PROTECTING WATER RESOURCES WITH SUSTAINABLE DEVELOPMENT

THE CHALLENGE – RAPID GROWTH AND INCREASING DROUGHTS IMPACTING WATER RESOURCES

When you visit New Braunfels, Texas, you can feel how much our community cherishes its local waterways. Residents and visitors spend weekends tubing down the Comal River and hosting picnics at Landa Lake, which is fed by the pristine springs of the Edwards Aquifer. However, rapid growth and periods of extended drought are rapidly impacting the local water resources.

Stormwater runoff floods our neighborhood and carries pollutants into our waterways.

- Additional users increase demand for limited local water supplies.
- Increased impervious cover, such as parking lots, homes, and driveways, is slowing down recharge of the aquifers and increasing stormwater runoff.
- Being geographically located along the 100th meridian predisposes the region to periods of extended drought followed by intense rainfall and flash flooding and increased stormwater runoff.
- Stormwater runoff can result in increased water contamination, as stormwater carries contaminants directly to our waterbodies instead of being naturally filtered.

Increased stormwater runoff due to regional development and flash flooding is impacting our ability to use our beloved waterways. For example, stormwater carries deer and duck waste in Landa Park directly into the Comal River and Dry Comal Creek. Due to increased waste, the *E. coli* levels in the creek and river have risen over the last couple of decades, resulting in the classification of these waterbodies as impaired.

To combat these challenges, Headwaters at the Comal partnered with local engineering firm, Arcadis, to encourage the use of **Low Impact Development** in New Braunfels.

ARCADIS HEADWATERS AT THE COMAL™ TEXAS MASTER GARDENER TEXAS A&M AGRILIFE EXTENSION CONNECTIONS INDIVIDUAL AND FAMILY SERVICES

THE SOLUTION – LOW IMPACT DEVELOPMENT

Low Impact Development, also known as Green Infrastructure, is a sustainable land planning and engineering design approach that seeks to manage stormwater runoff as close to its source as possible. Low Impact Development emphasizes the use of natural systems and small-scale, decentralized techniques to mimic a site's pre-development hydrology. Instead of relying on large, centralized stormwater infrastructure like storm drains and retention basins, Low Impact Development promotes infiltration, evapotranspiration, and reuse of rainwater. Benefits include:

Improve Water Quality

- Filter contaminants

Mitigate Localized Flash Flooding

- Slow the flow of stormwater
- Reduce safety threats and property damage of flash flooding
- Reduce damage to waterways

Cost Savings

- Reduce the need for expensive utility infrastructure to manage stormwater
- Use of collected stormwater for irrigation reduces the need to purchase potable water

Maintain Water Supply

- Allow for infiltration to replenish groundwater

Low Impact Development at Home

1. Rain Barrel
2. Rain Garden Planter
3. Rain Garden
4. Xeriscaping with Native Drought-Tolerant Plants
5. Ribbon Driveway

Low Impact Development for Business

1. Green Roof
2. Rainwater Harvesting
3. Pervious Pavement
4. Bioswale/Filter Strip
5. Bioretention/ Biofiltration Basin

Training the Community about Low Impact Development

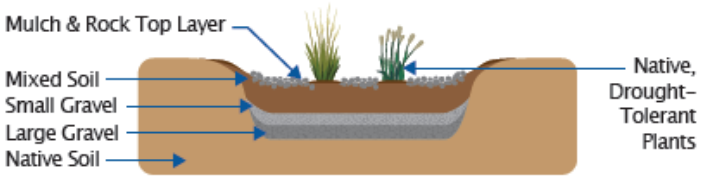
Arcadis developed a Low Impact Development training program for use by Headwaters at the Comal. To date, Headwaters at the Comal has hosted two training sessions for 20 people and presented at the 2025 Texas Regional Stormwater Conference. They will continue to offer training opportunities in the new Center at the Headwaters building beginning in late 2025.

To learn more about Low Impact Development, sign up for a training session by contacting info@headwatersatthecomal.org. Reference "Protecting Water Resources" training.

Demonstration Rain Garden

To demonstrate an implementation of Low Impact Development (LID) in New Braunfels, a rain garden was built at one of the Connections Individual and Family Services (IFS) locations. The garden was constructed by hand in a 5-hour session by volunteers from Arcadis, Texas Master Gardeners, and Headwaters at the Comal with materials donated by Arcadis.

The rain garden is a shallow, planted depression filled with native plants and soil layers that help filter pollutants and allow water collected from impervious surfaces like roofs and driveways to slowly soak into the ground.



Address:
Connections IFS & Community Garden
1447 W. Mill Street

Connections IFS is a nonprofit organization that provides shelter and counseling services to at-risk youth in Comal County.

Size: 9 ft x 9 ft area, 18 in. deep

Materials Cost: $1,700

Rain Garden Construction Steps

A soil infiltration test was completed and an 811 locate was performed. The location of the rain garden was selected to maximize the flow of rainwater captured.

Native soil was removed to create an 18-inch deep hole with sloped sides.

The garden was refilled with the gravel and soil layers shown in the schematic above to capture and retain rainwater.

Multiple century plant agaves, Muhly Grasses, Esperanzas and Texas Lantanas were planted, which are all native and drought-tolerant to minimize watering requirements.

The rain garden was topped with mulch around the plants and edges to retain moisture and rocks on the top to prevent erosion.

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Benefits of Rain Gardens:

- Reduce Runoff
- Recharge Our Aquifers
- Conserve Water
- Enhance Outdoor Spaces
- Improve Water Quality
- Provide Habitat
- Reduce Flooding & Erosion
- Improve Aesthetics

Help us preserve our water quality by constructing a rain garden at your home!

For a How-To Guide, contact Headwaters at the Comal

THE IMPACT – PRESERVING WATER RESOURCES

By implementing Low Impact Development strategies in our community, we can all help to preserve our local water resources, supporting our community's One Water Vision to ensure water remains a celebrated and protected feature of New Braunfels. Larger-scale projects can be incorporated into planned rehabilitation and new construction projects to reduce costs, while many of the smaller-scale projects are simple enough to DIY at home.

By each doing our part to implement Low Impact Development, we can:

- improve water quality
- preserve flow in our aquifers and rivers
- reduce localized flooding
- increase habitat

Protecting the quality of water resources and the watersheds not only supports the physical health of a community by providing reliable supplies of drinking water, but also supports the socioeconomic health of a community by providing recreational and economic opportunities, supporting native aquatic and animal species, and minimizing localized flooding.

Population:
>100,000 currently

People Receiving Training To-Date:
Approx. 200

Headwaters at the Comal Visitors per Year:
Approx. 3,000

Connections IFS and Community Garden Visitors per Year:
Approx. 2,000

Aquifers/Rivers:
Comal River
Dry Comal Creek
Guadalupe River
Trinity Aquifer
Edwards Aquifer

Did you know? The City of New Braunfels is already implementing Low Impact Development on city properties. For example, biofiltration basins, which similarly capture and absorb stormwater, have been built in three different locations.