Ordinance Review to Support Green Infrastructure and Low Impact Development

City of Griffin, Georgia

Presenter: Julie Kaplan, Tetra Tech

TETRA TECH

Outline

- NPDES stormwater permit requirements
- Green Infrastructure (GI) and Low Impact Development (LID)
- City of Griffin Stormwater Division
- Code review process
- Common GI/LID barriers
- Adding code incentives

TETRA TECH

General NPDES Stormwater Permit Requirements for Small MS4s

4.2.5.2 Green Infrastructure/Low Impact Development (GI/LID)

The requirements of Part 4.2.5.2 of this permit only apply to those permittees with a population exceeding 10,000 at the time of this permit issuance or at the time of designation. Permittees with a population less than 10,000 are exempt from this requirement at this time (See Appendix B).

EPD encourages the use of GI/LID practices and approaches on both new and redeveloped sites. The permittee shall review and revise, where necessary, building codes, ordinances, and other regulations to ensure they do not prohibit or impede the use of GI/LID practices, including infiltration, reuse, and evapotranspiration. At a minimum, the permittee shall assess those regulations governing road design and parking requirements. During the review, the permittee should consider the inclusion of incentives for use of GI/LID practices into the regulatory documents. For existing permittees, the evaluation must be completed within two years and a written report submitted to EPD with the 2014 annual report, due February 15, 2015. Any necessary revisions must be completed, and adopted ordinances submitted to EPD, within four years of the effective date of this Permit. For new permittees, the evaluation must be completed within two years of designation and a written report submitted to EPD with the subsequent annual report. Any necessary revisions must be completed, and adopted ordinances submitted to EPD within four years after designation.

No. GAG610000

TETRA TECH

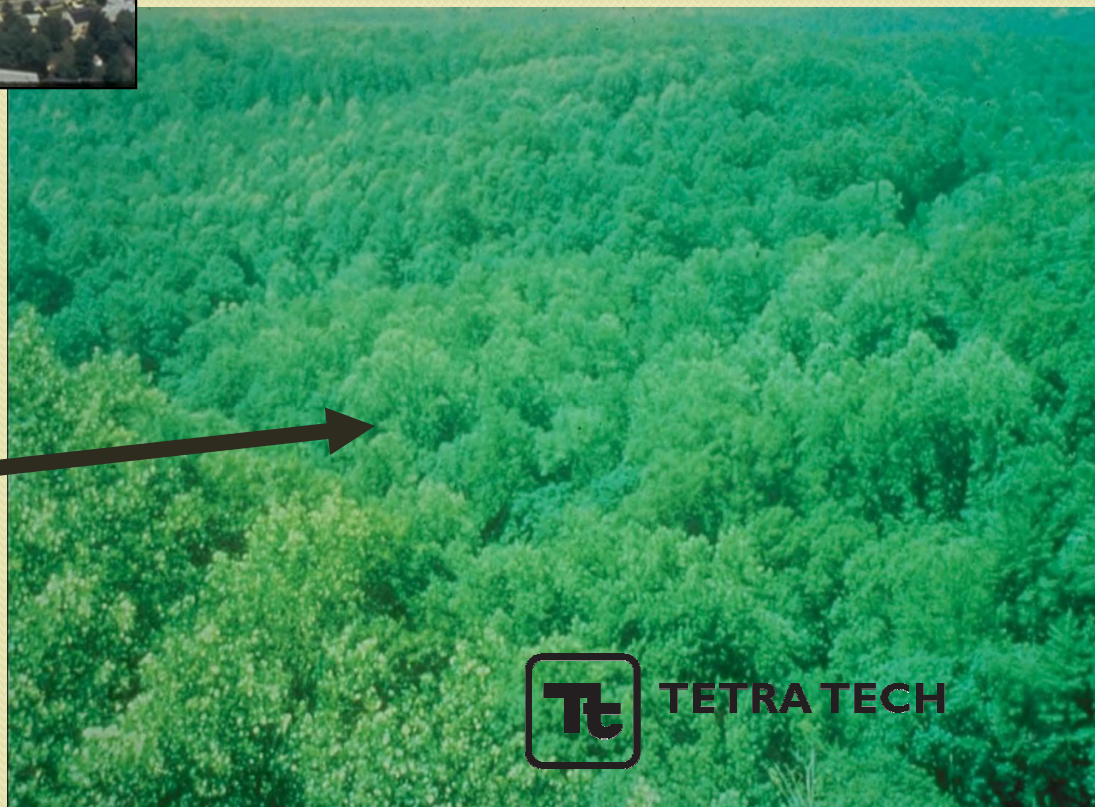
GI/LID Definitions

- **Green Infrastructure (GI)** refers to systems and practices that use or mimic natural processes to infiltrate, evapotranspirate, or reuse stormwater or runoff on the site where it is generated (USEPA)
- **Low Impact Development (LID)** is an approach to land development (or re-development) that works with nature to manage stormwater as close to its source as possible (USEPA)

TETRA TECH

How to make this…

function like this

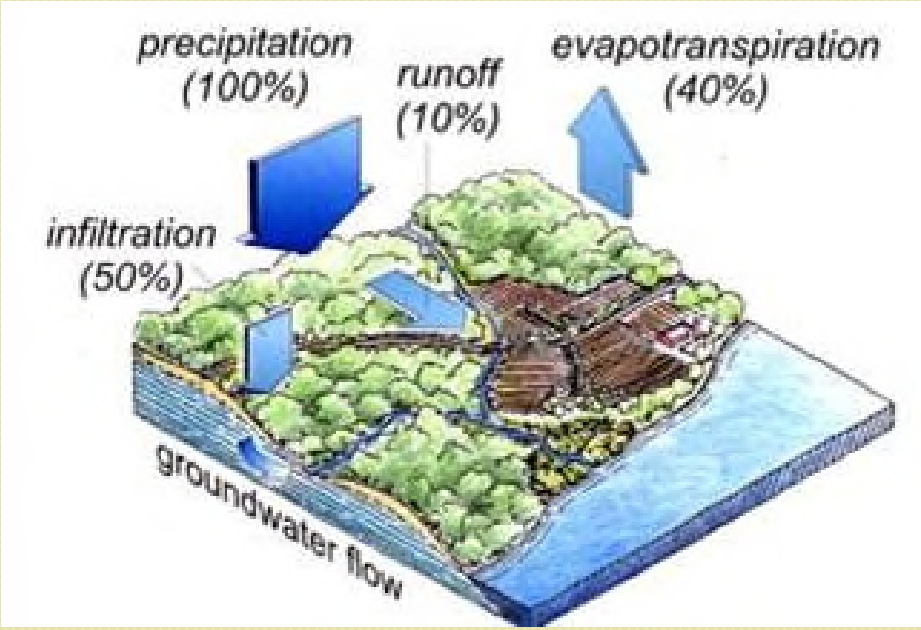


Development Impacts: Runoff Volume

Typical pre-development conditions:

Runoff = 10%

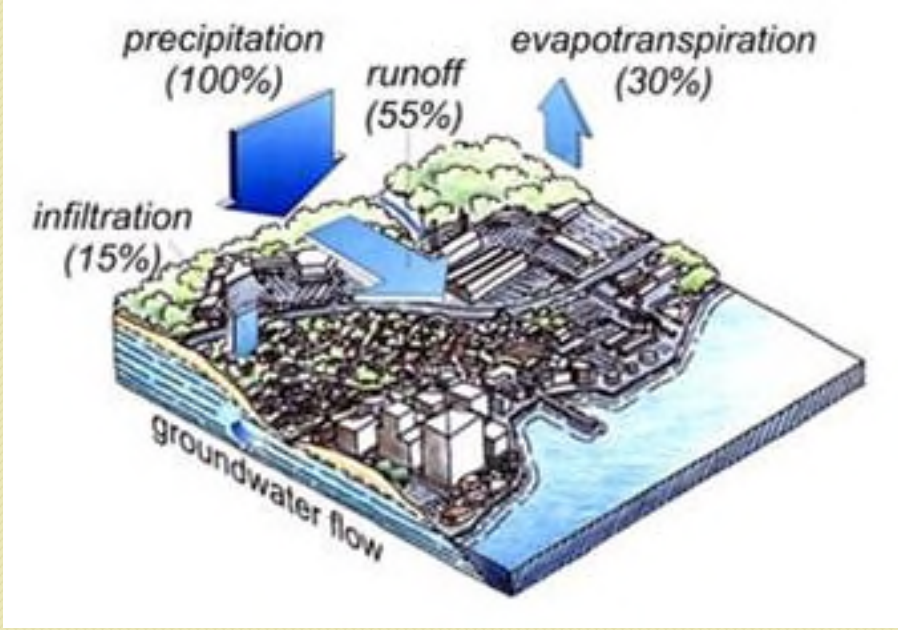
Infiltration = 50%



Typical post-development conditions:

Runoff = 55%

Infiltration = 15%



TETRA TECH

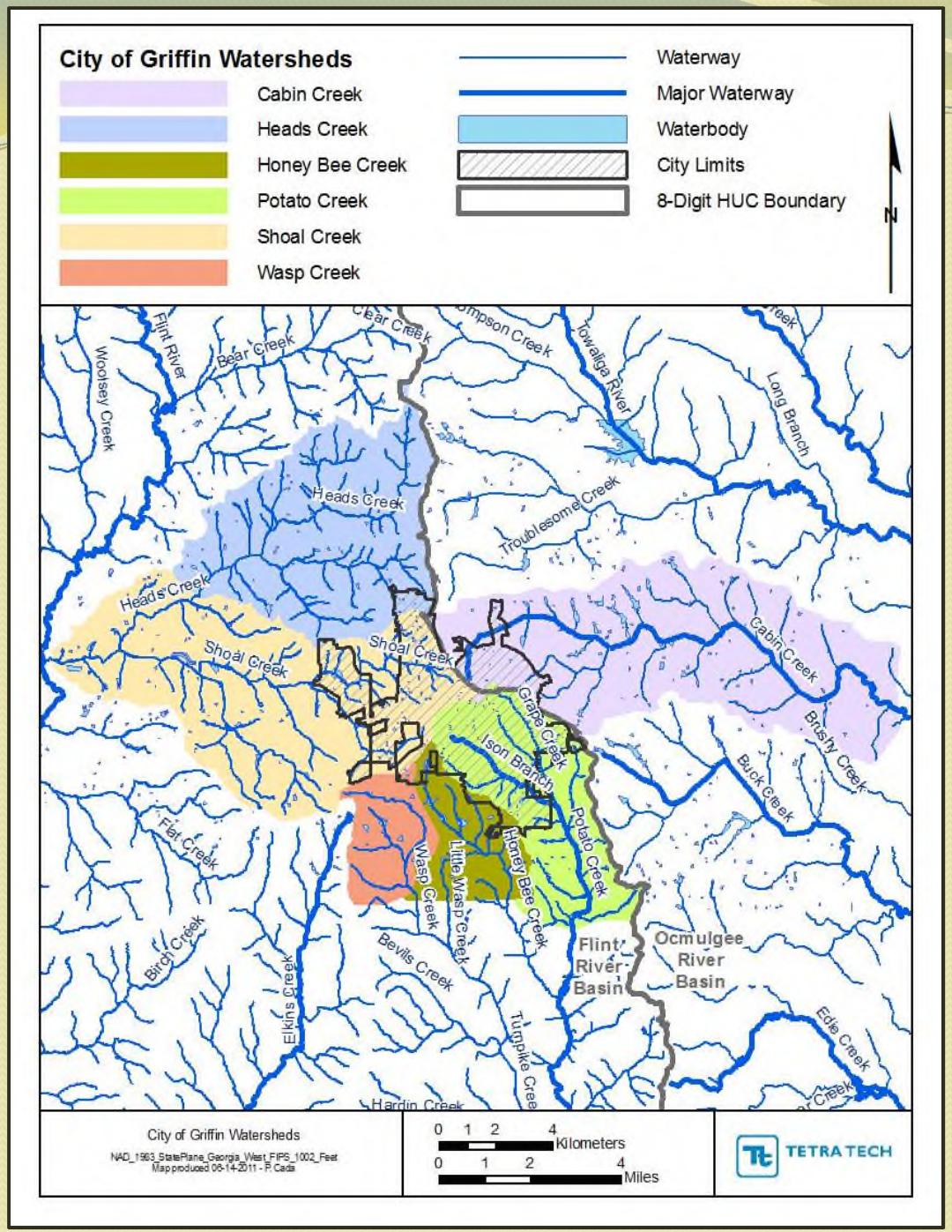
What measures reduce runoff to more natural conditions?

- Low impact development/green infrastructure practices…
  - Trees
  - Natural areas and open space
  - Bioretention
  - Rain gardens
  - Vegetated swales
  - Permeable paving
  - Green roofs

TETRA TECH

City of Griffin – Stormwater Division

- Regulated as a Phase II Municipal Separate Storm Sewer System (MS4)
- Proactive in stormwater management
- The first stormwater utility in Georgia
- Implements Best Management Practices (BMPs) that enhance water quality throughout the region
- Encourages the use of LID practices in the City's Stormwater Design Manual



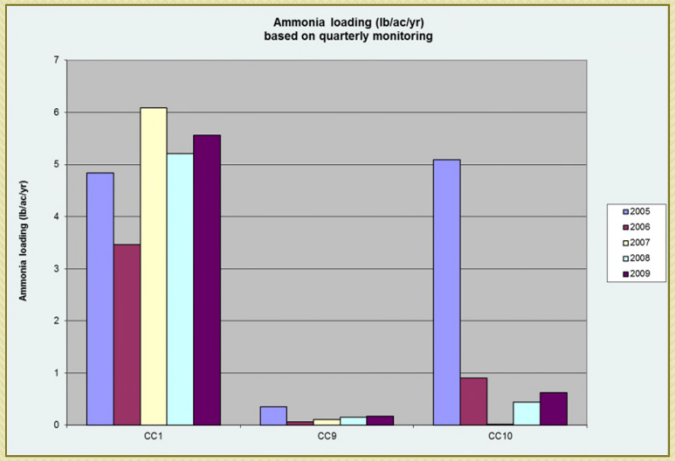
City of Griffin located on the continental divide

TETRA TECH

Holistic Approach to Watershed Management

Monitoring

Assessment



Planning

BMP Ranking Attribute	Weighting	PUB-160	PGN-3558	PUB-291	PUB-291a	PGN-176	PGN-3305
Drainage area treated	1	10	5	0	0	2.5	2.5
Ownership	1	10	0	10	10	0	0
Education potential	0.5	0	0	5	5	0	0
Maintenance needs	1	0	5	0	5	5	5
Storm flow control	2	20	10	5	5	20	0
Pollutant reduction	2	16	14	6	2	4	10
LID, green, or innovative BMP	0.5	0	0	5	0	0	0
Removal efficiency cost	2	12	4	10	6	6	12
Priority subwatershed	1	0	5	5	5	0	0
Total Score		68	43	46	38	37.5	29.5
Rank		1	3	2	4	5	6

Implementation

Funding

- Stormwater Utility fee
- Clean Water Act Section 319 grant
- Georgia Emergency Management Agency (GEMA) Hazardous Mitigation Grant
- Georgia Environmental Facilities Authority (GEFA) loan
- Stormwater and Transportation Improvement Program (STIP)

TETRA TECH

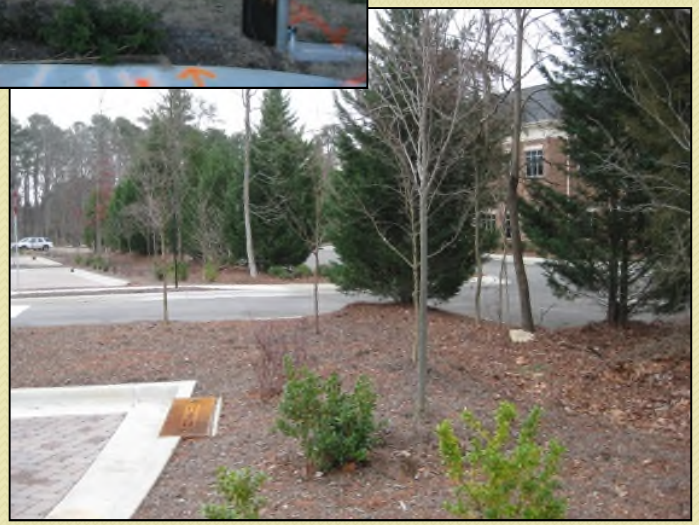
Code Review Process

- Review relevant sections of the City Codes, Zoning Ordinance, and other guidance documents
- Identify current code provisions and practices that either support or present barriers to GI
- Recommend code changes that can address barriers and strengthen opportunities for GI implementation.
- Develop incentives for use of GI/LID practices
- Work with attorneys, developers, and other City stakeholders to identify preferred code changes and language

TETRA TECH

Making Local Codes Green Infrastructure Friendly

- Revise ordinances to eliminate barriers:
  - Landscaping
  - Screening
  - Setbacks
  - Open Space
  - Right-of-Way
- Evaluate/select practices you want to encourage.



TETRA TECH

Green Infrastructure Opportunity Checklist

- Detailed focus on site scale code and manual barriers and potential opportunities
- 5 main goals:
  - Minimize effective or connected impervious area
  - Preserve the hydrologic functions of unpaved areas
  - Harvest rainwater to enhance potable and non-potable supply
  - Allow and encourage use of multi-use stormwater controls
  - Manage stormwater to sustain stream functions

TETRA TECH

Degree of Importance Key to Symbols:

- ● Essential
- ◑ Very important
- ○ Important
- NI Not important to the City of Phoenix

GOAL #1: MINIMIZE EFFECTIVE OR CONNECTED IMPERVIOUS AREA

Objective: Minimize impervious area associated with streets.
Objective: Minimize impervious area associated with parking.
Objective: Minimize impervious area associated with driveways and sidewalks.
Objective: Clustering development.
Objective: Incorporate sustainable hydrology practices into urban redevelopment.

GOAL #1 KEY QUESTIONS	DEGREE OF IMPORTANCE	COMMENTS (INDICATE ORDINANCE FINDINGS "YES" OR "NO". WHEN "NO", NOTE SPECIFIC LOCATION OF BARRIER IN CODE)
Effective Impervious Area		
1. Does the code distinguish between pervious paved areas and impervious paved areas in the determination of onsite stormwater requirements?	◑	
2. Does the code definition of impervious area distinguish between impervious area connected to the storm drain system (effective impervious area) and disconnected impervious area?	◑	
Streets		
1. For residential development, are the street pavement widths allowed to be between 18 to 22 feet, with curb pullouts for passing of large vehicles?	●	
2. Are travel lanes allowed to be from 12 to 10 feet (or less), with curb pullouts for passing of large vehicles?	●	

Barrier	Optional Approach	Example Language (To Address Barriers)
Streets		
1. City of Phoenix Street Planning and Design Guidelines. The paving width of local single-family residential streets is typically required to be 28 to 32 feet, and 40 feet for minor residential collector streets. Travel lanes for local single-family residential streets are required to be greater than 14 to 16 feet wide.	Amend the Phoenix Street Planning and Design Guidelines (and any related zoning ordinance and/or subdivision ordinance provisions) for right-of-way and paving widths to allow exceptions for narrower streets. Encourage Green Infrastructure practices such as curb pullouts with bioretention to allow for passing of larger vehicles and enhanced stormwater management. Or Adopt standard Green Infrastructure standard street drawings as part of the Street Planning and Design Guidelines and Street Landscape Standards.	"An exception to a requirement of a paving width for residential streets may be recommended by the Planning Commission to the Mayor and City Council on the merits of a particular case upon consideration of the following criteria: type of curbing, building heights, building density, use of Green Infrastructure stormwater management practices, and other applicable factors. In no case shall the paving width be less than 24 feet, provided there will be no less than 16 feet of right-of-way." If the use of "curb" (distance to be measured from face of curb) is perceived as issue for implementation of Green Infrastructure streets, amend to specify "curb or street edge." "Where a portion of a project or public improvement has been designed specifically as a Green Infrastructure stormwater management feature, the City Manager or designee shall have the authority to waive the dimensional requirements of this section to enable the installation of Green Infrastructure stormwater management measures." Or Adoption and use of standard Green Infrastructure street drawings as part of the Street Planning and Design Guidelines and Street Landscape Standards.
2. City of Phoenix Street Planning and Design Guidelines. Curb bumpouts and curb extensions are allowed as traffic calming devices. However, they do not appear to be used as bioretention stormwater management opportunities. Moreover, the design specifications do not allow flexibility that could better accommodate Green Infrastructure practices.	Amend the Street Planning and Design Guidelines and related zoning ordinance and/or subdivision ordinance provisions regarding curb and street dimensional and material requirements. Provide waiver for uses of Green Infrastructure practices. Or Adopt standard Green Infrastructure standard street and	If the use of "curb" (distance to be measured from face of curb) is perceived as issue for implementation of Green Infrastructure streets, amend to specify "curb or street edge." "Where a portion of a project or public improvement has been designed specifically as a Green Infrastructure stormwater management feature, the City Manager or designee shall have the authority to waive the dimensional requirements of this section to enable the installation of Green Infrastructure stormwater management measures." "…or with materials and sizes necessary to support specifically designed Green Infrastructure drainage functions [consistent with the

Regional Considerations

- Prioritize measures that will work best in your city
- Pick the low hanging fruit
  - Measures that provide best cost-benefit
  - Measures that provide the least hassle for developers and plan reviewers

TETRA TECH

Common Barriers Include…

- Lack of tree protection regulations for existing, private development
- Lack of effective stream buffer requirements for new development
- Requirements for new development to connect to the storm sewer system
- No allowance or barriers for GI/LID practices in street right-of-way

TETRA TECH

Exercise: Spot the Green Infrastructure Implementation Barrier

"All shoulders and easements shall be graded smooth and established in grass."

TETRA TECH

“Easements shall be graded smooth and established in grass.”

Good - but not legal.

TETRA TECH

Common Barriers Include…

- Requirements for overly wide streets, right-of-ways, and parking areas
- Impediments to shared parking and parking payment in lieu
- Parking area screening and landscaping requirements
  - Plant type
  - Plant size
  - Plant density
  - Planting area

Exercise: Spot the Green Infrastructure Implementation Barrier

"A buffer strip of dense evergreens a minimum of five (5) feet in width shall be planted along the property line."

TETRA TECH

"A buffer strip of dense evergreens a minimum of five (5) feet in width shall be planted along the property line."

Good – but not legal

TETRA TECH

Exercise: Spot the Green Infrastructure Implementation Barrier

“All parking lot islands shall be surrounded by a minimum five (5) inch continuous curb.”

TETRA TECH

"All parking lot islands shall be surrounded by a minimum five (5) inch continuous curb."

In compliance, but no functionality

drain

Good - but not legal

TETRA TECH

Exercise: Spot the Green Infrastructure Implementation Barrier

“Parking areas shall be well screened by berms, plantings, or other screening methods to minimize their visual impact.”

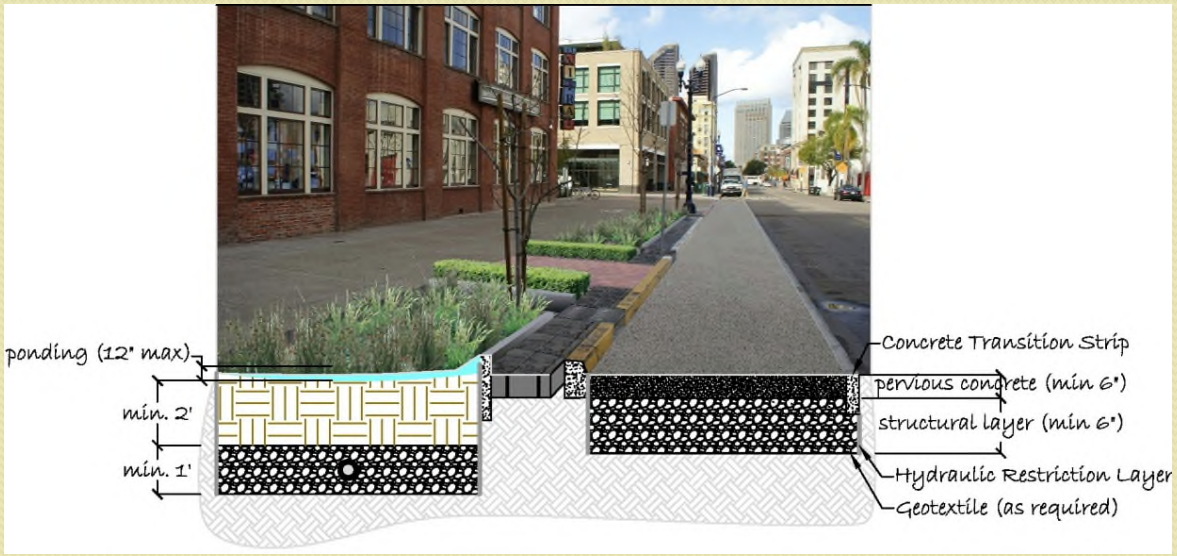
TETRA TECH

“Parking areas shall be well screened by berms...”

TETRA TECH

Common Barriers Include…

- Lack of distinction between pervious paved and impervious paved areas
- Lack of design templates for LID in Street Landscape Standards & Street Planning and Design Guidelines
- Lack of LID Design Manual



TETRA TECH

Common Barriers Include…

- No allowance for GI/LID green BMPs to
  - count toward required open space and landscaping area requirements
  - be constructed in designated open space and landscaping area
- Lack of retention stormwater performance standard
- No allowance for rain barrels, cisterns, and other green BMPs within standard zoning setback areas

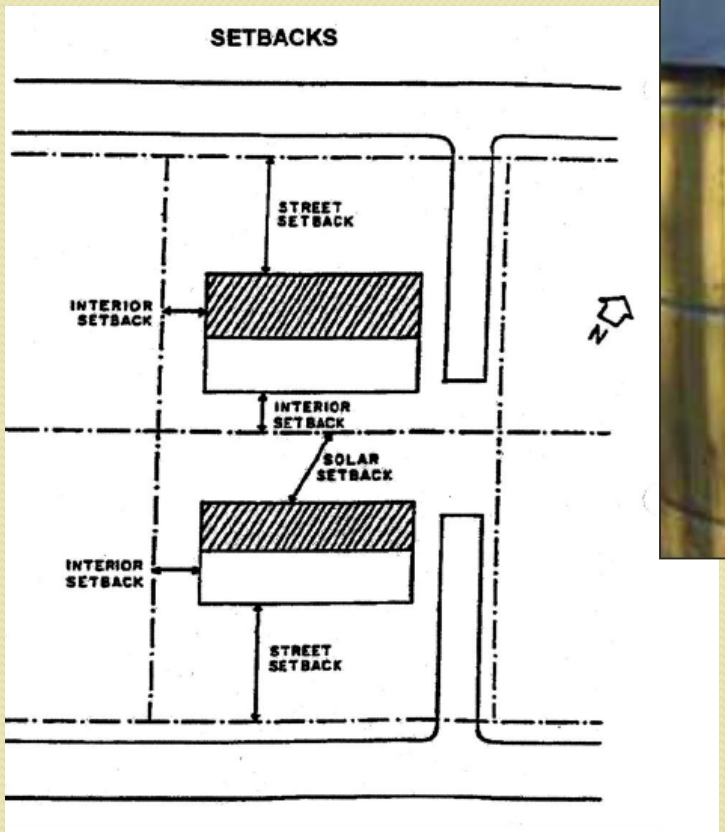
Exercise: Spot the Green Infrastructure Implementation Barrier

"Permitted encroachments of setbacks. Architectural features such as eaves, steps, gutters, porches, decks and fire escapes may project no more than three feet beyond any required setback line."

TETRA TECH

“Architectural features…may project no more than three feet beyond any required setback line.”

Good – but not legal



TETRA TECH

Common Barriers Include…

- Lack of inspection programs for post-construction BMPs
- Lack of off-site mitigation provisions for developed infill areas (linked to habitat conservation goals and regional BMPs)

TETRA TECH

Removing Barriers: Easy Code Fixes

"Where a portion of a project or public improvement has been designed specifically as a green infrastructure stormwater management feature, the [City][County] Manager or designee shall have the authority to waive the [dimensional][material] requirements of this section to enable the installation of green infrastructure stormwater management measures."

Removing Barriers: Easy Code Fixes

"Grading and edge treatments of landscaping areas shall allow stormwater inflow where areas are designed as green infrastructure stormwater management features. In such cases, where adequate screening is provided, berming and curbs shall not be required."

Removing Barriers: Easy Code Fixes

"Green infrastructure stormwater management features shall be permitted to project beyond any setback line at the discretion of [local official] or in accordance with the standards of the green infrastructure design manual."

TETRA TECH

Removing Barriers: Easy Code Fixes

"The dimensional standards for landscape areas, landscape strips, and walls may be varied to accommodate green infrastructure stormwater features designed in conjunction with an overall landscaping and stormwater management plan for the site."

TETRA TECH

Removing Barriers: Easy Code Fixes

"Planter boxes, green infrastructure planters, green rainwater harvesting systems, a green wall or other green stormwater BMPs may be used as a substitute for the required [landscaping][open space]. Such substitute shall be subject to the approval of [local official] or in accordance with the standards of the green infrastructure design manual."

TETRA TECH

Removing Barriers: Easy Code Fixes

- Requiring wider stream buffers (e.g. 50 ft.)
- Allowing narrower street pavement widths (e.g. minor residential 18 to 22 ft.)
- Retention stormwater performance standards
- Inspection program for post-construction BMPs

Adding Code Incentives

- Add stormwater retention performance standards
- Add explicit policy encouraging GI/LID
- Reduce requirements in exchange for use of green BMPs

Adding Code Incentives

"The [City][County] encourages the use of green infrastructure practices in street landscape areas. The dimensional standards for landscaped strips may be varied to accommodate green infrastructure stormwater features."

Adding Code Incentives

"Permeable surfaces such as [approved list] are encouraged in low traffic areas and in required parking areas for open space uses such as recreation areas."

Adding Code Incentives

"Minimum parking may be reduced by one parking space for each tree 12 inches diameter or larger that is preserved. A maximum of 2 parking spaces or 10 percent of the total required may be reduced, whichever is greater."

Adding Code Incentives

"To encourage multi-functional landscaping, areas shall be suitably landscaped with a mixture of shrubs, trees, and groundcover, which are encouraged to incorporate xeriscaping and low water use plants, and to function as a green infrastructure stormwater management area."

Adding Stormwater Fee Credit Incentives

Two Approaches:

- With Stormwater Retention Standard
- Without Stormwater Retention Standard

TETRA TECH

Adding Fee Credit Incentives – With Retention Standard

- **Retention standard** (e.g. retain runoff generated by 1st inch of rainfall) **will require use of green infrastructure practices**
- These practices should not receive credit toward fee reduction
- GI/LID fee credits to consider:
  - Better site design practices
  - Exceeding minimum retention standard for new development
  - Exceeding minimum retention standard for redevelopment
  - O & M agreement for existing SWM facilities

TETRA TECH

Adding Fee Credit Incentives – Without Retention Standard

- Use tiered approach (progressively more credit for more onsite retention)
- GI/LID fee credits to consider:
  - Retention stormwater performance standards
  - Better site design practices
  - O & M agreement for existing SWM facilities
  - Incorporation of GI/LID practices into new development
  - Downspout disconnects

In Summary

- Review codes and other guidance documents to identify barriers
- Determine what LID practices you want to encourage
- Discuss potential code revisions with appropriate stakeholders
- Select one or more districts to test and implement policies
- Add code and/or stormwater fee credit incentives
- Revise codes and other guidance documents simultaneously for consistency

TETRA TECH

Julie Kaplan
julie.kaplan@tetratech.com

Special thanks to the City of Griffin Stormwater Division

Griffin
Growing, TOGETHER

TETRA TECH