A One Water Story – Innovative Conservation Design: Wimberley's Blue Hole Primary School

THE MEADOWS CENTER FOR WATER AND THE ENVIRONMENT

No natural resource is more important to our future than Water. Water is what we do.

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The Meadows Center
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Texas State University

Primary Threats to Water in the Wimberley Valley

Impacts of drought – lower flows, increased temperatures negatively affect dissolved oxygen and bacteria growth

Growth, development – increased pumping of groundwater, impervious cover/increased stormwater flows; pollution from homes, cars, businesses; changes in wildlife habitat/patterns; aging infrastructure

Declining groundwater levels – reduced spring flows result in worsening water quality for Cypress Creek and Blanco River; significant economic, cultural and ecologic costs

“Optimism is a strategy for making a better future. Because unless you believe that the future can be better, it’s unlikely you will step up and take responsibility for making it so. If you assume that there’s no hope, you guarantee that there will be no hope. If you assume that there is an instinct for freedom, there are opportunities to change things, there’s a chance you may contribute to making a better world. The choice is yours.”

-Noam Chomsky

CYPRESS CREEK

Let's keep it clean, clear & flowing

10

Celebrating 10 Years

Of stakeholder-driven watershed protection in the Cypress Creek Watershed

The Meadows Center for Water and the Environment
Texas State University

EPA United States Environmental Protection Agency

The Meadows Center for Water and the Environment
Texas State University
Texas Stream Team

Texas State University
The rising STAR of Texas

Texas Commission on Environmental Quality

City of Wimberley

Wimberley Valley Watershed Association

GBRA
Guadalupe-Blanco River Authority

The City of Woodcreek
In the Midst of the Texas Hill Country

Hays Trinity Groundwater Conservation District

The Texas Clean Rivers Program

Hays County State of Texas

Texas State Soil and Water
Soil
Water

Texas Water Development Board

Texas A&M AgriLife Extension

Lions International

The Nature Conservancy

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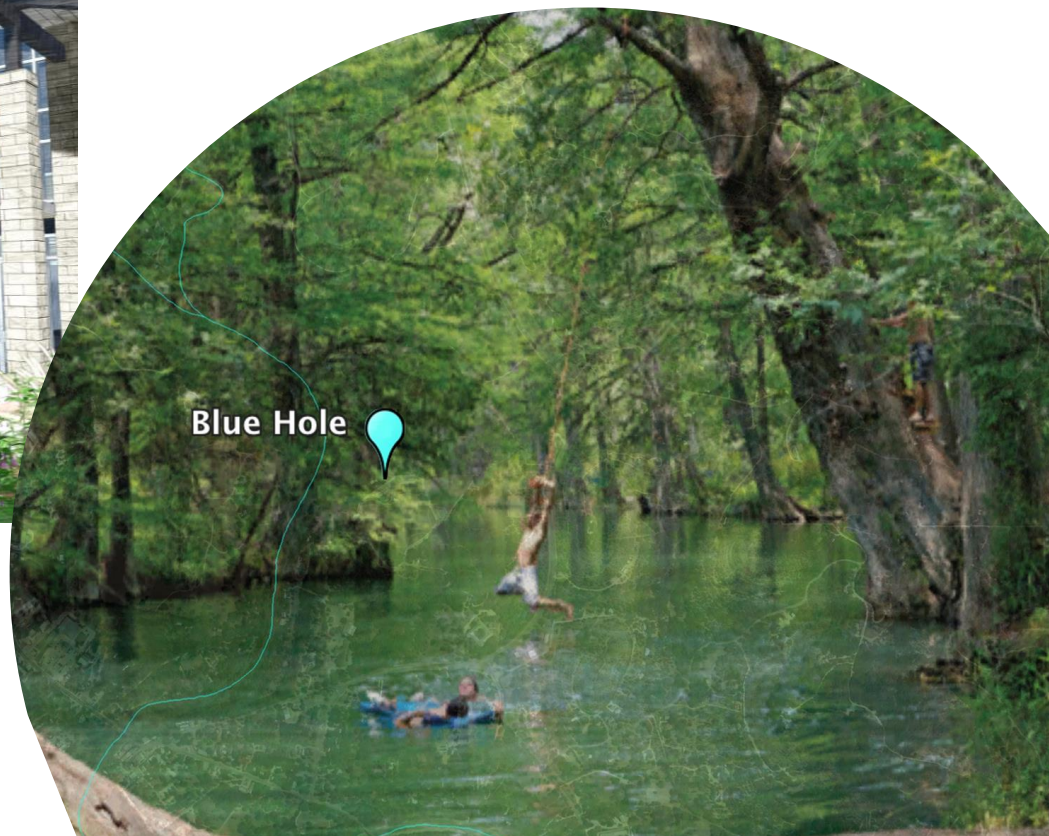
Cypress Creek Watershed Protection

- Activities to prevent pollution, protect flow
- Preserve water quality through local permitting, ordinances
- Improve tools for decision makers to calculate effects of land use changes on water quality
- Site-specific LID/Green Infrastructure demonstration sites
- Outreach and education efforts
- Monitoring and modeling water quality changes

Simply Stated:

The Cypress Creek Watershed Protection Plan aims to ensure that the long-term integrity and sustainability of the Cypress Creek watershed is preserved and that water quality standards are maintained for present and future generations.

A New Primary School for Wimberley ISD



WISD Primary School Environmental Concerns

CONVERSION OF NATIVE RANGE TO DEVELOPED SITE

STORMWATER IMPACTS TO EPHEMERAL TRIBUTARY AND CYPRESS CREEK WITH NO ENHANCED GSI

STANDARD CONSTRUCTION W/ MINIMAL WATER CONSERVATION PRACTICES (20 GAL. PER STUDENT/DAY)

WASTEWATER MINDSET WITH RAW SEWAGE TO BE TRANSPORTED TO OFF-SITE WWTP

WATER SUPPLY FROM ALREADY STRESSED COW CREEK AQUIFER… THE SOURCE OF FLOW FOR JACOB'S WELL SPRING

A MISSED OPPORTUNITY

A solution?

LOCAL

Wimberley school to make history as first 'One Water' school in Texas

A 'One Water' school means it will use 90 percent less groundwater than a typical school of this size.

Author: Shawna Reding
Published: 8:04 AM CST December 3, 2018
Updated: 11:06 AM CST December 3, 2018

WHAT IS ONE WATER?

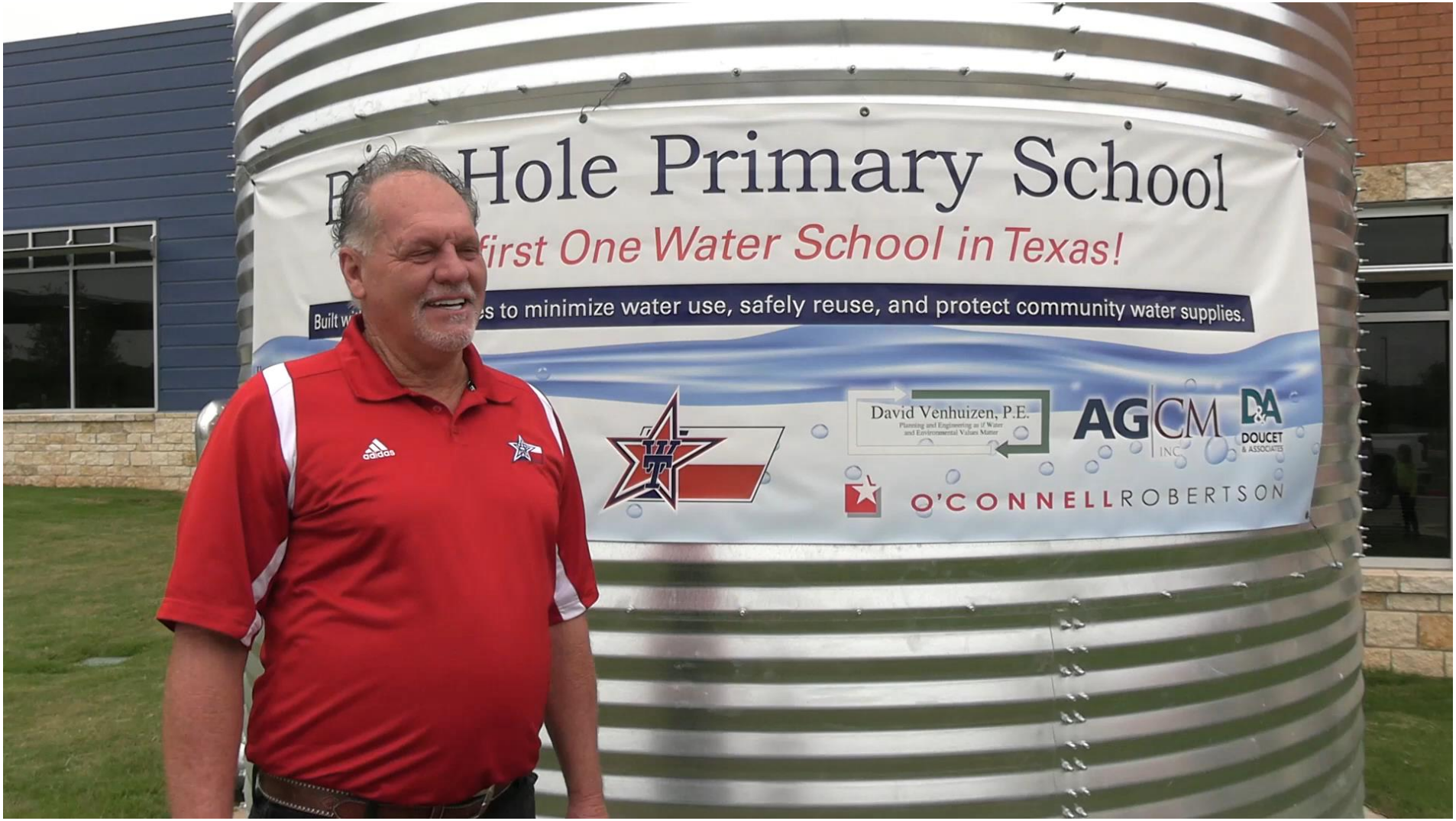
An intentionally INTEGRATED approach to water

One Water promotes the management of **all water** — drinking water, wastewater, stormwater, greywater— as a **single resource**.

Across types of water

Across regions/ watersheds

D&A DOUCET & ASSOCIATES


Hole Primary School
first One Water School in Texas!
s to minimize water use, safely reuse, and protect community water supplies.
David Venhuizen, P.E.
AGCM INC
DOUCET & ASSOCIATES
O'CONNELL ROBERTSON

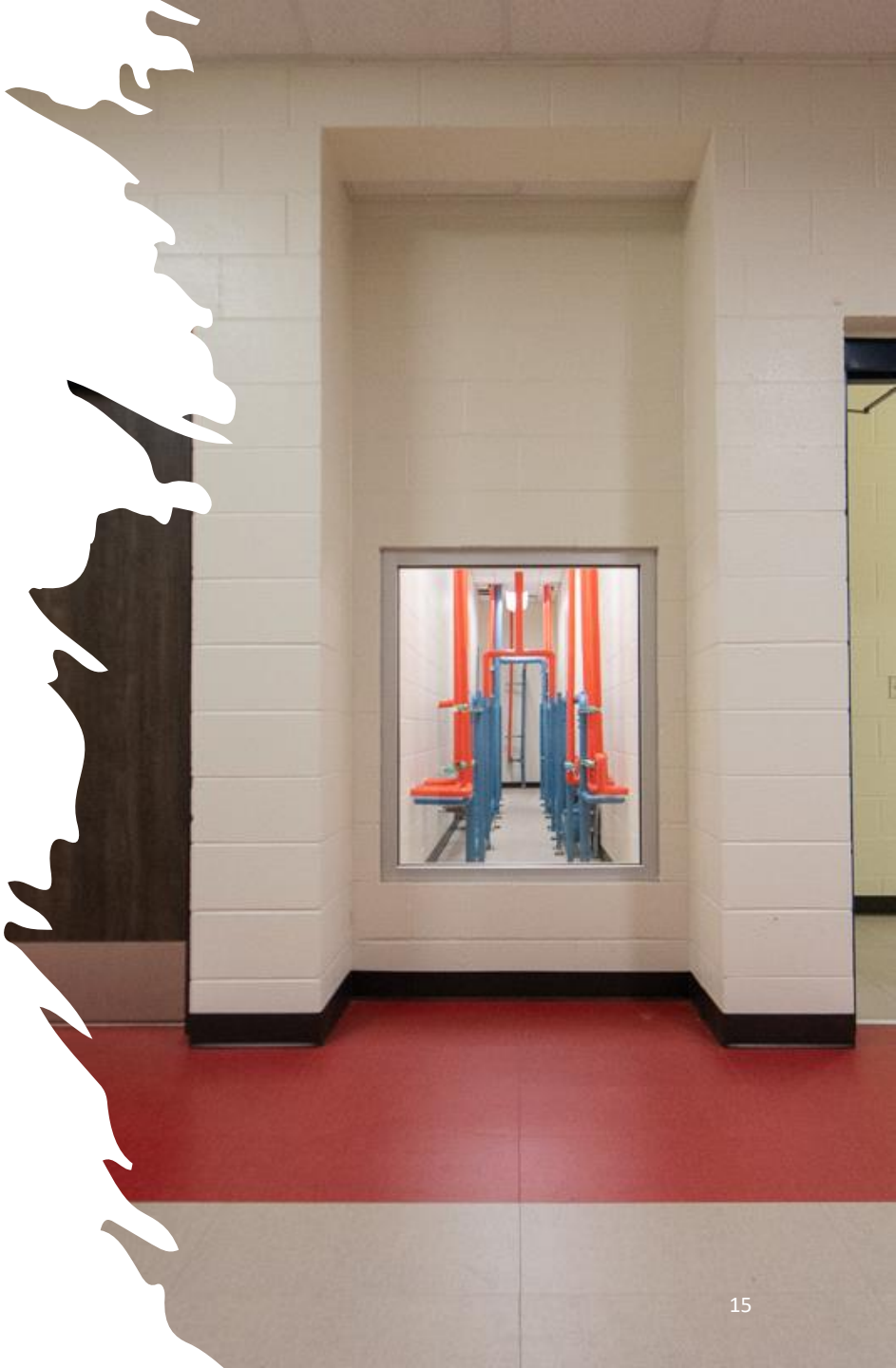
Onsite black/gray water treatment using packed-bed recirculating gravel filters.

Subsurface drip irrigation for athletic field = beneficial reuse of up to 5,000 GPD of treated effluent.

Rainwater and HVAC condensate for toilet flushing.

Potable water demand reduced by 90% protecting spring flow.

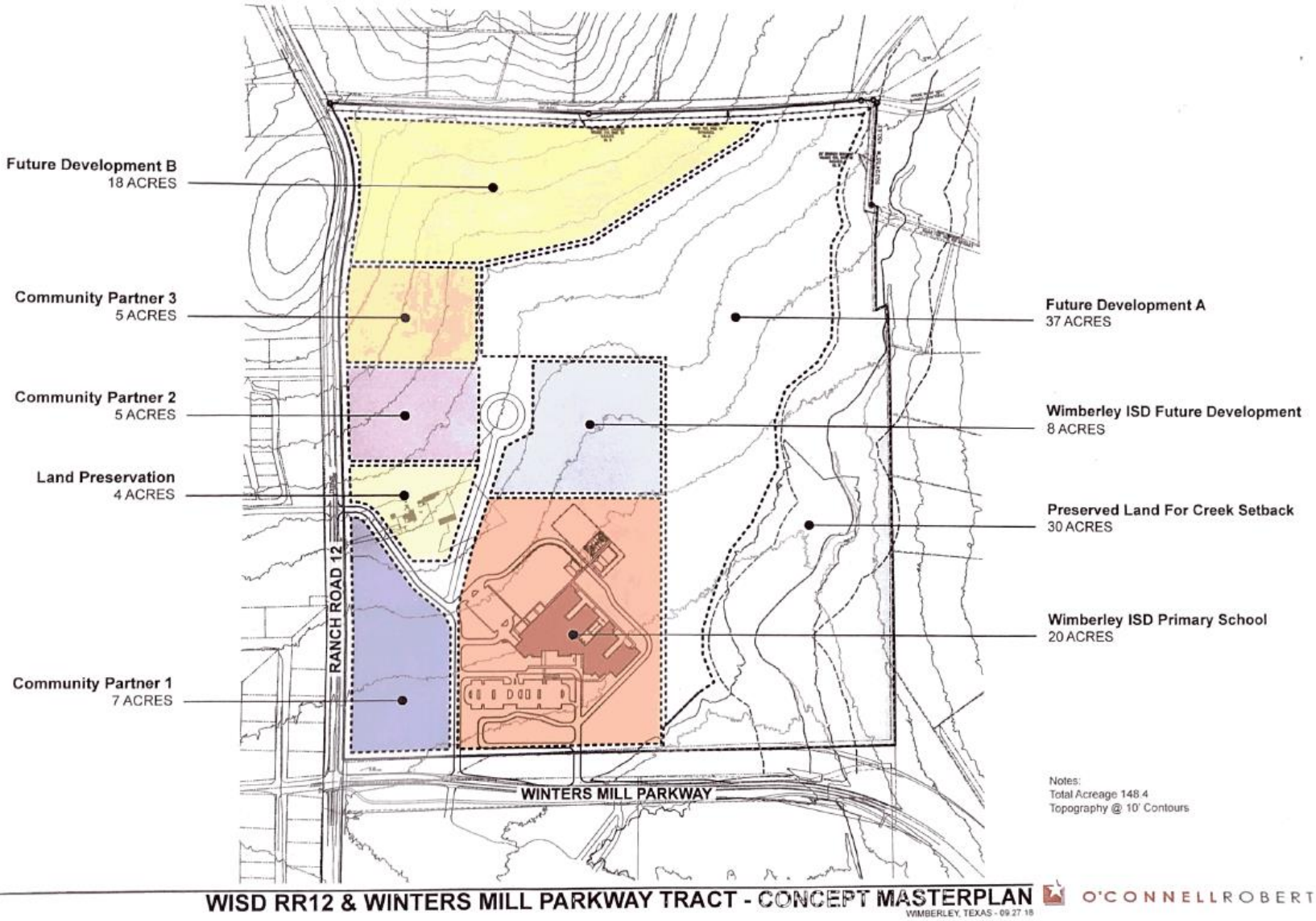
Approx. $1,000,000 in water/sewer savings over 30 years.



Benefits: Bringing It All Together

- FOR WISD:
  - Reduced capital and operating costs
  - Establish leadership in the community on a flagship site
- FOR THE COMMUNITY
  - A catalyst for creating a watershed culture
  - A Living Lab for integrated water management
- FOR THE CHILDREN
  - Healthier and smarter kids
  - Engaging and Inspirational Learning Experience

Next Step: A *One Water* Master Plan:



A *One Water* Future for the Texas Hill Country

Online dashboard for Blue Hole Primary water use

Wimberley Village Library

Blue Hole Park and Nature Center

Austin ISD, Lake Travis ISD and Comal ISD

Blanco Water Reclamation Task Force – Pathways for a One Water Community

Special thanks to my friends and colleagues Joe Day, David Baker and David Venhuizen, PE.

This project would not have been possible without the support of Wimberley ISD, Wimberley Valley Watershed Association, the Meadows Center for Water and the Environment and the outpouring of support from local citizens and stakeholders.

AGCM, Inc., Doucet and Associates and O'Connell Robertson

Funding to support this effort was generously provided by the Harry L. Willet Foundation.

Blue Hole Primary School

The first One Water School in Texas!

Built with STEM principles to minimize water use, safely reuse, and protect community water supplies.

Harry L. Willett Foundation

Wimberley Valley Watershed Association

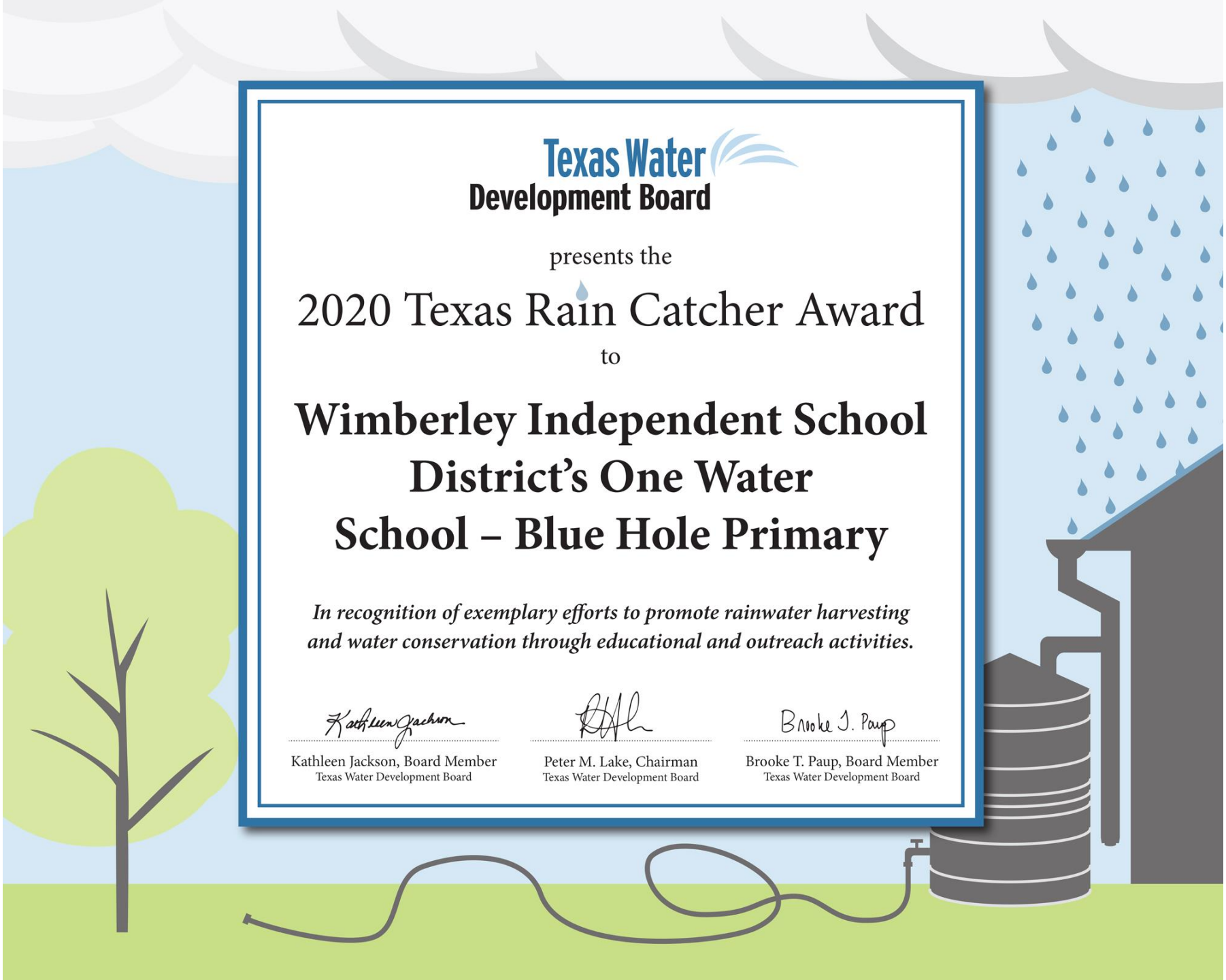
The Meadows Center for Water and the Environment
Texas State University

David Venhuizen, P.E.
Planning and Engineering as if Water and Environmental Values Matter

AGCM INC

D&A Doucet & Associates

O'Connell Robertson


Texas Water
Development Board
presents the
2020 Texas Rain Catcher Award
to
Wimberley Independent School District's One Water School – Blue Hole Primary
In recognition of exemplary efforts to promote rainwater harvesting and water conservation through educational and outreach activities.
Kathleen Jackson, Board Member
Texas Water Development Board
Peter M. Lake, Chairman
Texas Water Development Board
Brooke T. Paup, Board Member
Texas Water Development Board

Nick Dornak
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Conventional vs One-Water Cost Summary

WATER SUBSYSTEM	COST TYPE	CONVENTIONAL	ONE-WATER
WASTE WATER + REUSE	CAPITAL COST	$ 750,000	$ 446,778
	ANNUAL O & M COST	$ 26,695	$ 6,000
RAINWATER + AC CONDENSATE COLLECTION FOR TOILET FLUSHING	CAPITAL	$ -	$ 250,000
	ANNUAL O & M COST	$ 19,488	$ 10,188
STORMWATER MANAGEMENT (LID & GREEN INFRASTRUCTURE)	CAPITAL COST	$ -	$ 125,000
	ANNUAL O & M COST	$ -	$ -
SUM TOTAL ALL WATER SYSTEMS	CAPITAL + 30 YEAR O & M COST	$ 2,135,490	$ 1,307,418