
Home
Worksheet
Audit Report
Request Access
WLUC Home
Water Audit Report for 1010027, Year 2019
Un-Submit Worksheet
Help for Form Completion
Assessment Scale
Change Year
Cancel
Open Instructions
* FIELDS MARKED WITH A RED STAR MUST BE FILLED OUT BEFORE THIS FORM CAN BE SUBMITTED.
E. Apparent Losses
* 23. Average Customer Meter Accuracy: 98.0 % Assessment Scale: 4.5
24. Customer Meter Accuracy Loss: 16,175,347 gallons
25. Systematic Data Handling Discrepancy: 0 gallons Assessment Scale: 4
26. Unauthorized Consumption: 2,064,042 gallons Assessment Scale: 2
Use 0.25% of System Input Volume
27. Total Apparent Losses: 18,239,389 gallons
F. Real Losses
28. Reported Breaks and Leaks: 1,000,000 gallons Assessment Scale: 3.5
29. Unreported Loss: 3,465,070 gallons Assessment Scale: 1
30. Total Real Losses: 4,465,070 gallons
31. Total Water Losses: 22,704,458 gallons
32. Non-Revenue Water: 33,024,667 gallons

| Component | Adapted from American Water Works Association Free Water Audit Software© | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| APPARENT LOSSES | 0.5 | 1 | 1.5 | 2 | 2.5 | 3 | 3.5 | 4 | 4.5 | 5 | N/A |
| *Line 23 Average customer meter accuracy* | *Current condition:* Customer meters exist, but with unorganized paper records on meters; no meter accuracy testing or meter replacement program for any size of retail meter. Metering workflow is driven chaotically with no proactive management. Loss volume due to aggregate meter inaccuracy is estimated. | *Current condition:* Poor recordkeeping and meter oversight is recognized by water utility management who has allotted staff and funding resources to organize improved recordkeeping and start meter accuracy testing. Existing paper records gathered and organized to provide cursory disposition of meter population. Customer meters are tested for accuracy only upon customer request. | *Conditions between 1 and 2* | *Current condition:* Reliable recordkeeping exists; meter information is improving as meters are replaced. Meter accuracy testing is conducted annually for a small number of meters (more than just customer requests, but less than 1% of inventory). A limited number of the oldest meters are replaced each year. Inaccuracy volume is largely an estimate, but refined based upon limited testing data. | *Conditions between 2 and 3* | *Current condition:* A reliable electronic recordkeeping system for meters exists. The meter population includes a mix of new high performing meters and dated meters with suspect accuracy. Routine, but limited, meter accuracy testing and meter replacement occur. Inaccuracy volume is quantified using a mix of reliable and less certain data. | *Conditions between 3 and 4* | *Current condition:* Ongoing meter replacement and accuracy testing result in highly accurate customer meter population. Testing is conducted on samples of meters of varying age and accumulated volume of throughput to determine optimum replacement time for various types of meters. | *Current condition:* Ongoing meter replacement and accuracy testing result in highly accurate customer meter population. Statistically significant number of meters are tested in audit year. This testing is conducted on samples of meters of varying age and accumulated volume of throughput to determine optimum replacement time for these meters. | *Current condition:* Good records of all active customer meters exist and include as a minimum: meter number, account number/location, type, size and manufacturer. Ongoing meter replacement occurs according to a targeted and justified basis. Regular meter accuracy testing gives a reliable measure of composite inaccuracy volume for the customer meter population. New metering technology is embraced to keep overall accuracy improving. Procedures are reviewed by a third party knowledgeable in the M36 methodology. | Not a choice |
| *Improvements to average customer meter accuracy* | *To improve to 1:* Gather available meter purchase records. Conduct testing on a small number of meters believed to be the most inaccurate. Review staffing needs of the metering group and budget for necessary resources to better organize meter | *To improve to 2:* Implement a reliable record keeping system for customer meter histories, preferably using electronic methods typically linked to, or part of, the Customer Billing System or Customer Information System. Expand meter accuracy testing to a larger group of meters. | | *To improve to 3:* Standardize the procedures for meter recordkeeping within an electronic information system. Accelerate meter accuracy testing and meter replacements guided by testing results. | | *To improve to 4:* Expand annual meter accuracy testing to evaluate a statistically significant number of meter makes/models. Expand meter replacement program to replace statistically significant number of poor performing meters each year. | | *To improve to 4.5:* Continue efforts to manage meter population with reliable recordkeeping. Test a statistically significant number of meters each year and analyze test results in an ongoing manner to serve as a basis for a target meter | *To improve to 5:* Continue efforts to manage meter population with reliable recordkeeping, meter testing and replacement. Evaluate new meter types and install one or more types in 5-10 | *To maintain a 5:* Increase the number of meters tested and replaced as justified by meter accuracy test data. Continually monitor development of new metering technology and Advanced Metering Infrastructure (AMI) to grasp opportunities for | Not a choice |

| Component | Systematic Data Handling Discrepancy Assessment Scale Table<br>Adapted from American Water Works Association Free Water Audit Software© | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| APPARENT LOSSES | 0.5 | 1 | 1.5 | 2 | 2.5 | 3 | 3.5 | 4 | 4.5 | 5 | N/A |
| *Line 25 Systematic data handling discrepancy* | *Current condition:* Policies and procedures for activation of new customer water billing accounts are vague and lack accountability. Billing data is maintained on paper records which are not well organized. No auditing is conducted to confirm billing data handling efficiency. An unknown number of customers escape routine billing due to lack of billing process oversight. | *Current condition:* Policy and procedures for activation of new customer accounts and oversight of billing records exist but need refinement. Billing data is maintained on paper records or insufficiently capable electronic database. Only periodic unstructured auditing work is conducted to confirm billing data handling efficiency. The volume of unbilled water due to billing lapses is a guess. | *Conditions between 1 and 2* | *Current condition:* Policy and procedures for new account activation and oversight of billing operations exist but needs refinement. Computerized billing system exists, but is dated or lacks needed functionality. Periodic, limited internal audits conducted and confirm with approximate accuracy the consumption volumes lost to billing lapses. | Default value of 0.25% of volume of billed and metered water is employed. | *Current condition:* Policy and procedures for new account activation and oversight of billing operations is adequate and reviewed periodically. Computerized billing system is in use with basic reporting available. Any effect of billing adjustments on measured consumption volumes is well understood. Internal checks of billing data error conducted annually. Reasonably accurate quantification of consumption volume lost to billing lapses is obtained. | *Conditions between 3 and 4* | *Current condition:* New account activation and billing operations policy and procedures are reviewed at least biannually. Computerized billing system includes an array of reports to confirm billing data and system functionality. Checks are conducted routinely to flag and explain zero consumption accounts. Annual internal checks conducted with third party audit conducted at least once every five years. Accountability checks flag billing lapses. Consumption lost to billing lapses is well quantified and reducing year-by-year. | *Conditions between 4 and 5* | *Current condition:* Sound written policy and procedures exist for new account activation and oversight of customer billing operations. Robust computerized billing system gives high functionality and reporting capabilities which are utilized, analyzed and the results reported each billing cycle. Assessment of policy and data handling errors are conducted internally and audited by third party at least once every three years, ensuring consumption lost to billing lapses is minimized and detected as it occurs. | Not a choice |
| *Improvements in quantifying loss due to systematic data handling* | *To improve to 1:* Draft written policy and procedures for activating new water billing accounts and oversight of billing operations. Investigate and budget for computerized customer billing system. Conduct initial | *To improve to 2:* Finalize written policy and procedures for activation of new billing accounts and overall billing operations management. Implement a computerized customer billing system. Conduct initial audit of billing records as part of this process. | | *To improve to 3:* Refine new account activation and billing operations procedures and ensure consistency with the utility policy regarding billing, and minimize opportunity for missed billings. Upgrade or replace customer billing system for needed functionality - ensure that billing adjustments don't corrupt the value of consumption volumes. Implement procedural internal annual audit process | | *To improve to 4:* Formalize regular review of new account activation process and general billing practices. Enhance reporting capability of computerized billing system. Formalize regular auditing process to reveal scope of data handling error. Plan for periodic third party audit to occur at least once every five years. | | *To improve to 5:* Close policy/procedure loopholes that allow some customer accounts to go unbilled, or data handling errors to exist. Ensure that billing system reports are utilized, analyzed and reported every billing cycle. Ensure that internal and third party audits are conducted at least once every three years. | *To maintain a 5:* Stay abreast of customer information management developments and innovations. Monitor developments of Advanced Metering Infrastructure (AMI) and integrate technology to ensure | Not a choice |

| Component | Unauthorized Consumption Assessment Scale Table<br>Adapted from American Water Works Association Free Water Audit Software© | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| APPARENT LOSSES | 0.5 | 1 | 1.5 | 2 | 2.5 | 3 | 3.5 | 4 | 4.5 | 5 | N/A |
| *Line 26 Unauthorized consumption* | *Current condition:* Extent of unauthorized consumption is unknown due to unclear policies and poor recordkeeping. Total unauthorized consumption is estimated. | *Current condition:* Unauthorized consumption is a known occurrence, but its extent is a mystery. There are no requirements to document observed events, but periodic field reports capture some of these occurrences. Total unauthorized consumption is approximated from this limited data. | *Conditions between 1 and 2* | *Current condition:* Procedures exist to document some unauthorized consumption such as observed unauthorized fire hydrant openings. Use formulae to quantify this consumption (time running multiplied typical flowrate, multiplied by number of events). | Default value of 0.25% of volume of water supplied is employed | *Current condition:* Coherent policies exist for some forms of unauthorized consumption (more than simply fire hydrant misuse) but others await closer evaluation. Reasonable surveillance and recordkeeping exist for occurrences that fall under the policy. Volumes quantified by inference from these records. | *Conditions between 3 and 4* | *Current condition:* Clear policies and good auditable recordkeeping exist for certain events (ex: tampering with water meters, illegal bypasses of customer meters); but other occurrences have limited oversight. Total consumption is a combination of volumes from formulae (time x typical flow) and subjective estimates of unconfirmed consumption. | *Conditions between 4 and 5* | *Current condition:* Clear policies exist to identify all known unauthorized uses of water. Staff and procedures exist to provide enforcement of policies and detect violations. Each occurrence is recorded and quantified via formulae (estimated time running multiplied by typical flow) or similar methods. All records and calculations should exist in a form that can be audited by a third party. | Not a choice |
| *Improvements in quantifying volume of unauthorized consumption* | *To improve to 2.5:* Use accepted default of 0.25% of volume of water supplied.<br><br>*To improve to 1:* Review utility policy regarding what water uses are considered unauthorized, and consider tracking a small sample of one such occurrence (ex: unauthorized fire hydrant openings) | *To improve to 2.5:* Use accepted default of 0.25% of volume of water supplied.<br><br>*To improve to 2:* Review utility policy regarding what water uses are considered unauthorized, and consider tracking a small sample of one such occurrence (ex: unauthorized fire hydrant openings) | | *To improve to 2.5:* Utilize accepted default value of 0.25% of volume of water supplied as an expedient means to gain a reasonable quantification of all such use. This is particularly appropriate for water utilities who are in the early stages of the water auditing process. | *To improve to 3:* Finalize policy updates to clearly identify the types of water consumption that are authorized from those usages that fall outside of this policy and are, therefore, unauthorized. Begin to conduct regular field checks. Proceed if the top-down audit already exists and/or a great volume of | *To improve to 4:* Assess water utility policies to ensure that all known occurrences of unauthorized consumption are outlawed, and that appropriate penalties are prescribed. Create written procedures for detection and documentation of various occurrences of unauthorized consumption as they are uncovered. | | *To improve to 5:* Refine written procedures and assign staff to seek out likely occurrences of unauthorized consumption. Explore new locking devices, monitors and other technologies designed to detect and thwart unauthorized consumption. | | *To maintain a 5:* Continue to refine policy and procedures to eliminate any loopholes that allow or tacitly encourage unauthorized consumption. Continue to be vigilant in detection, documentation and enforcement efforts. | Not a choice |

| Component | Reported Breaks and Leaks Assessment Scale Table<br>Adapted from American Water Works Association Free Water Audit Software© | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| REAL LOSSES | 0.5 | 1 | 1.5 | 2 | 2.5 | 3 | 3.5 | 4 | 4.5 | 5 | N/A |
| *Line 28 Reported breaks and leaks* | *Current condition:* Arbitrary estimates of reported breaks and leaks repaired. Repairs of reported breaks and leaks not documented. | *Current condition:* Reported breaks and leaks estimated by repair crew is suspect. No written procedures exist for estimating or documenting breaks and leaks. | *Conditions between 1 and 2* | *Current condition:* Reported breaks and leaks are estimated by repair crew. Written procedures exist for estimating or documenting breaks and leaks. | *Conditions between 2 and 3* | *Current condition:* Breaks and leaks reported by customers and city staff fixed <75% of time. Call-to-repair times known, but are greater than one week average. Good records of breaks and leaks exist. | *Conditions between 3 and 4* | *Current condition:* Breaks and leaks reported by customers and city staff fixed >75% of time. Call-to-repair times average less than one week. Computerized maintenance management system is used to document leak repair trends. | *Conditions between 4 and 5* | *Current condition:* Breaks and leaks reported by customers and city staff fixed >90% of time. Call-to-repair times average less than three days. Outstanding computer maintenance records track system deficiencies and repair crew performance. | Not a choice |
| *Improvements in quantifying reported breaks and leaks* | *To improve to 1:* Document reported breaks and leaks. Use leak rates calculation to estimate volume lost from reported breaks and leaks. | *To improve to 2:* Develop standards to find, repair, and document leaks and breaks. Continue to use of leak rates calculation to estimate volume lost from reported breaks and leaks. | | *To improve to 3:* Standardize recordkeeping of leak incidents, location, response time, and other repair data. | | *To improve to 4:* Continue to standardize recordkeeping process. Begin planning a computerized maintenance management system. Reduce average leak run time to less than one week. | | *To improve to 5:* Implement computerized maintenance management system to document repairs. Reduce average leak run time to less than two days. Begin planning a proactive leak detection program. | | *To maintain a 5:* Use capabilities of computerized maintenance management system to track failure trends in distribution system and repair crew activity costs. Conduct a proactive leak detection program. | Not a choice |




https://www.twdb.texas.gov/conservation/resources/waterloss-resources.asp

Texas Water Development Board

# Water Loss Audit

Home | Worksheet | Audit Report | Request Access | WLUC Home

Water Audit Report for **1010027**, Year **2019** | Save | Un-Submit Worksheet | Help for Form Completion | Assessment Scale | Change Year | Cancel

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The **Save** button will save any data you enter for retrieval on future visits to this site.
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If further assistance is needed contact WLA-Group@twdb.texas.gov or 512.463.0987.

* **FIELDS MARKED WITH A RED STAR MUST BE FILLED OUT BEFORE THIS FORM CAN BE SUBMITTED.**

38. Real Losses Normalized - Main Lines: 0.00 gallons lost per mile per day

## I. Financial Performance Indicators

39. Total Apparent Losses: 18,239,389 gallons

* 40. Retail Price of Water: 0.00232 $ per gallon Assessment Scale: 3

41. Cost of Apparent Losses: $42,315

42 Total Real Losses: 4,465,070 gallons

* 43. Variable Production Cost of Water: 0.000240 $ per gallon Assessment Scale: 3.5

44. Cost of Real Losses: $1,072

45. Total Cost Impact of Apparent and Real Losses $43,387

46. Total Assessment Score: 67

| Component | Customer Retail Price of Water Assessment Scale Table<br>Adapted from American Water Works Association Free Water Audit Software© | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| COST DATA | 0.5 | 1 | 1.5 | 2 | 2.5 | 3 | 3.5 | 4 | 4.5 | 5 | N/A |
| *Line 40 Customer retail price of water (applied to apparent losses)* | *Current condition:* Antiquated, cumbersome water rate structure is used, with periodic historic amendments that were poorly documented and implemented; resulting in classes of customers being billed inconsistent charges. The actual composite billing rate likely differs significantly from the published water rate structure, but a lack of auditing leaves the degree of error indeterminate. | *Current condition:* Dated, cumbersome water rate structure, not always employed consistently in actual billing operations. The actual composite billing rate is known to differ from the published water rate structure, and a reasonably accurate estimate of the degree of error is determined, allowing a composite billing rate to be quantified. | *Conditions between 1 and 2* | *Current condition:* Straight-forward water rate structure in use, but not updated in several years. Billing operations reliably employ the rate structure. The composite billing rate is derived from a single customer class such as residential customer accounts, neglecting the effect of different rates from varying customer classes. | *Conditions between 2 and 3* | *Current condition:* Clearly written, up-to-date water rate structure is in force and is applied reliably in billing operations. Composite customer rate is determined using a weighted average residential rate using volumes of water in each rate block. | *Conditions between 3 and 4* | *Current condition:* Effective water rate structure is in force and is applied reliably in billing operations. Composite customer rate is determined using a weighted average composite consumption rate, which includes residential, commercial, industrial, institutional (CII), and any other distinct customer classes within the water rate structure. | *Conditions between 4 and 5* | *Current condition:* Current, effective water rate structure is in force and applied reliably in billing operations. The rate structure and calculations of composite rate - which includes residential, commercial, industrial, institutional (CII), and other distinct customer classes - are reviewed by a third party knowledgeable in the M36 methodology at least once every five years. | Not a choice |
| *Improvements in quantifying the retail price of water* | *To improve to 1:* Formalize the process to implement water rates, including a secure documentation procedure. Create a current, formal water rate document and gain approval from all stakeholders. | *To improve to 2:* Review the water rate structure and update/formalize as needed. Assess billing operations to ensure that actual billing operations incorporate the established water rate structure. | | *To improve to 3:* Evaluate volume of water used in each usage block by residential users. Multiply volumes by full rate structure. | | *To improve to 4:* Evaluate volume of water used in each usage block by all classifications of users. Multiply volumes by full rate structure. | | *To improve to 5:* Conduct a periodic third-party audit of water used in each usage block by all classifications of users. Multiply volumes by full rate structure. | | *To maintain a 5:* Keep water rate structure current in addressing the water utility's revenue needs. Update the calculation of the customer unit rate as new rate components, customer classes, or other components are modified. | Not a choice |

| Component | Variable Production Cost Assessment Scale Table<br>Adapted from American Water Works Association Free Water Audit Software© | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| COST DATA | 0.5 | 1 | 1.5 | 2 | 2.5 | 3 | 3.5 | 4 | 4.5 | 5 | N/A |
| *Line 43 Variable production cost (applied to real losses)* | *Current condition:* Incomplete paper records and lack of documentation on primary operating functions (electric power and treatment costs most importantly) makes calculation of variable production costs a pure estimated. | *Current condition:* Reasonably maintained, but incomplete, paper or electronic accounting provides data to roughly estimate the basic operations costs (pumping power costs and treatment costs) and calculate a unit variable production cost. | *Conditions between 1 and 2* | *Current condition:* Electronic, industry-standard cost accounting system in place. Electric power and treatment costs are reliably tracked and allow accurate weighted calculation of unit variable production costs based on these two inputs and water imported purchase costs (if applicable). All costs are audited internally on a periodic basis. | *Conditions between 2 and 3* | *Current condition:* Reliable electronic, industry-standard cost accounting system in place, with all pertinent water system operating costs tracked. Pertinent additional costs beyond power, treatment and water imported purchase costs (if applicable) such as liability, residuals management, wear and tear on equipment, impending expansion of supply, are included in the unit variable production cost, as applicable. The data is audited at least annually by utility personnel. | *Conditions between 3 and 4* | *Current condition:* Reliable electronic, industry-standard cost accounting system in place, with all pertinent primary and secondary variable production and water imported purchase (if applicable) costs tracked. The data is audited at least annually by utility personnel, and at least once every three years by a third-party knowledgeable in the M36 methodology. | *Conditions between 4 and 5* | *Current condition:* Either of two conditions can be met to obtain a grading of 10:<br>1) Third party CPA audit of all pertinent primary and secondary variable production and water imported purchase (if applicable) costs on an annual basis.<br>or:<br>2) Water supply is entirely purchased as bulk water imported, and the unit purchase cost - including all applicable marginal supply costs - serves as the variable production cost. If all applicable marginal supply costs are not included in this figure, a grade of 10 should not be selected. | Not a choice |
| *Improvements in quantifying the variable production cost* | *To improve to 1:* Gather available records, institute new procedures to regularly collect and audit basic cost data and most important operations functions. | *To improve to 2:* Implement an electronic cost accounting system, structured according to accounting standards for water utilities. | | *To improve to 3:* Formalize process for regular internal audits of production costs. Assess whether additional costs (liability, residuals management, equipment wear, and impending infrastructure expansion) should be included to calculate a more representative variable production cost. | | *To improve to 4:* Formalize the accounting process to include direct cost components (power, treatment) as well as indirect cost components (liability, residuals management, etc.) Arrange to conduct audits by a knowledgeable third-party at least once every three years. | | *To improve to 5:* Standardize the process to conduct a third-party financial audit by a CPA on an annual basis. | | *To maintain a 5:* Maintain program, stay abreast of expenses subject to erratic cost changes and budget/track costs proactively. | Not a choice |

# Total Assessment Score

- As you enter your confidence values, the program will give you a Total Assessment Score out of 100. (Line 46)
- Measures the policies and processes used currently when you gather data for the audit.
- The assessment is a number that should be increasing every year.
- Improve the accuracy of the data in order to identify opportunities for water loss reduction.

## Water Loss Control Planning Guide

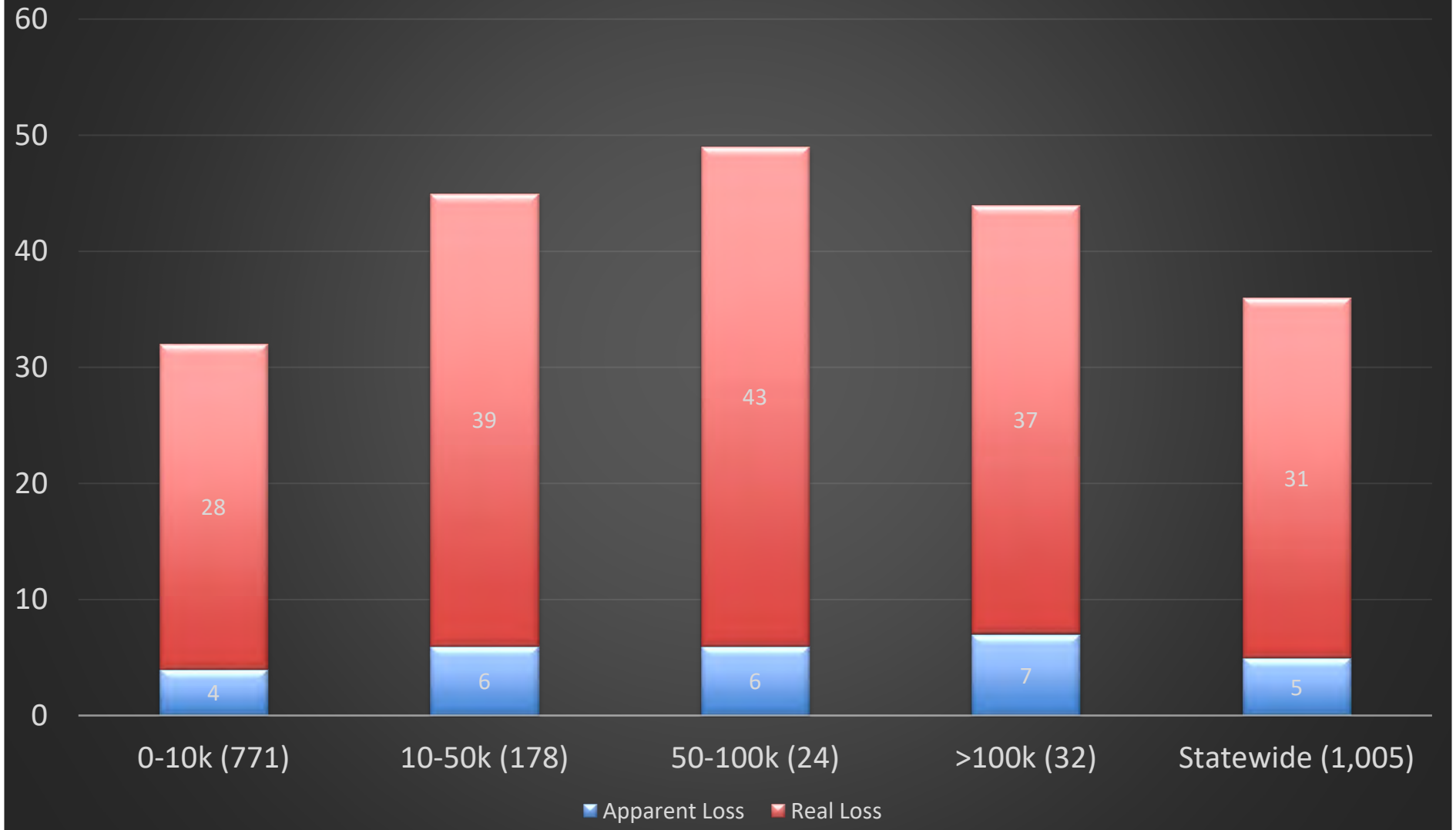
| Functional Focus Area | Level I (0-25) | Level II (26-50) | Level III (51-70) | Level IV (71-90) | Level IV (91-100) |
|---|---|---|---|---|---|
| Audit Data Collection | Launch auditing and loss control team; address production meter deficiencies. | Analyze business process for customer metering/billing functions and water supply operation. | Establish/revise policies and procedures for data collection. | Refine data collection practices and establish as routine business process. | Annual water audit is reliable gauge of year-to-year water efficiency standing. |
| Short-term loss control | Research information on leak detection programs. Begin flowcharting analysis of customer billing system. | Conduct loss assessment investigations on a sample portion of system: customer meter testing, leak survey, theft. | Establish ongoing mechanisms for customer meter accuracy testing, active leakage control, and infrastructure monitoring. | Refine, enhance, or expand ongoing programs based on economic justification. | Stay abreast of improvements in metering, meter reading, billing, leakage management, and infrastructure rehabilitation. |
| Long-term loss control | N/A | Begin to assess long-term needs requiring large expenditure: customer meter replacement, water main replacement, new customer billing system, or Automatic Meter Reading. | Begin to assemble economic business case for long-term needs based upon improved data becoming available through the water audit process. | Conduct detailed planning, budgeting, and launch of comprehensive improvements for metering, billing, or infrastructure management. | Continue incremental improvements in short-term and long-term loss control interventions. |
| Target-setting | N/A | N/A | Establish long-term apparent and real loss reduction goals (+10 year horizon). | Establish mid-range (5 year horizon) apparent and real loss reduction goals. | Evaluate and refine loss control goals on a yearly basis. |
| Benchmarking | N/A | N/A | Preliminary Comparisons – can begin to rely upon Infrastructure Leakage Index (ILI) for performance comparison for real losses. | Performance Benchmarking – ILI is meaningful in comparing real loss standing. | Identify Best Practices – the ILI is very reliable as a real loss performance indicator for best in class service. |

* Adapted from American Water Works Association©

# From Audit to Action

- Don’t compare it to last years unless you are creating a trend analysis.
- Understand water losses through improved data collection.
- Determine effective approach and initial implementation of improved data gathering
- System-wide water loss reduction and performance standard refinement

# Median 2019 Apparent and Real Loss per Connection per Day (gallons)



# Taking Actions

- Refine data gathering and information
- Metering assessment, testing, or replacement program
- Leak detection
- Pipe repair or replacement
- Operation and maintenance programs and changes
- Administrative processes or policy changes

# Questions for Review

- Were your goals met? If not, why not?
- Where do you need more information?
- How often should you repeat the water loss audit steps?
- Is there another performance indicator that should be considered?
- Look at trends by reviewing historic data – has water loss improved?
- How can the system improve water loss performance?
- Is more training required?

# Water Loss Resources

- Troubleshooting, guidance, assessment scales, leak detection loan form, WUS and WLA checklist, monthly water loss report, and more.

- http://www.twdb.texas.gov/conservation/resources/waterloss-resources.asp

- http://www.twdb.texas.gov/conservation/municipal/waterloss/historical-annual-report.asp

# Contact

**Water Loss Audit**
– **Mark Mathis**
– **512-463-0987**
**mark.mathis@twdb.texas.gov**

**John Sutton**
– **512-463-7988**
**john.sutton@twdb.texas.gov**

# Water Loss, Use, and Conservation Workshop
# Water Conservation

Municipal Water Conservation

Water Science & Conservation

Texas Water Development Board (TWDB)

*Unless specifically noted, this presentation does not necessarily reflect official Board positions or decisions.*

# Content and Topics

- Water Conservation
- Statutes and Requirements
- Reports, Forms, and Plans
  - Annual report
  - Utility Profile
  - Water Conservation Plan
- Municipal Water Conservation Planning Tool
- Flow of data
- Resources and Information Available
- Questions or Concerns…

# Statutes and Requirements

| Report Name | Who is Required to Report | When is Report Due | Legislative Code |
|---|---|---|---|
| **Water Conservation Plan** | Entities with loans greater than $500,000 (TWDB), 3,300 connections or greater (TWDB), a non-irrigation surface water right greater than 1,000 ac-ft/yr. (TCEQ), or an irrigation surface water right greater than 10,000 ac-ft/yr. (TCEQ). | Plans are revised every 5 years. The next revision for many entities is due to TWDB, May 1, 2019. TWDB shall be provided a copy of Plans submitted to TCEQ. | 31 TAC Chapter 363, Subchapter A, Rule 363.15 / TWC 15.106(b) |
| **Water Conservation Plan Annual Report** | All entities with a Water Conservation Plan. | Reports are due to TWDB every year by May 1st. | 31 TAC Chapter 363, Subchapter A, Rule 363.15(g) |
| **Water Loss Audit** | Retail public water suppliers with either an active financial obligation with the TWDB or having more than 3,300 connections should submit an annual water loss audit. All retail public water suppliers must submit a water loss audit once every five years. | Annual water loss audits are due by May 1 of each year for the previous year. The next audit for the five-year cycle is due by May 1, 2021 for the year 2020. | 31 TAC Chapter 358, Subchapter B, Rule 358.6 / TWC 16.0121 |
| **Water Use Survey** | Entities that have received a letter, generally municipalities with a population of 25 or greater, or high-volume industrial water use. | Surveys are due every year, 60 days after receiving a letter. | 31 TAC Chapter 358, Subchapter B, Rule 358.5 / TWC 16.012(m) |

# Statutes and Requirements

- Entities with loans greater than $500,000 (TWDB)
- 3,300 connections or greater (TWDB),
- A non-irrigation surface water right greater than 1,000 ac-ft/yr. (TCEQ), or an irrigation surface water right greater than 10,000 ac-ft/yr. (TCEQ).

# However…

The purpose of a **Water Conservation** is to ensure water use efficiency within your operation and/or system.

The Water Conservation Plan is a strategy or combination of strategies for…

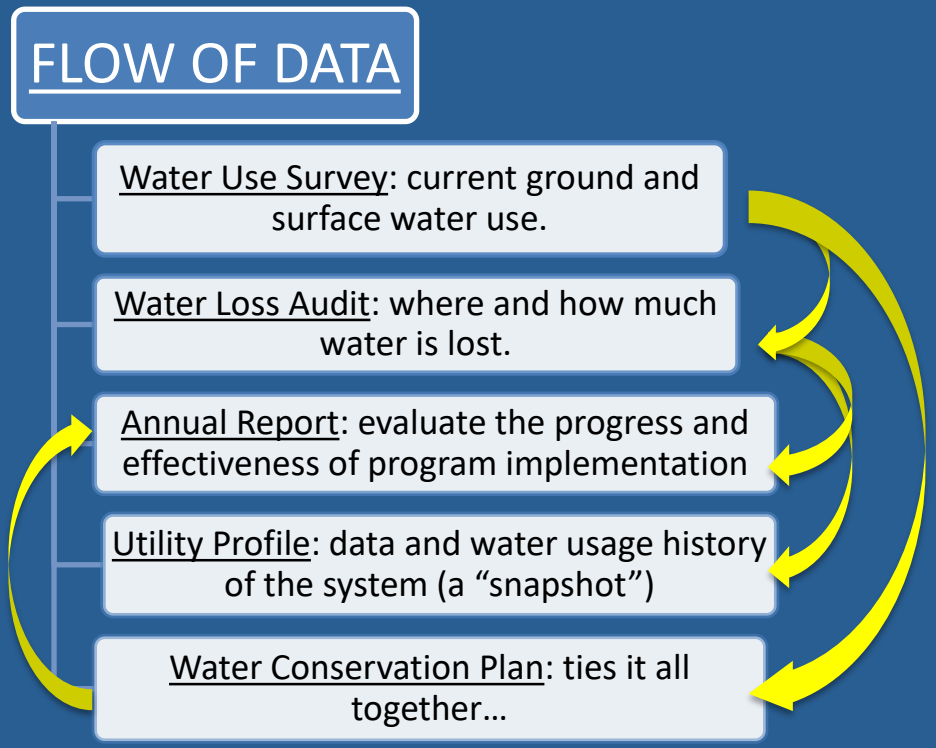
1. reducing the consumption of water,
2. reducing the loss or waste of water,
3. efficiency in the use of water,
4. or increasing recycling and reuse of water.

# However…

Even if you are not required, having a water conservation plan can only serve to benefit your system…

- Conservation strategies
- Best Management strategies
- Cost saving measures
- Accountability

# The why…


FLOW OF DATA
Water Use Survey: current ground and surface water use.
Water Loss Audit: where and how much water is lost.
Annual Report: evaluate the progress and effectiveness of program implementation
Utility Profile: data and water usage history of the system (a "snapshot")
Water Conservation Plan: ties it all together…

# Quiz

Which of these is not a report?

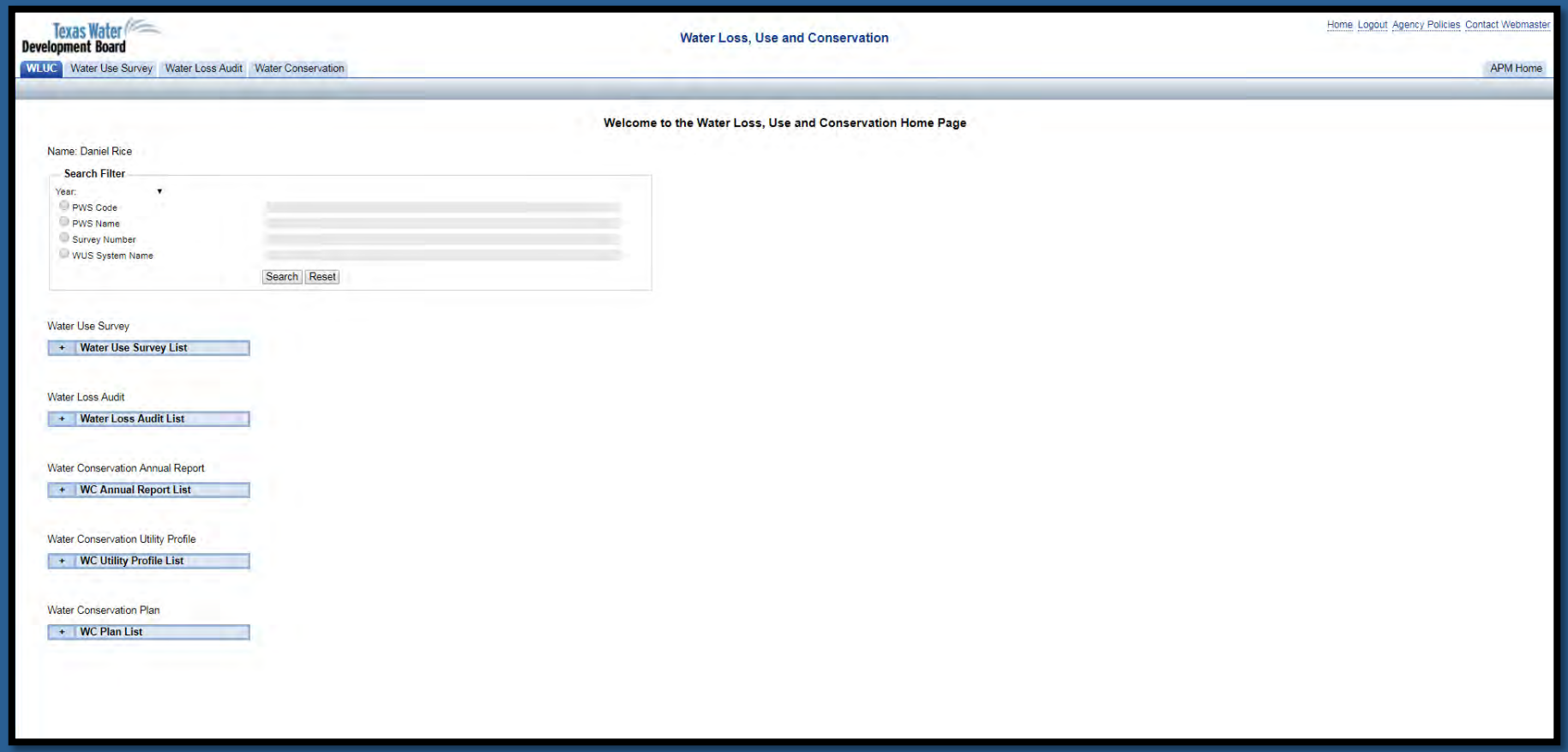
1. Water Use Survey
2. Water Loss Audit
3. Annual Report
4. Utility Profile
5. Water Conservation Plan

# Quiz

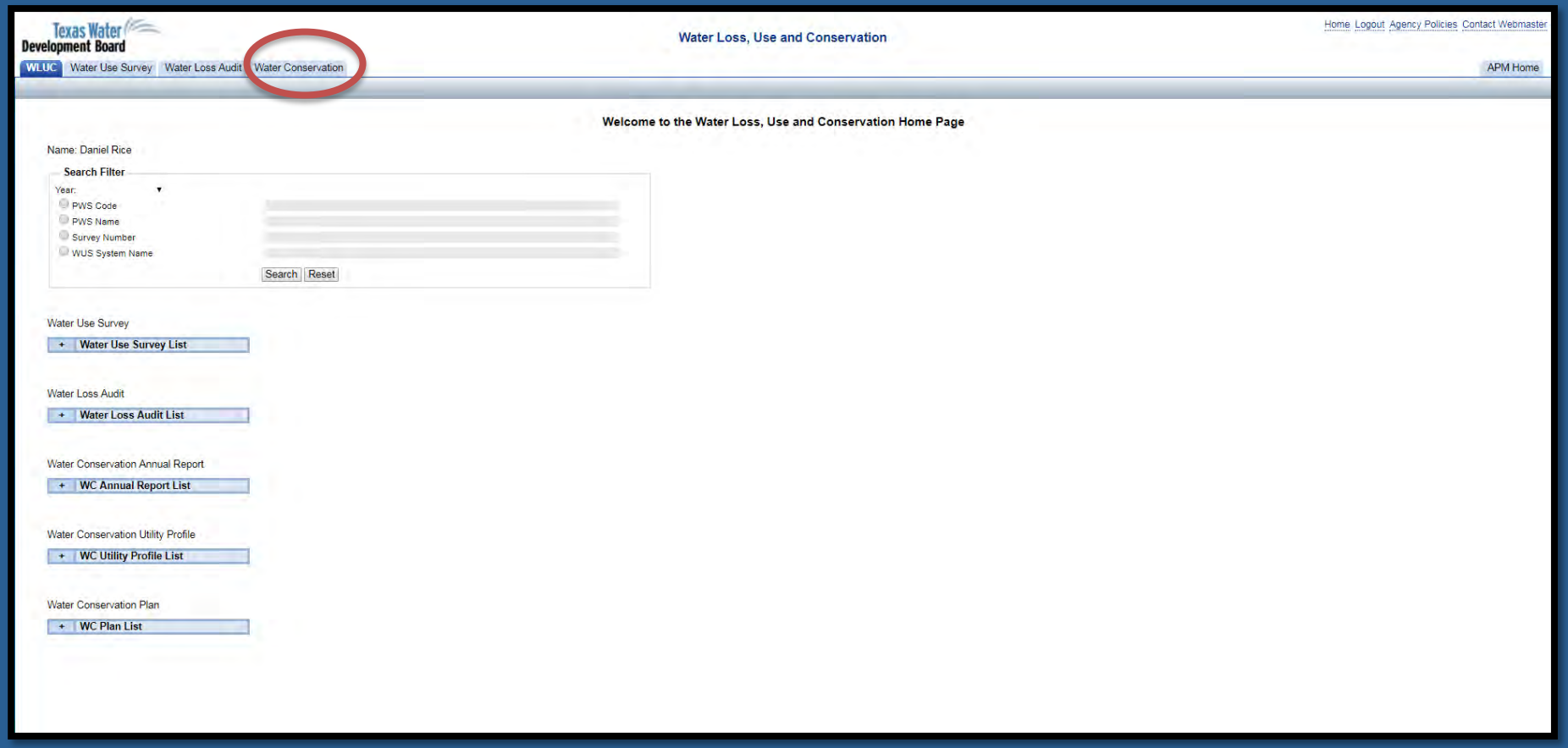
Does that make it better though?

1. Water Use Survey
2. Water Loss Audit
3. Annual Report
4. Utility Profile
5. Water Conservation Plan

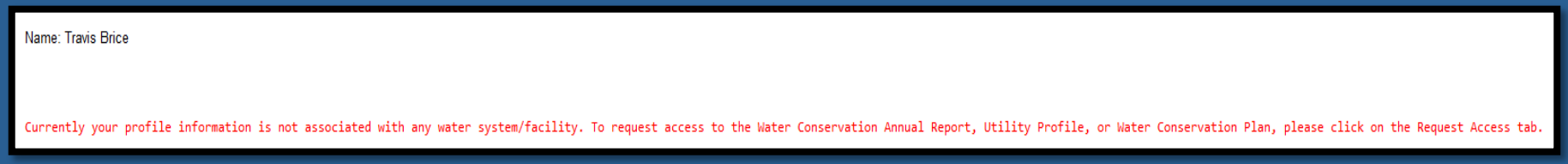
# Welcome to the Water Loss, Use and Conservation Home Page



# WLUC


Texas Water Development Board
Water Loss, Use and Conservation
Home Logout Agency Policies Contact Webmaster
WLUC
Water Use Survey
Water Loss Audit
Water Conservation
APM Home
Welcome to the Water Loss, Use and Conservation Home Page
Name: Daniel Rice
Search Filter
Year:
PWS Code
PWS Name
Survey Number
WUS System Name
Search
Reset
Water Use Survey
Water Use Survey List
Water Loss Audit
Water Loss Audit List
Water Conservation Annual Report
WC Annual Report List
Water Conservation Utility Profile
WC Utility Profile List
Water Conservation Plan
WC Plan List

# WLUC

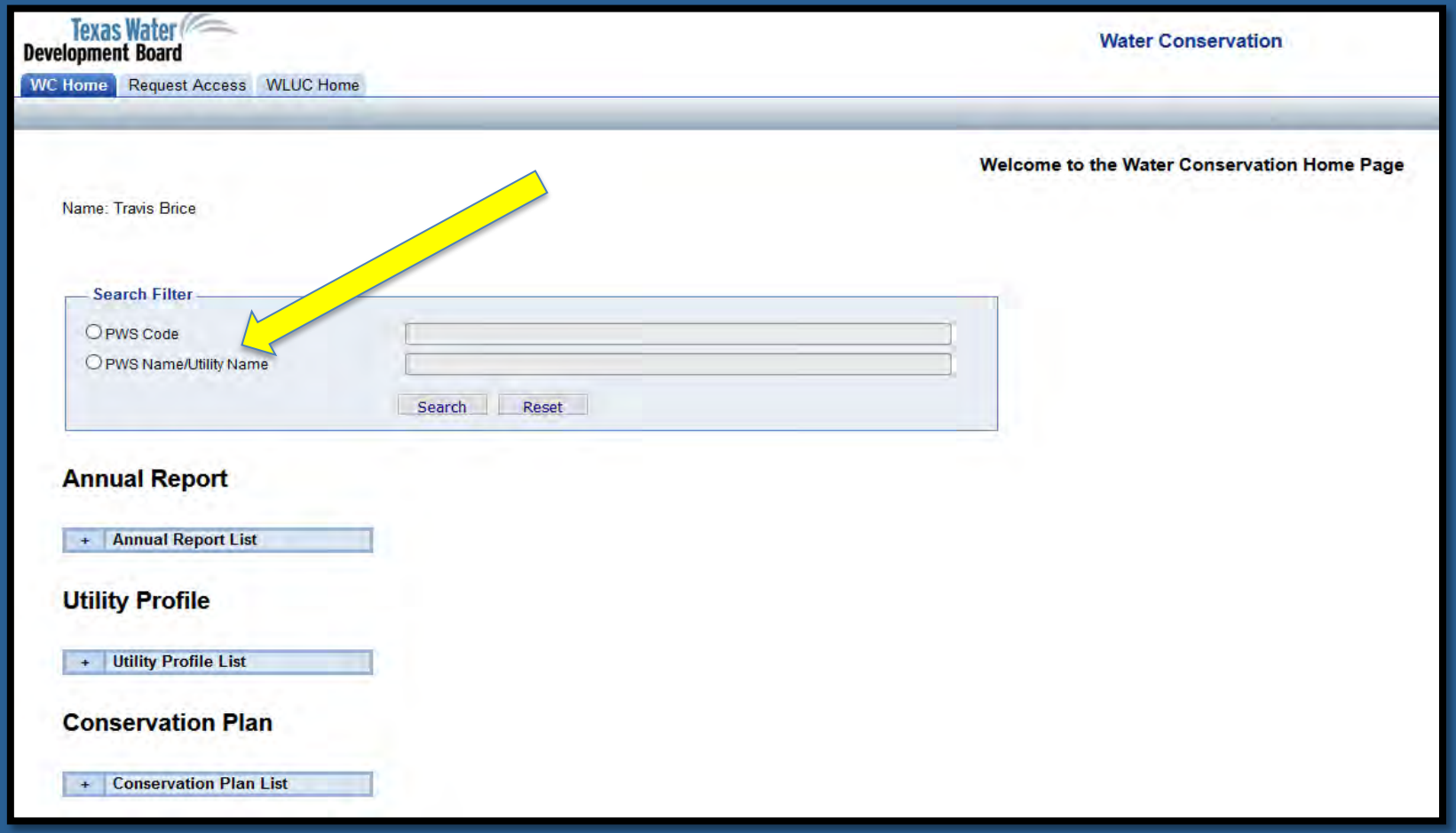


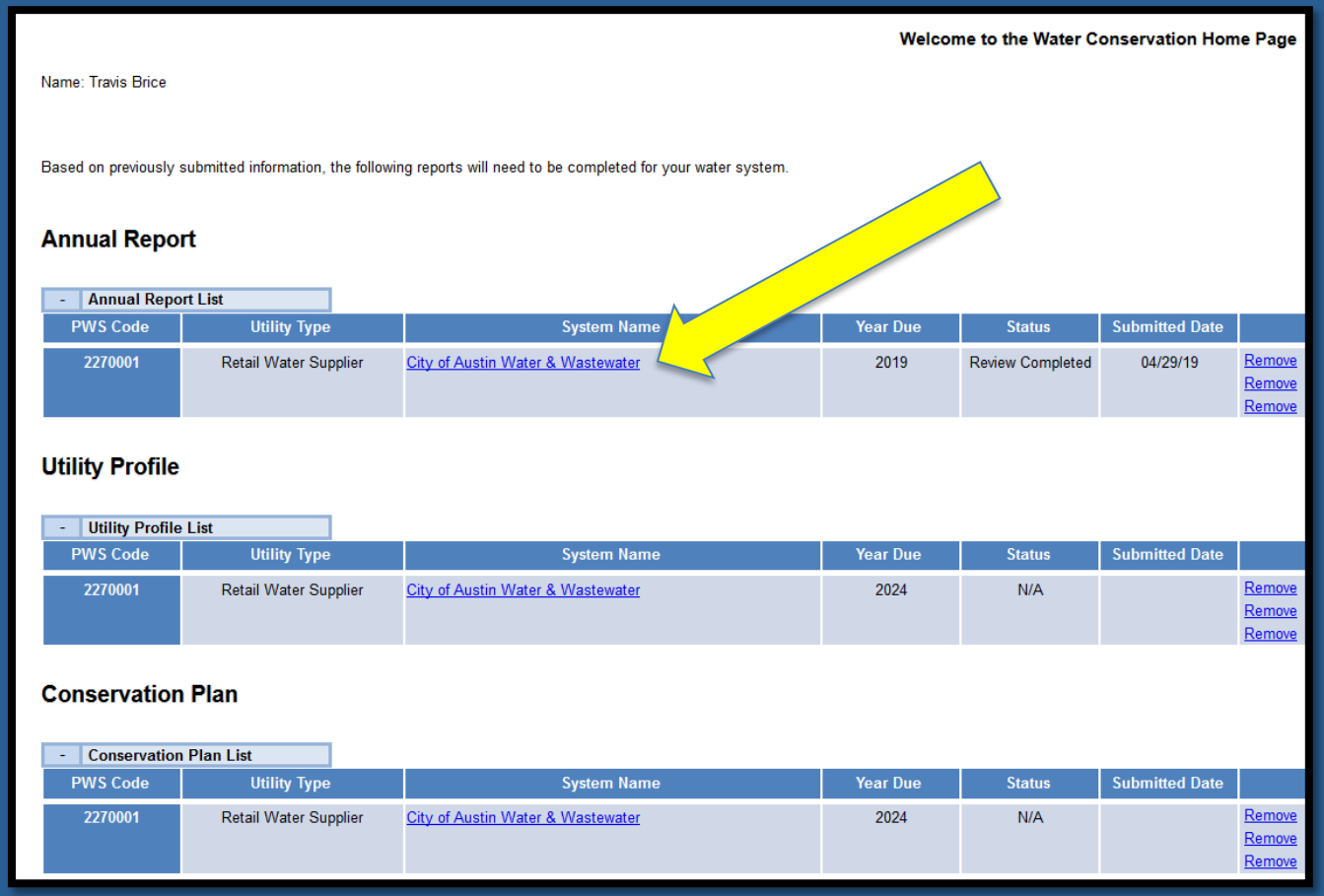

*"Currently… not associated with any water system/facility."*

REQUEST ACCESS TO YOUR SYSTEM!

Select the box in the Utility List for each Utility that you want to access -- then click the Submit button.

# Water Conservation Home Page





Welcome to the Water Conservation Home Page

Name: Travis Brice

Based on previously submitted information, the following reports will need to be completed for your water system.

## Annual Report

- Annual Report List

| PWS Code | Utility Type | System Name | Year Due | Status | Submitted Date | |
|---|---|---|---|---|---|---|
| 2270001 | Retail Water Supplier | City of Austin Water & Wastewater | 2019 | Review Completed | 04/29/19 | Remove<br>Remove<br>Remove |

## Utility Profile

- Utility Profile List

| PWS Code | Utility Type | System Name | Year Due | Status | Submitted Date | |
|---|---|---|---|---|---|---|
| 2270001 | Retail Water Supplier | City of Austin Water & Wastewater | 2024 | N/A | | Remove<br>Remove<br>Remove |

## Conservation Plan

- Conservation Plan List

| PWS Code | Utility Type | System Name | Year Due | Status | Submitted Date | |
|---|---|---|---|---|---|---|
| 2270001 | Retail Water Supplier | City of Austin Water & Wastewater | 2024 | N/A | | Remove<br>Remove<br>Remove |

# Annual Reporting

Utility Name: City of Austin Water & Wastewater
PWS Code: 2270001

**Annual Report List**

| Edit | View | Status | Reporting Year |
|---|---|---|---|
| Fill Out | View | Not on File | 2010 |
| Fill Out | View | Review Completed | 2011 |
| Fill Out | View | Review Completed | 2012 |
| Fill Out | View | Review Completed | 2013 |
| Fill Out | View | Review Completed | 2014 |
| Fill Out | View | Review Completed | 2015 |
| Fill Out | View | Review Completed | 2016 |
| Fill Out | View | Review Completed | 2017 |
| Fill Out | View | Review Completed | 2018 |

"Rolling" history of submitted annual reports creating a water usage and conservation history for your system.

# Annual Reporting

PWS Code: N/A

- Annual Report List

| Edit | View | Status | Reporting Year |
|---|---|---|---|
| | View | Not on File | 2010 |
| | View | Not on File | 2011 |
| | View | Review Completed | 2012 |
| | View | Review Completed | 2013 |
| | View | Review Completed | 2014 |
| | View | Review Completed | 2015 |
| | View | Review Completed | 2016 |
| | View | Review Completed | 2017 |
| | View | Saved | 2018 |
| | View | Not Started | 2019 |
| Fill Out | View | Review Completed | 2020 |

- "Rolling" history of submitted annual reports.
- If some previous reporting years have been missed or left unsubmitted, that's ok.
- Reach out to us and TWDB staff can back fill those reports.

# Annual Report (Page 3)

| | Total Gallons During the Reporting Period |
|---|---|
| **1. Corrected Input Volume:**<br>The volume of treated water input to the distribution system from own production facilities.<br>Same as line 13b of the Water Loss Audit for reporting periods >= 2015.<br>Same as line 14 of the Water Loss Audit for reporting periods <= 2014. | 47,999,230,963 |
| **2. Corrected Treated Purchased Water Volume:**<br>The amount of treated purchased wholesale water transferred into the utility's distribution system from other water suppliers system.<br>Same as line 14b of the Water Loss Audit for reporting periods >= 2015.<br>Same as line 15 of the Water Loss Audit for reporting periods <= 2014. | 940,000 |
| **3. Corrected Treated Wholesale Water Sales Volume:**<br>The amount of treated wholesale water transferred out of the utility's distribution system, although it may be in the system for a brief time for conveyance reasons.<br>Same as line 15b of the Water Loss Audit for reporting periods >= 2015.<br>Same as line 16 of the Water Loss Audit for reporting periods <= 2014. | 2,385,015,400 |
| **4. Total System Input Volume:**<br>This is the sum of the corrected input volume plus corrected treated purchased water volume minus corrected treated wholesale water sales volume.<br>Same as line 16 of the Water Loss Audit for reporting periods >= 2015.<br>Same as line 17 of the Water Loss Audit for reporting periods <= 2014.<br>Produced + Imported - Exported = Total System Input Volume | 45,615,155,563 |
| **5. Billed Metered:**<br>All retail water sold and metered.<br>Same as line 17 of the Water Loss Audit for reporting periods >= 2015.<br>Same as line 18 of the Water Loss Audit for reporting periods <= 2014. | 38,442,953,800 |
| **6. Other Authorized Consumption:**<br>Water that is authorized for other uses such as back flushing, line flushing, storage tank cleaning, fire department use, municipal government offices or municipal golf courses/parks. This water may be metered or unmetered.<br>Same as lines 18, 19, and 20 of the Water Loss Audit for reporting periods >= 2015.<br>Same as lines 19, 20, and 21 of the Water Loss Audit for reporting periods <= 2014. | 107,439,938 |
| **7. Total Authorized Consumption:**<br>All water that has been authorized for use.<br>Same as Line 21 of the Water Loss Audit for reporting periods >= 2015.<br>Same as line 22 of the Water Loss Audit for reporting periods <= 2014.<br>Total Billed and Metered Retail Water + Other Authorized Consumption<br>= Total Authorized Consumption | 38,550,393,738 |
| **8. Total Apparent Losses:**<br>Water that has been consumed but not properly measured or billed (losses due to customer meter inaccuracy, systematic data handling discrepancy and/or unauthorized consumption such as theft).<br>Same as line 27 of the Water Loss Audit for reporting periods >= 2015.<br>Same as line 28 of the Water Loss Audit for reporting periods <= 2014. | 938,656,919 |
| **9. Total Real Loss:**<br>Physical losses from the distribution system prior to reaching the customer destination (losses due to reported breaks and leaks, physical losses from the system or mains and/or storage overflow).<br>Same as line 30 of the Water Loss Audit for reporting periods >= 2015.<br>Same as line 31 of the Water Loss Audit for reporting periods <= 2014. | 6,126,104,906 |
| **10. Total Water Loss:**<br>Apparent + Real = Total Water Loss | 7,064,761,825 |

# Annual Report - Retail
# Conservation Programs and Activities (Page 4)

1. What year did your entity adopt or revise their most recent Water Conservation Plan? 2014

2. Does The Plan incorporate Best Management Practices? (•) Yes ( ) No

* 3. Using the table below select the types of Best Management Practices or water conservation and reuse strategies actively administered during this reporting period and estimate the savings incurred in implementing water conservation and reuse activities and programs. Leave fields blank if unknown. Please separate reuse volumes from gallons saved.

Methods and techniques for determining gallons saved are unique to each utility as they conduct internal cost analyses and long-term financial planning. Texas Best Management Practices can be found at TWDB's Water Conservation Best Management Practices webpage. The Alliance for Water Efficiency's Water Conservation Tracking Tool may offer guidance on determining and calculating savings for individual BMPs.

| Best Management Practice | Check if implemented | Estimated Gallons Saved | Estimated Gallons Reused |
|---|---|---|---|
| **Conservation Analysis and Planning** | | | |
| Conservation Coordinator | ☑ | 0 | |
| Cost Effective Analysis | ☑ | 0 | |
| Water Survey for Single Family and Multi-family Customers | ☐ | | |
| **Financial** | | | |
| Wholesale Agency Assistance Programs | ☑ | 0 | |
| Water Conservation Pricing | ☑ | 0 | |
| **System Operations** | | | |
| Metering New Connections and Retrofitting Existing Connections | ☑ | 0 | |
| System Water Audit and Loss Control | ☑ | 0 | |

# Annual Report - Retail
# Conservation Programs and Activities (Page 4)

| | | | |
|---|---|---|---|
| Residential Clothes Washer Incentive Program | ☐ | | |
| Water Wise Landscape Design and Conversion Programs | ☑ | 172,572 | |
| Showerhead, Aerator, and Toilet Flapper Retrofit | ☑ | 11,194,638 | |
| Residential Toilet Replacement Programs | ☐ | | |
| ICI Incentive Programs | ☑ | 8,444,835 | |
| **Conservation Technology & Resuse** | | | |
| New Construction Graywater | ☐ | | |
| Rainwater Harvesting and Condensate Reuse | ☑ | 4,120,452 | |
| Reuse for On-site Irrigation | ☑ | | 0 |
| Reuse for Plant Washdown | ☑ | | 0 |
| Reuse for Chlorination/Dechlorination | ☑ | | 0 |
| Reuse for Industry | ☑ | | 753,826,217 |
| Reuse for Agriculture | ☐ | | |
| **Regulatory and Enforcement** | | | |
| Prohibition on Wasting Water | ☑ | 5,347,478,100 | |
| **Retail** | | | |
| Other | ☑ | 188,340 | 1,873,907,300 |
| **Totals** | | 5,379,519,437 | 3,303,906,117 |

Describe Other Best Management Practices from Section Above.

Included in "Other:
Estimated Gallons Saved: Pressure Regulating Valve Rebate
Estimated Gallons Reused: Toilet flushing, Plant Washdown, Chlorination/Dechlorination, and Onsite Irrigation.

# Annual Report - Retail Conservation Programs and Activities

4. For this reporting period, estimate the savings from water conservation activities and programs.

| Gallons Saved/Conserved | Gallons Recycled/Reused | Total Volume of Water Saved[1] | Dollar Value of Water Saved[2] |
|---|---|---|---|
| 5,379,519,437 | 3,303,906,117 | 8,683,425,554 | 3,351,802 |

[1]Estimated Gallons Saved + Estimated Gallons Recycled/Reused = Total Volume Saved

[2]Estimated this value by taking into account water savings, the cost of treatment or purchase of water, and deferred capital cost due to conservation.

5. Comments or Explanations Regarding Data Entered in Sections Above.

Files to support or explain this may be attached below.

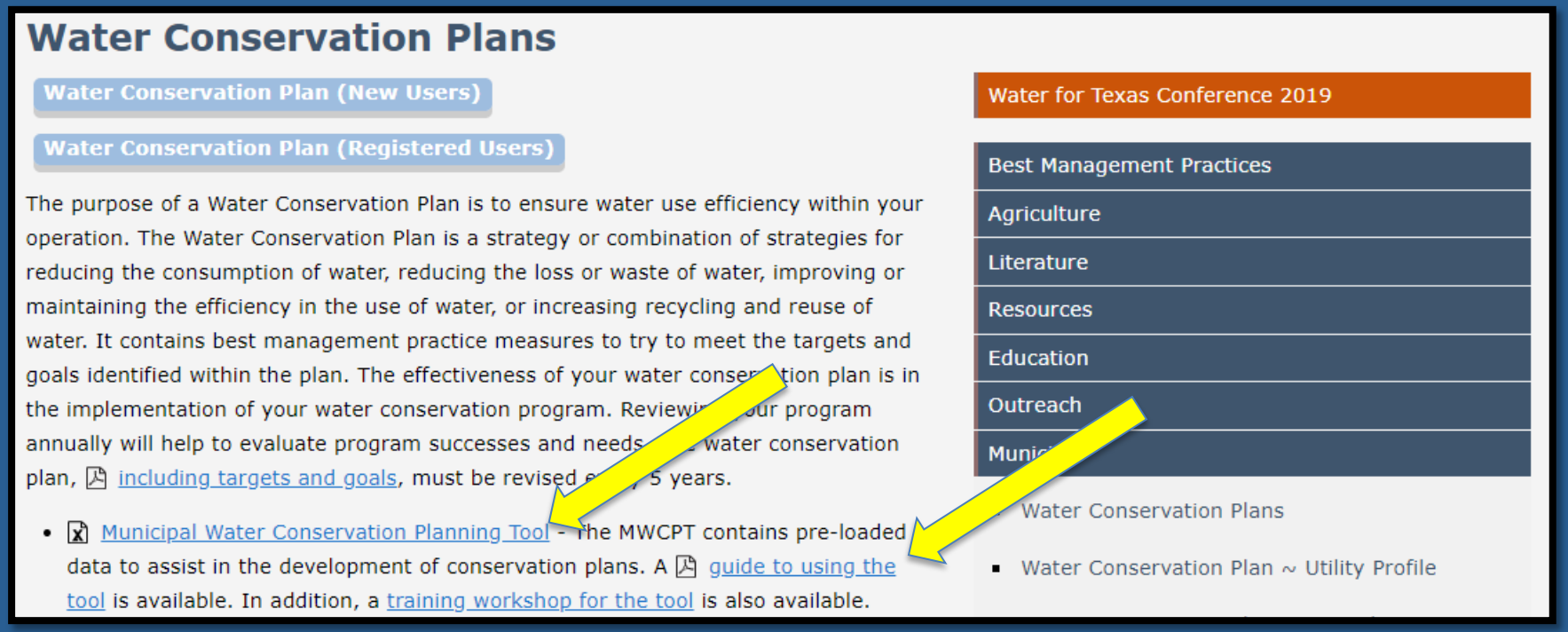
Saving water can and will save you money, …but it can be hard to quantify.

# NEVER FEAR!

*The Municipal Water Conservation Planning Tool is here!*

- A new method for calculating water savings via annual reporting was created. It provides an accounting framework for projecting future conservation program costs and water savings as well as estimating the water savings from previous implementation of conservation measures.

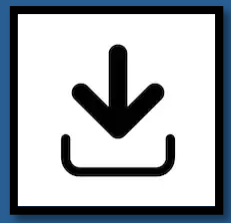
# Municipal Water Conservation Planning Tool




You can access the tool on the TWDB's website and the associated guide to have a VERY DETAILED explanation on its use.

# Municipal Water Conservation Planning Tool

Completely downloadable and editable.



Please save a copy to your desktop and manipulate the scenarios as you see fit!

# Municipal Water Conservation Planning Tool

We will be accessing the tool directly with further description and directions.

It should be noted that the data in the tool is becoming dated.

The principles of the tool are still relevant.

# Annual Report - Retail
# Conservation Programs and Activities (Page 4)

| | | | |
|---|---|---|---|
| Residential Clothes Washer Incentive Program | ☐ | | |
| Water Wise Landscape Design and Conversion Programs | ☑ | 172,572 | |
| Showerhead, Aerator, and Toilet Flapper Retrofit | ☑ | 11,194,638 | |
| Residential Toilet Replacement Programs | ☐ | | |
| ICI Incentive Programs | ☑ | 8,444,835 | |
| **Conservation Technology & Resuse** | | | |
| New Construction Graywater | ☐ | | |
| Rainwater Harvesting and Condensate Reuse | ☑ | 4,120,452 | |
| Reuse for On-site Irrigation | ☑ | | 0 |
| Reuse for Plant Washdown | ☑ | | 0 |
| Reuse for Chlorination/Dechlorination | ☑ | | 0 |
| Reuse for Industry | ☑ | | 753,826,217 |
| Reuse for Agriculture | ☐ | | |
| **Regulatory and Enforcement** | | | |
| Prohibition on Wasting Water | ☑ | 5,347,478,100 | |
| **Retail** | | | |
| Other | ☑ | 188,340 | 1,873,907,300 |
| **Totals** | | 5,379,519,437 | 3,303,906,117 |

Describe Other Best Management Practices from Section Above.

Included in "Other:
Estimated Gallons Saved: Pressure Regulating Valve Rebate
Estimated Gallons Reused: Toilet flushing, Plant Washdown, Chlorination/Dechlorination, and Onsite Irrigation.

1. Landscape Irrigation Conservation and Incentives
2. Athletic Fields Conservation
3. Golf Course Conservation
4. Park Conservation
5. Residential Landscape Irrigation Evaluation

6. Public Information
7. Small Utility Outreach and Education
8. Partnerships with Nonprofit Organizations

9. Residential Clothes Washer Incentive Program

10. Water Wise Landscape Design and Conversion Programs

11. Showerhead, Aerator, and Toilet Flapper Retrofit

12. Residential Toilet Replacement Programs

13. Rainwater Harvesting and Condensate Reuse

14. Conservation Programs for ICI Accounts
15. ICI Incentive Programs

16. Other (can be used to set the system's own measures)

SF Irrigation Audits - High Users
SF High-Efficiency Sprinkler Nozzle Rebate
SF Smart Irrigation Controller Rebate
MF Irrigation Audits - High Users
MF High-Efficiency Sprinkler Nozzle Rebate
MF Smart Irrigation Controller Rebate

SF Home Water Reports

SF Clothes Washer Rebate
MF Clothes Washer Rebate

SF WaterWise Landscape Rebate
MF WaterWise Landscape Rebate

SF Showerhead and Aerator Kit
MF Showerhead and Aerator Kit

SF HE Toilet Rebate
SF Bathroom Retrofit
MF HE Toilet Rebate
MF Bathroom Retrofit

SF Rainwater Harvesting Rebate
SF Rain Barrel
MF Rainwater Harvesting Rebate

ICI HE Toilet Rebate
ICI Urinal Rebate
ICI Clothes Washer Rebate
ICI Commercial General Rebate
ICI Kitchen Pre-Rinse Spray Valve Installation
ICI Irrigation Audits - High Users
ICI High-Efficiency Sprinkler Nozzle Rebate
ICI Smart Irrigation Controller Rebate
ICI WaterWise Landscape Rebate
ICI Rainwater Harvesting Rebate
ICI Commercial Dishwasher Rebate
ICI Commercial Food Steamer Rebate

# Annual Report - Retail
# Conservation Programs and Activities

4. For this reporting period, estimate the savings from water conservation activities and programs.

| Gallons Saved/Conserved | Gallons Recycled/Reused | Total Volume of Water Saved[1] | Dollar Value of Water Saved[2] |
|---|---|---|---|
| 5,379,519,437 | 3,303,906,117 | 8,683,425,554 | 3,351,802 |

[1]Estimated Gallons Saved + Estimated Gallons Recycled/Reused = Total Volume Saved

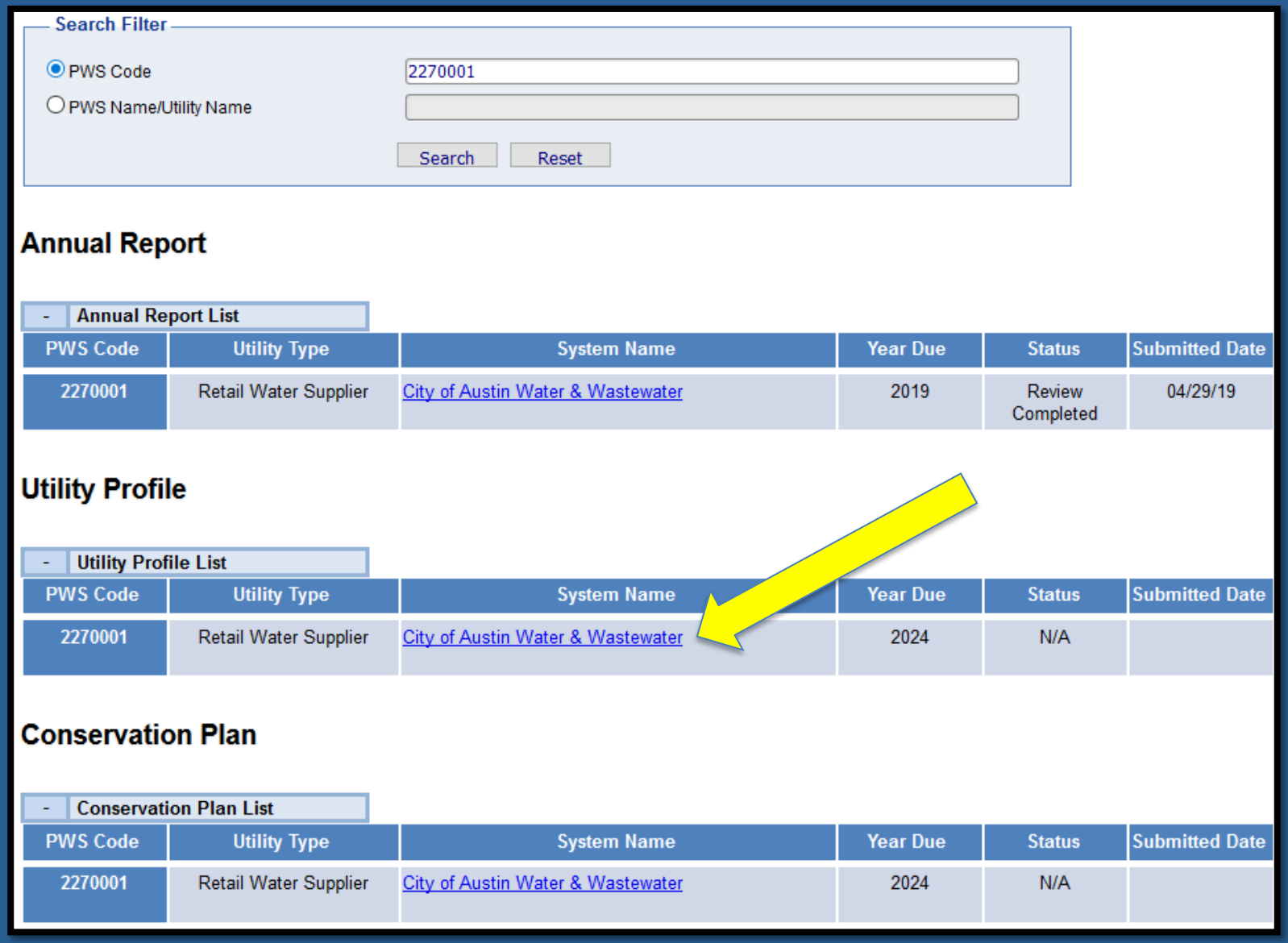
[2]Estimated this value by taking into account water savings, the cost of treatment or purchase of water, and deferred capital cost due to conservation.

5. Comments or Explanations Regarding Data Entered in Sections Above.

Files to support or explain this may be attached below.

Now with these new estimates from the tool we can better report our water and MONEY savings.

# Utility Profile



Search Filter

PWS Code: 2270001

PWS Name/Utility Name:

Search | Reset

## Annual Report

Annual Report List

| PWS Code | Utility Type | System Name | Year Due | Status | Submitted Date |
|---|---|---|---|---|---|
| 2270001 | Retail Water Supplier | City of Austin Water & Wastewater | 2019 | Review Completed | 04/29/19 |

## Utility Profile

Utility Profile List

| PWS Code | Utility Type | System Name | Year Due | Status | Submitted Date |
|---|---|---|---|---|---|
| 2270001 | Retail Water Supplier | City of Austin Water & Wastewater | 2024 | N/A | |

## Conservation Plan

Conservation Plan List

| PWS Code | Utility Type | System Name | Year Due | Status | Submitted Date |
|---|---|---|---|---|---|
| 2270001 | Retail Water Supplier | City of Austin Water & Wastewater | 2024 | N/A | |

# Utility Profile

The Utility Profile serves as the first component in developing a Water Conservation Plan.

The purpose of the Utility Profile is to assist you with water conservation plan development and to ensure that important information and data about your utility system be considered when preparing your water conservation plan and the associated target and goals.

# Utility Profile

By using the 5-year rolling history of your system, you can set appropriate goals.

Provide system input data for the previous five years.
Total System Input = Self supplied + Imported - Exported

| Year | Water Produced in Gallons | Purchased/Imported Water in Gallons | Exported Water in Gallons | Total System Input | Total GPCD |
|---|---|---|---|---|---|
| 2018 | 47,999,230,963 | 940,000 | 2,385,015,400 | 45,615,155,563 | 124 |
| 2017 | 48,366,392,060 | 689,000 | 2,783,459,800 | 45,583,621,260 | 128 |
| 2016 | 45,653,599,594 | 1,494,000 | 2,527,643,397 | 43,127,450,197 | 123 |
| 2015 | 44,743,637,572 | 8,800,000 | 2,538,933,179 | 42,213,504,393 | 124 |
| 2014 | 29,148,336,469 | 15,443,172,848 | 2,579,530,487 | 42,011,978,830 | 128 |
| Historic Average | 43,182,239,332 | 3,091,019,170 | 2,562,916,453 | 43,710,342,049 | 125 |

# Utility Profile

Also, the data flows through the reports and self calculates within, so CONSISTENCY and ACCURACY are important.

| Water Use Category | Total Residential GPCD |
|---|---|
| 2018 | 65 |
| 2017 | 66 |
| 2016 | 66 |
| 2015 | 66 |
| 2014 | 70 |
| Historic Average | 67 |

# Water Conservation Plan

## Annual Report

- Annual Report List

| PWS Code | Utility Type | System Name | Year Due | Status | Submitted Date |
|---|---|---|---|---|---|
| 2270001 | Retail Water Supplier | City of Austin Water & Wastewater | 2019 | Review Completed | 04/29/19 |

## Utility Profile

- Utility Profile List

| PWS Code | Utility Type | System Name | Year Due | Status | Submitted Date |
|---|---|---|---|---|---|
| 2270001 | Retail Water Supplier | City of Austin Water & Wastewater | 2024 | N/A | |

## Conservation Plan

- Conservation Plan List

| PWS Code | Utility Type | System Name | Year Due | Status | Submitted Date |
|---|---|---|---|---|---|
| 2270001 | Retail Water Supplier | City of Austin Water & Wastewater | 2024 | N/A | |

# Water Conservation Plan

- By using the information and data discussed in the previous section from the utility profile, a system can better adjust and create more realistic goals.

| | | | | | |
|---|---|---|---|---|---|
| Historic Average | 43,182,239,332 | 3,091,019,170 | 2,562,916,453 | 43,710,342,049 | 125 |

- 5-year historic average is **125 GPCD**… "I'll set my 5-year goal as **123**, and 10-year goal as **120**…"

- Is this goal appropriate?

## Water Conservation Plan Checklist

Entity:

Plan Date: Review Date: Reviewed By:

- ☐ A complete Utility Profile
- ☐ Baseline GPCD
- ☐ 5- and 10- year goals:
  - ☐ Total GPCD
  - ☐ Residential GPCD
  - ☐ Water Loss GPCD
  - ☐ Water Loss Percentage
- ☐ Schedule for implementation of Plan to achieve goals listed
- ☐ Method for tracking the effectiveness of Plan
- ☐ Master meter
- ☐ Universal metering program
- ☐ Measures to determine water loss
- ☐ Leak detection program
- ☐ Education/information program
- ☐ Non-promotional water rate structure
- ☐ Means of implementation and enforcement of Plan
- ☐ Documentation of notification to Regional Water Planning group
- ☐ Official adoption of Plan
- ☐ Drought Contingency Plan
- ☐ Wholesaler Requiring WCP from Customers

# Water Conservation Plan

If you have identified that you must submit a Water Conservation Plan (WCP) then please use all available resources and references to create the best plan possible.

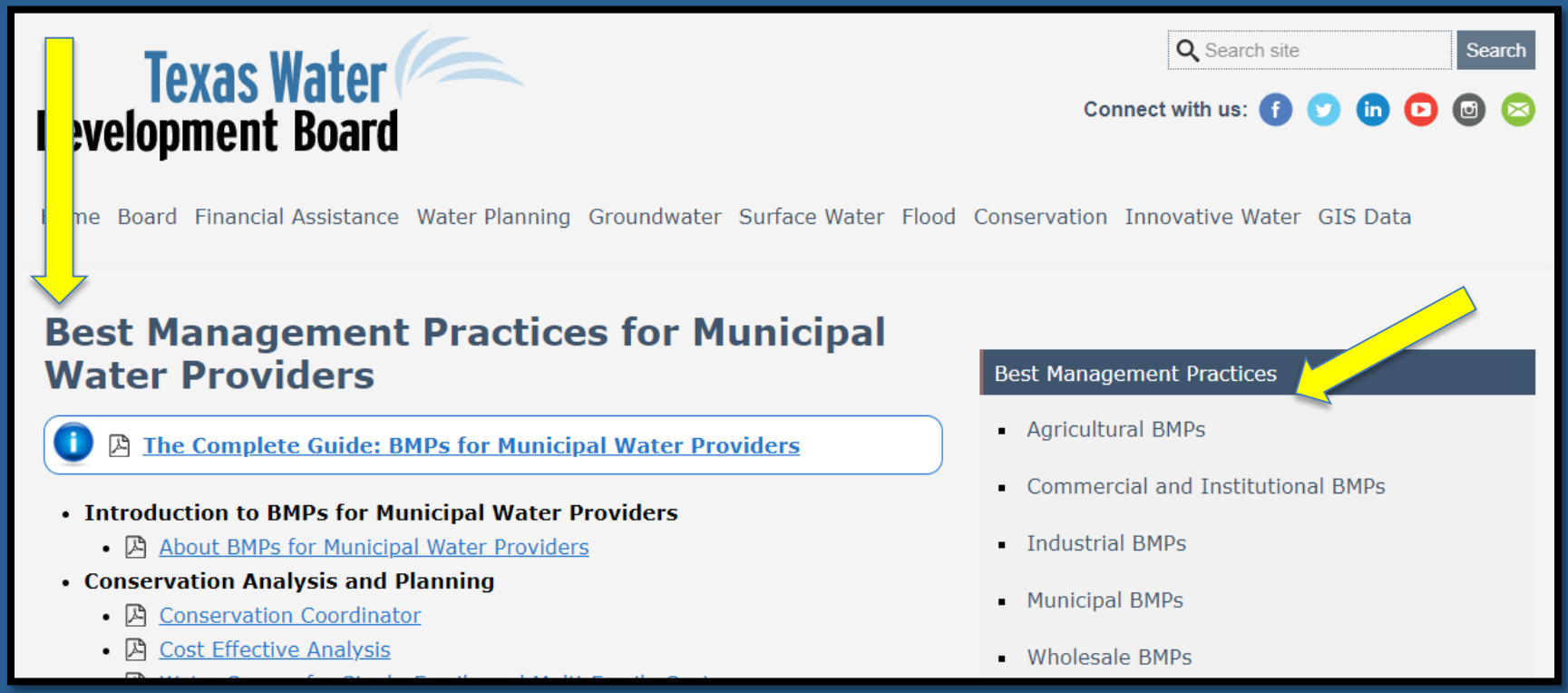
**This plan is for the benefit of your system. It is a "living" document, NOT a report.**

# Water Conservation

Even without a plan, the city or system can incorporate and use conservation measures and strategies to their benefit.

Every measure used is another potential gallon saved.

# Best Management Practices Page



# Water Conservation Plan

Helpful tips and information…

1. Water Conservation Plan Checklist
2. WCP Goals Table Form
3. Water Conservation Plan FAQs
4. Refer to your previous plan
5. Call the TWDB for help

# Goals Table Form

Water Conservation Plan Goals Table
TWDB Form No.1964
Revised 12/14/2012 1:53 PM

## WATER CONSERVATION PLAN
## 5- AND 10-YR GOALS FOR WATER SAVINGS

Facility Name: _____

Water Conservation Plan Year: _____

| | Historic 5yr Average | Baseline | 5-yr Goal for year _____ | 10-yr Goal for year _____ |
|---|---|---|---|---|
| Total GPCD[1] | | | | |
| Residential GPCD[2] | | | | |
| Water Loss (GPCD)[3] | | | | |
| Water Loss (Percentage)[4] | % | % | % | % |

1. Total GPCD = (Total Gallons in System ÷ Permanent Population) ÷ 365
2. Residential GPCD = (Gallons Used for Residential Use ÷ Residential Population) ÷ 365
3. Water Loss GPCD = (Total Water Loss ÷ Permanent Population) ÷ 365
4. Water Loss Percentage = (Total Water Loss ÷ Total Gallons in System) x 100; or (Water Loss GPCD ÷ Total GPCD) x 100

# Water Conservation Plan

*Most common errors…*

1. Goals are NOT represented in Gallons per Capita per Day or **GPCD.**
   – (TOTAL, RESIDENTIAL, and WATER LOSS)

2. Adoption by resolution is NOT included or is unsigned.

3. Using a template WCP that does NOT address the specific(s) needs/problems of the system.

4. Referencing the *Water Conservation Implementation Task Force Report to the 79th Legislature…*

5. Please proof-read your submissions; check for ordinance numbers, signatures, items that are listed in appendices are listed, etc.

# Water Conservation Historical Resources

Water Conservation 5-Year and 10-Year GPCD Targets and Goals

**Reports**

AR GPCD

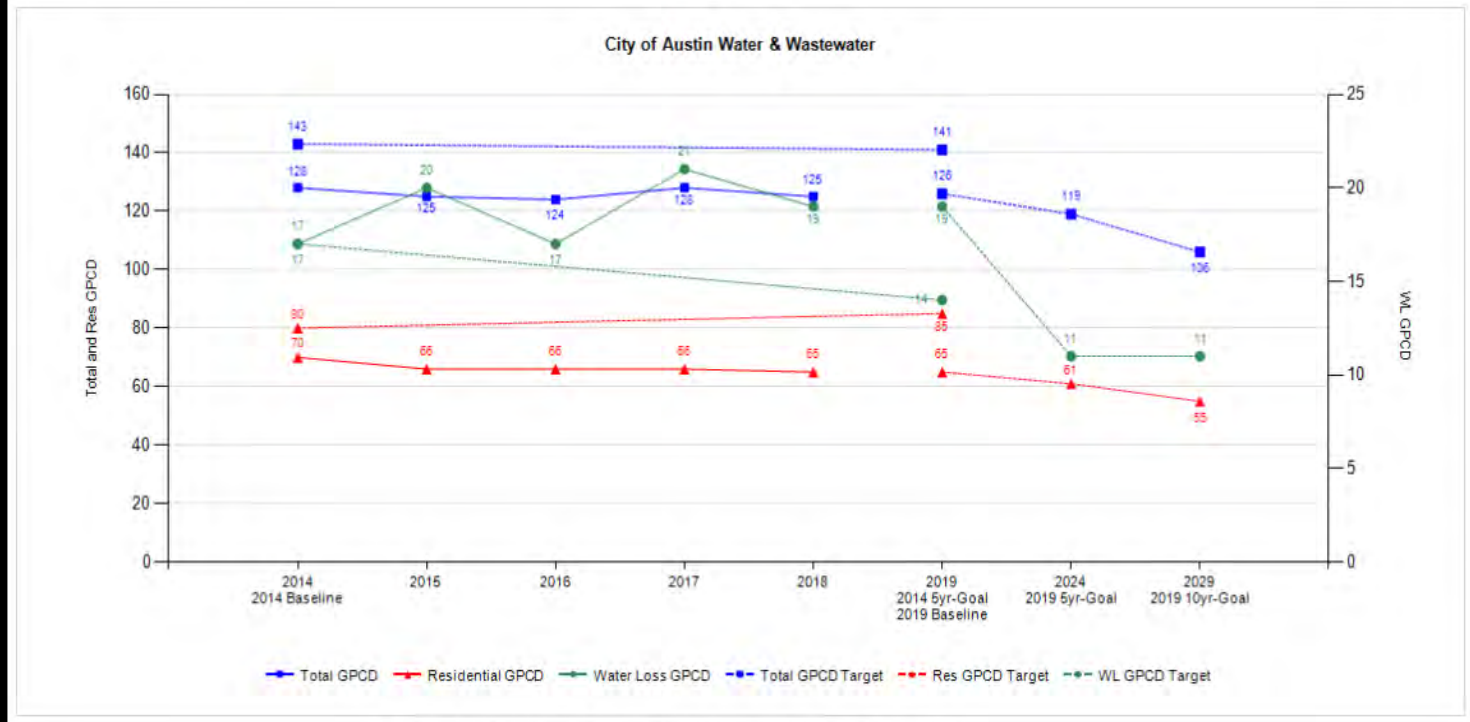
Connections Data

Water Use Data

Targets & Goals

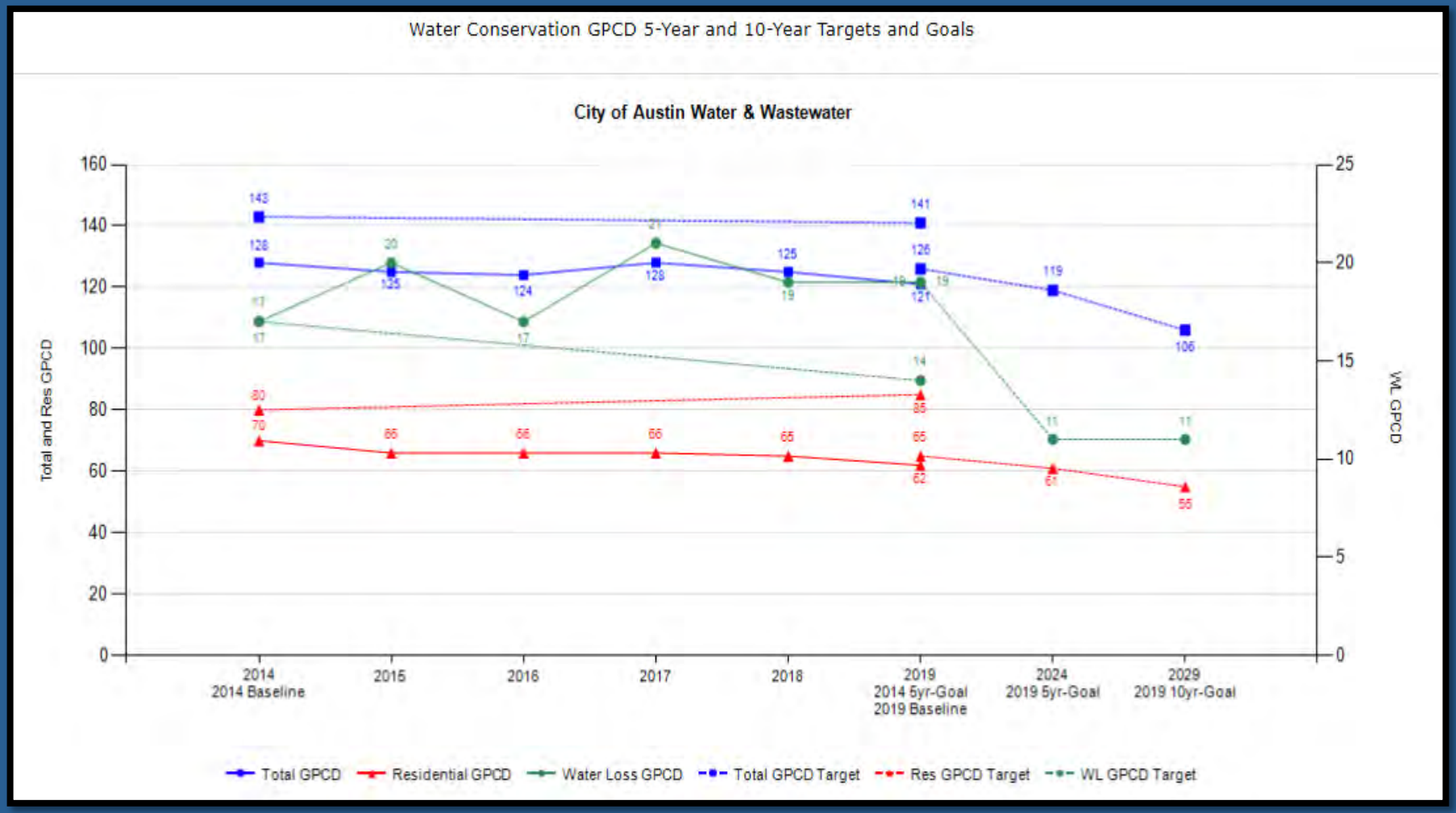
Utility Name:

Get Graph Report




Please note that there may be gaps in the graphs displaying the GPCD Targets and/or actual data reported in the Annual Reports. This may signify that the data was missing due to:

# Water Conservation Historical Resources



# Water Conservation Plan

Municipal Water Conservation Planning Tool

The tool can not necessarily be used to write your plan; *HOWEVER,* it can be used to assess and evaluate the effectiveness of the best management practices incorporated within.

# Thank you for your time!

Questions?
or
Concerns?

*Travis S. Brice*
Water Conservation Specialist
Texas Water Development Board

Office Phone: 512-475-1639
Travis.brice@twdb.texas.gov

# TWDB Financial Assistance Programs

Drinking Water State Revolving Fund (DWSRF)

Clean Water State Revolving Fund (CWSRF)

Texas Water Development Fund (Dfund)

State Water Implementation Fund for Texas (SWIFT)

# Drinking Water State Revolving Fund (DWSRF)

Offers below-market fixed interest rates

Principal forgiveness subsidies for qualifying projects:

- Disadvantaged
- Small/Rural Disadvantaged
- Green
- Very Small Systems
- Urgent Need

Up to 30-year repayment period

Initial maximum funding is $24 million per project

# Clean Water State Revolving Fund (CWSRF)

A wastewater financial assistance program funding water meter replacements?


YES!!! It is eligible as a conservation measure.

Green Project Reserve Funding
http://www.twdb.texas.gov/financial/programs/green/index.asp

At least 30% of a project needs to be “green” and of that 30% up to 15% of the costs are eligible for principal forgiveness

Water meters are 100% green!

SFY 2021 $4.6m set aside with a maximum of $1m per project/entity

# Clean Water State Revolving Fund (CWSRF)

Offers below-market fixed interest rates

Principal forgiveness subsidies for qualifying projects:

- Disadvantaged
- Small/Rural Disadvantaged
- Emergency Relief
- Green

Up to 30-year repayment period

Initial maximum funding is $44 million per project

# Texas Water Development Fund (Dfund)

TWDB's original financial assistance program

Flexible, available year-round

Low rates based on TWDB's cost of funds

AAA Bond Rating

Can fund both water/wastewater projects in a single commitment

Repayment terms up to 40 years

# State Water Implementation Fund for Texas (SWIFT)*

Offers low-interest loans reflecting TWDB's low cost of funds

-Rural/Agricultural additional interest rate subsidy

Up to 30-year repayment

Flexible financing structures

-Low-interest loans

-Deferred Loans

-Board Participation

No maximum funding limit

* The SWIFT program includes two funds, the State Water Implementation Fund for Texas (SWIFT) and the State Water Implementation Revenue Fund for Texas (SWIRFT). Bonds for the program are issued through SWIRFT.

# Eligible Applicants

| | DWSRF | CWSRF | DFund | SWIFT |
|---|---|---|---|---|
| Political Subdivisions (Cities, Counties, etc.) | 💧 | 💧 | 💧 | 💧 |
| Non-profit WSC's | 💧 | 💧 | 💧 | 💧 |
| Investor-owned Utilities | 💧 | 💧 | | |
| Private Entities | | 💧 | | |

**Nonpoint Source Pollution Control Projects Only**

# Eligible Projects

| | DWSRF | CWSRF | DFund | SWIFT |
|---|---|---|---|---|
| Water Supply: Current Need | 💧 | | 💧 | 💧 |
| Water Supply: Future Need | 💧 | | 💧 | 💧 |
| Water Treatment | 💧 | | 💧 | 💧 |
| Water Transmission & Distribution | 💧 | | 💧 | 💧 |
| Potable Reuse | | 💧 | 💧 | 💧 |
| Wastewater Collection | | 💧 | 💧 | |
| Wastewater Treatment | | 💧 | 💧 | |
| Conservation (Meters) | 💧 | 💧 | 💧 | 💧 |

| Program Requirements* | DWSRF | CWSRF | Dfund | SWIFT |
|---|---|---|---|---|
| Davis Bacon wage requirements |  |  | | |
| Disadvantaged Business Enterprise (DBE) (only for Equivalency projects) |  |  | | |
| American Iron & Steel |  |  | | |
| US Iron & Steel | | |  |  |
| Loan Origination Fee |  |  | | |
| Consistent with State Water Plan (SWP) |  |  |  |  |
| Recommended Water Management Strategy with capitalized costs in SWP | | | |  |
| Water Conservation and Drought Contingency Plan for projects > $500k |  |  |  |  |
| Review of water loss threshold limits |  |  |  |  |
| Project in current DWSRF/CWSRF IUP |  |  | | |

*Note: there may be more program requirements than listed; please refer to website for further details.

# Contact Us!

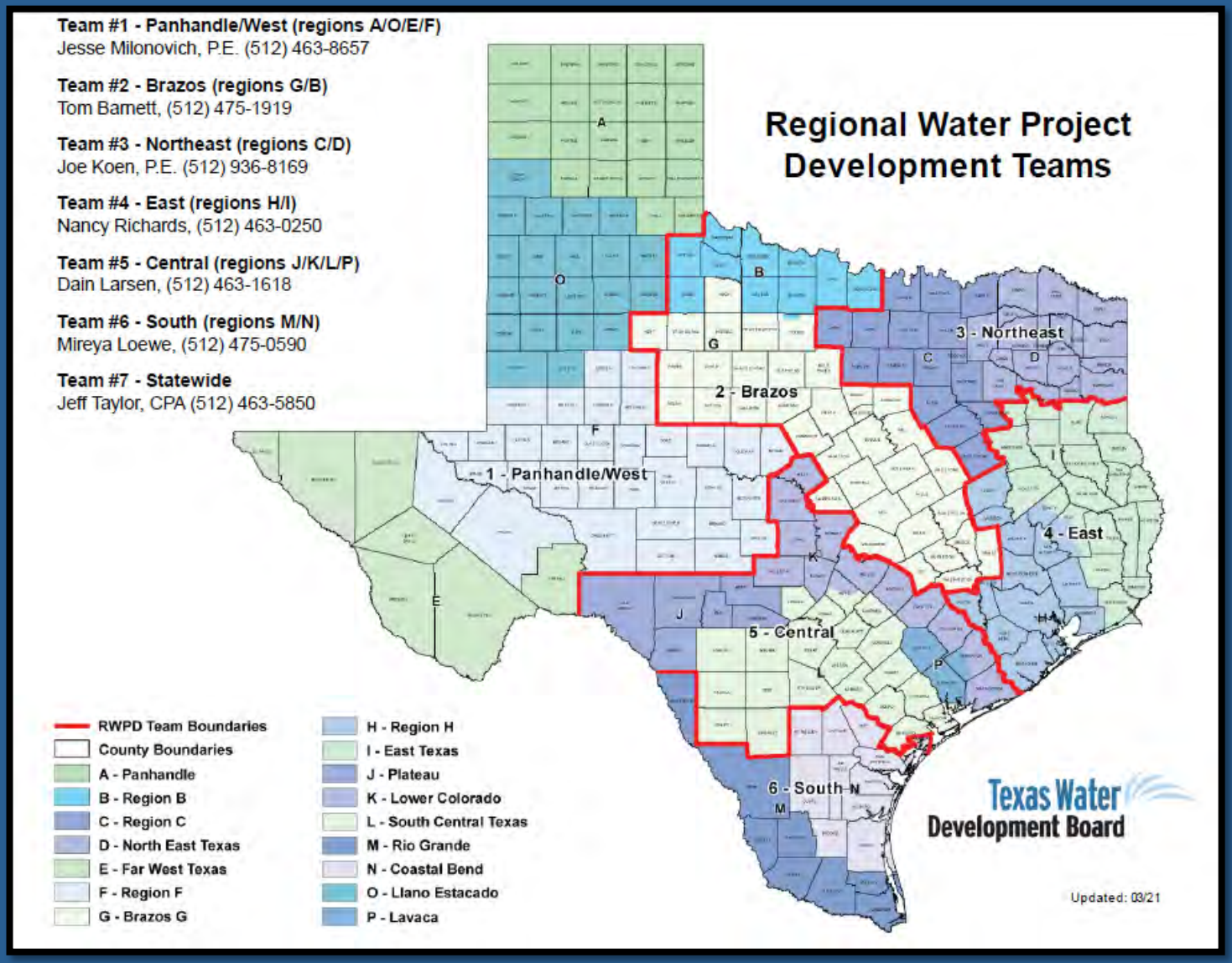
State Outreach Team
Lee Huntoon
512-964-8045

Enriqueta “Keta” Caballero
512-435-9071

CWSRF Coordinator
Issa McDaniel
512-463-1706

DWSRF Coordinator
Caaren Skrobarczyk
512-475-1128

State Programs Coordinator
Alyssa Azari
512-463-5801




financial_assistance@twdb.texas.gov

# Thank You!

## Financial Assistance Resources

- Financial Assistance webpage http://www.twdb.texas.gov/financial/index.asp
- State Revolving Funds Webinar http://www.twdb.texas.gov/financial/programs/DWSRF/index.asp#SRF-2021-02-05
- SRF Programs Overview pdf http://www.twdb.texas.gov/financial/programs/doc/SRF_OVERVIEW_2022.pdf?d=23186.100000006263
- SWIFT webinar http://www.twdb.texas.gov/financial/programs/SWIFT/index.asp#swift-webinar

# FINANCIAL, MANAGERIAL, AND TECHNICAL (FMT) ASSISTANCE PROGRAM

**APRIL 2021**

**TWDB**

**WATER LOSS, USE, AND CONSERVATION WEBINAR**

# MISSION STATEMENT

THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY STRIVES TO PROTECT OUR STATE'S PUBLIC HEALTH AND NATURAL RESOURCES CONSISTENT WITH SUSTAINABLE ECONOMIC DEVELOPMENT. OUR GOAL IS CLEAN AIR, CLEAN WATER, AND THE SAFE MANAGEMENT OF WASTE.

# FMT ASSISTANCE PROGRAM BACKGROUND

- INITIATED UNDER THE SAFE DRINKING WATER ACT – 1996 AMENDMENT, SECTION 1420
- SUPPORTS PUBLIC HEALTH OBJECTIVES OF THE TEXAS CAPACITY DEVELOPMENT PROGRAM
- FREE ON-SITE ASSISTANCE FOR ANY WATER OR WASTEWATER SYSTEM

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

TRWA

Texas Rural Water Association

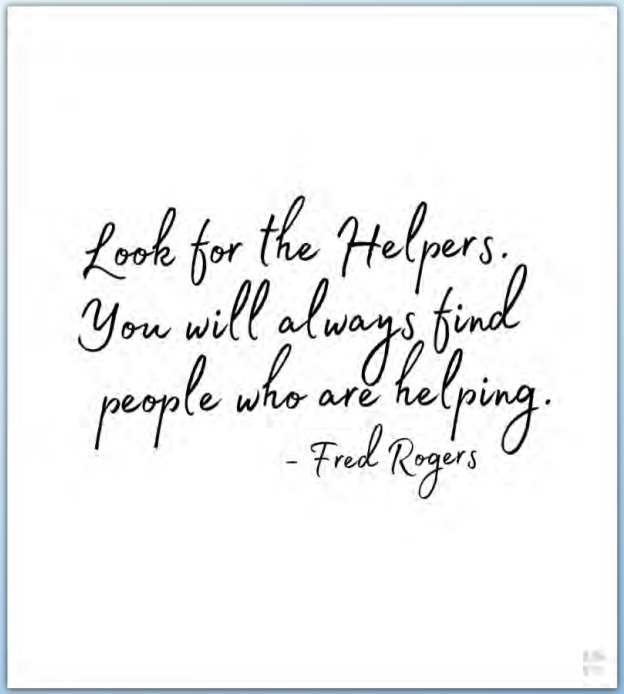
# FMT ASSISTANCE

- PROVIDES FREE ON-SITE SUPPORT AND EDUCATION TO PUBLIC WATER AND WASTEWATER SYSTEMS
- WE CAN HELP YOU GET BACK INTO COMPLIANCE.
- USEFUL TO SYSTEMS ATTEMPTING
  - TO SOLVE OPERATIONAL ISSUES,
  - FIND FINANCING,
  - ADDRESS COMPLIANCE CONCERNS, AND
  - UNDERSTANDING DOCUMENTATION AND HOW TO FILL OUT THE FORMS.

# OUR CONTRACTORS

**TEXAS RURAL WATER AUTHORITY**

- OPERATORS
- SUBJECT MATTER EXPERTS
- TECHNICAL SPECIALISTS
- FAMILIAR WITH TCEQ:
  - RULES,
  - REGULATIONS, AND
  - REQUIREMENTS.



# OUR PROCESS

- WHEN ASSISTANCE IS REQUESTED, A REFERRAL IS SENT TO TRWA.
- TRWA SCHEDULES A VISIT WITH YOU; THEN
- TRWA DELIVERS THE ASSISTANCE (USUALLY THIS IS ON-SITE, BUT WE CAN ALSO OFFER SOME THINGS VIRTUALLY).
- IF YOU NEED MORE HELP, WE WILL SEND MORE HELP.

# TYPES OF ASSISTANCE

- CAPACITY ASSESSMENTS
- CONSOLIDATION ASSESSMENTS
- ON-SITE FMT ASSISTANCE
- FMT DRINKING WATER OPERATOR TRAINING
- SPECIAL ASSIGNMENTS

# FMT CAPACITY ASSESSMENT

- CONDUCTED FOR DRINKING WATER STATE REVOLVING FUND (DWSRF) APPLICATIONS AND OTHER ENTITIES AS ASSIGNED
- OUTLINES SYSTEMS' STRENGTHS AND IDENTIFIES ANY AREAS IN NEED OF IMPROVEMENT

# CONSOLIDATION ASSESSMENT

- DETERMINES CONSOLIDATION OPPORTUNITIES AND ASSESSES THE FEASIBILITY OF TWO OR MORE SYSTEMS WORKING TOGETHER TO IMPROVE SERVICE TO CUSTOMERS


- CAN EVALUATE NEIGHBORING PWSS AND LARGER UTILITIES

- MAY INVOLVE THE PUC

# ON-SITE FMT ASSISTANCE

- PROVIDES FREE ON-SITE SUPPORT AND EDUCATION TO PUBLIC WATER AND WASTEWATER SYSTEMS
- USEFUL TO SYSTEMS ATTEMPTING TO SOLVE OPERATIONAL ISSUES
- 41 TASKS/TOPICS AVAILABLE
- THESE TASKS CAN BE COMBINED AND BE MADE AS SIMPLE OR COMPLEX AS IS NEEDED TO ADDRESS YOUR CONCERNS.

# FMT DRINKING WATER OPERATOR TRAINING (DWOT)

- TRAINS PWS OPERATORS ON TECHNICAL SUBJECTS RELATED TO PWS OPERATION TO INCREASE TECHNICAL CAPACITY
- TRAINING PROVIDED BY FMT USING DIRECTED ASSISTANCE MODULES (DAMS) WRITTEN BY THE TCEQ TEXAS OPTIMIZATION PROGRAM (TOP)
- 14 DAMS AVAILABLE
- DAMS ARE ESSENTIALLY WORKSHOPS THAT ARE CLASSROOM / BENCHTOP ORIENTED

# FMT DWOT
# AVAILABLE DAMS INCLUDE:

**DAM 1:** DEVELOPING PERFORMANCE GOALS & A MONITORING STRATEGY AT A SWTP

**DAM 2A:** ESTABLISHING APPROPRIATE CHEMICAL FEED RATES AT A SWTP

**DAM 2B:** JAR TESTING FOR A SWTP

**DAM 3A:** COMPLETING THE SWMOR FOR A CONVENTIONAL SWTP

**DAM 3B:** COMPLETING THE SWMOR-ALT FOR SWTPS WITH ALTERNATIVE TREATMENT

**DAM 4:** DBP CONTROL FOR SWTPS

**DAM 5:** PROCESS CONTROL FOR PWSS USING CHLORAMINES

**DAM 6:** FILTER ASSESSMENT FOR A CONVENTIONAL SWTP

**DAM 7:** METHOD 334 – APPROVAL OF NON-DPD ONLINE CHLORINE ANALYZERS FOR REGULATORY USE

**DAM 8:** NAP FOR PWSS USING CHLORAMINES

**DAM 9:** SPECIAL STUDIES IN THE WTP

**DAM 10:** FILTER DATA INTEGRITY FOR A SWTP

**DAM 11:** HOW TO PERFORM A RTCR LEVEL 1 ASSESSMENT

**DAM 12:** HOW TO DEVELOP & MANAGE AN EFFECTIVE CROSS-CONNECTION CONTROL PROGRAM

# SPECIAL ASSIGNMENTS

- INCLUDES ACTIVITIES NOT DEFINED BY THE OTHER ASSIGNMENT TYPES BUT WORK IN SUPPORT OF THE TCEQ CAPACITY DEVELOPMENT STRATEGY

- PAST SPECIAL ASSIGNMENTS HAVE INCLUDED FACILITATING A COMMUNITY MEETING, COORDINATING A WORKSHOP, AND PROVIDING ASSISTANCE OVER THE PHONE

# HOW TO REQUEST ASSISTANCE

EMAIL: FMT@TCEQ.TEXAS.GOV

PHONE: (512) 239-4691

RCDT STAFF: ADRIANA THOMAS, SAMIRA ARMIJOS,

TRAVIS BARTOS, KATHERINE MCGLAUGHLIN,

AND JAKE REITMEYER

# QUESTION AND ANSWER