



Development Code Update

Implementation of Strategies for LID in Private Land Development

*Workshop
March 21, 2024*

Today's Speakers

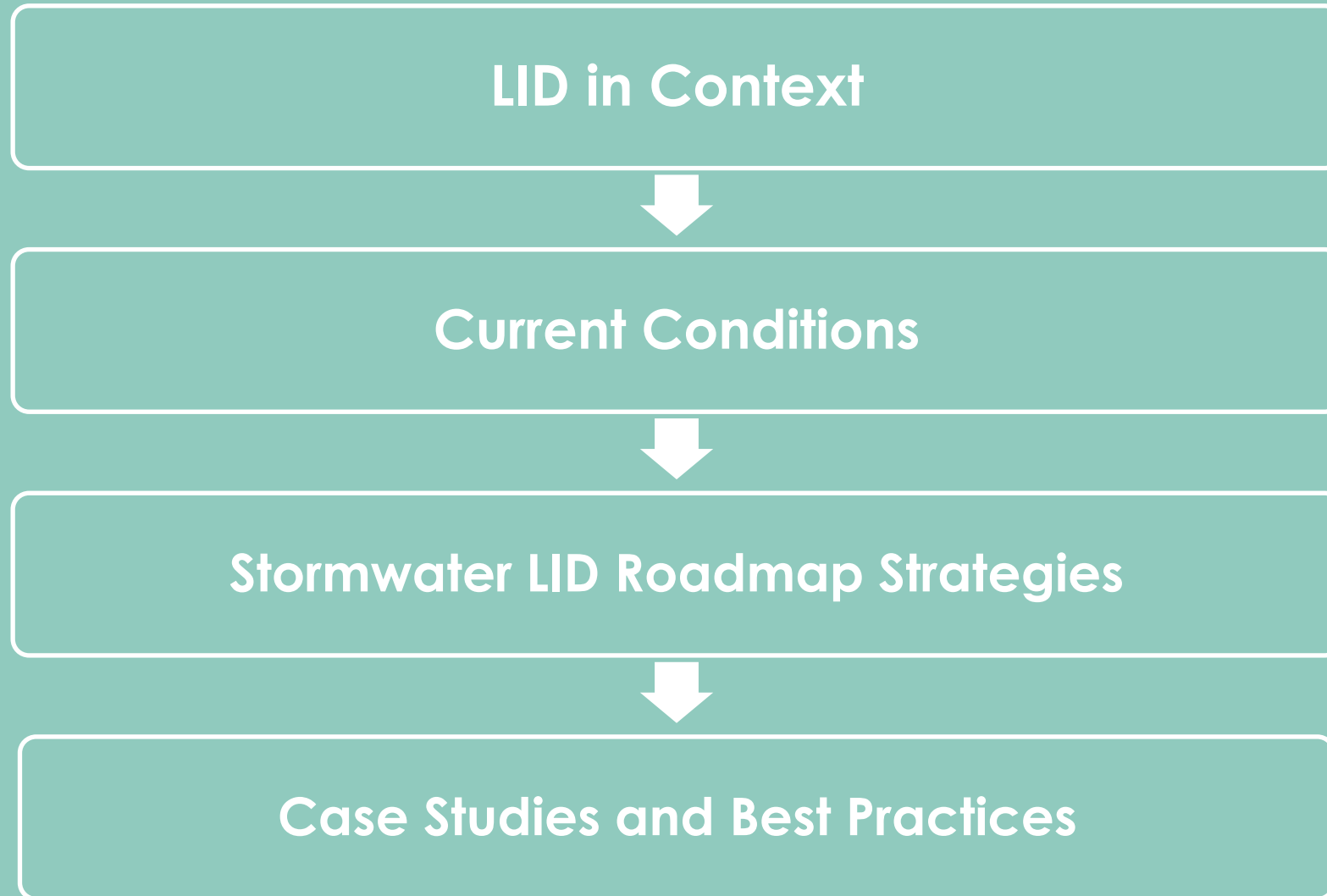


Dawn Warrick, AICP
Project Manager

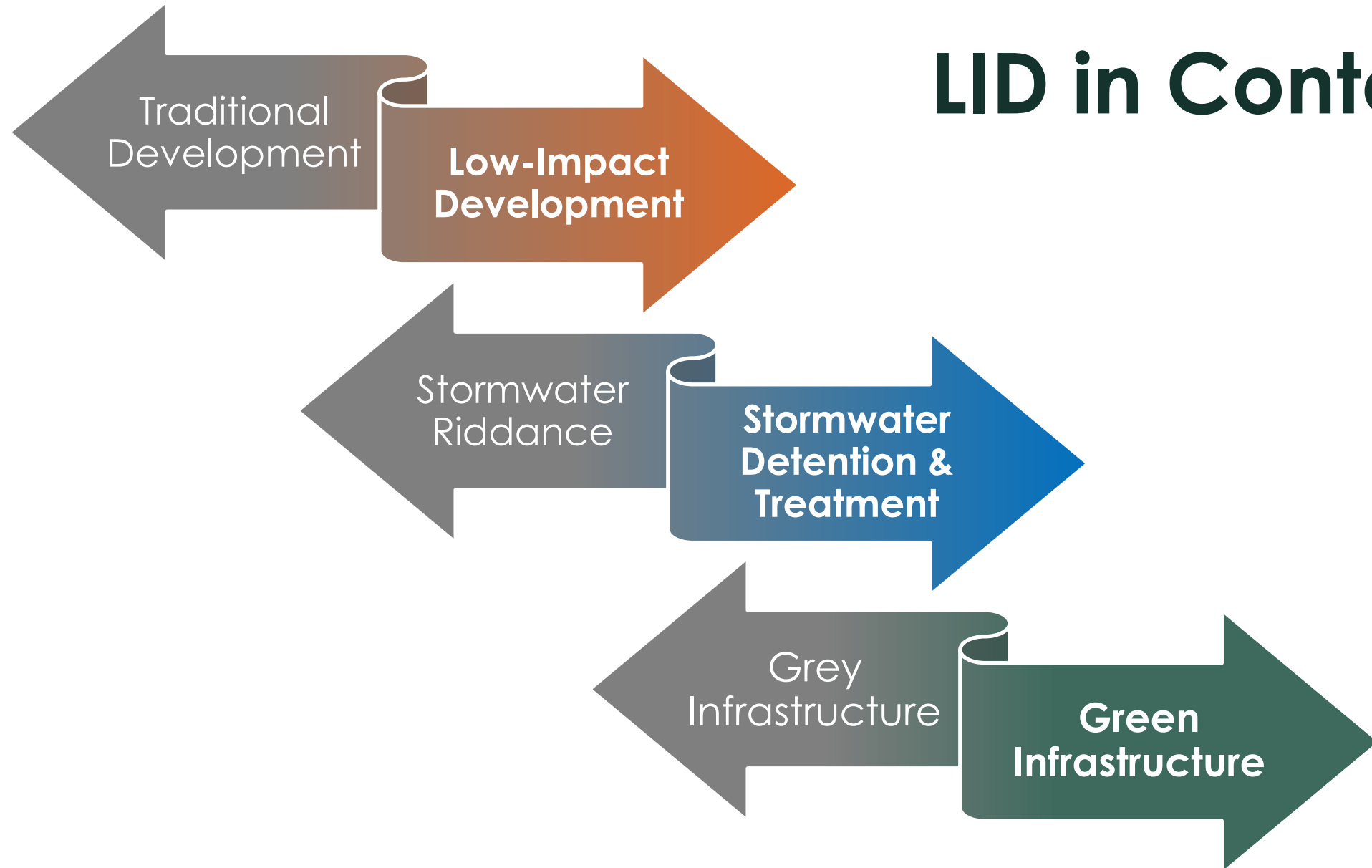


Kim Patak, PE, CFM, ENV SP
Sustainability Professional

Overview



LID in Context



LID in Context

Require



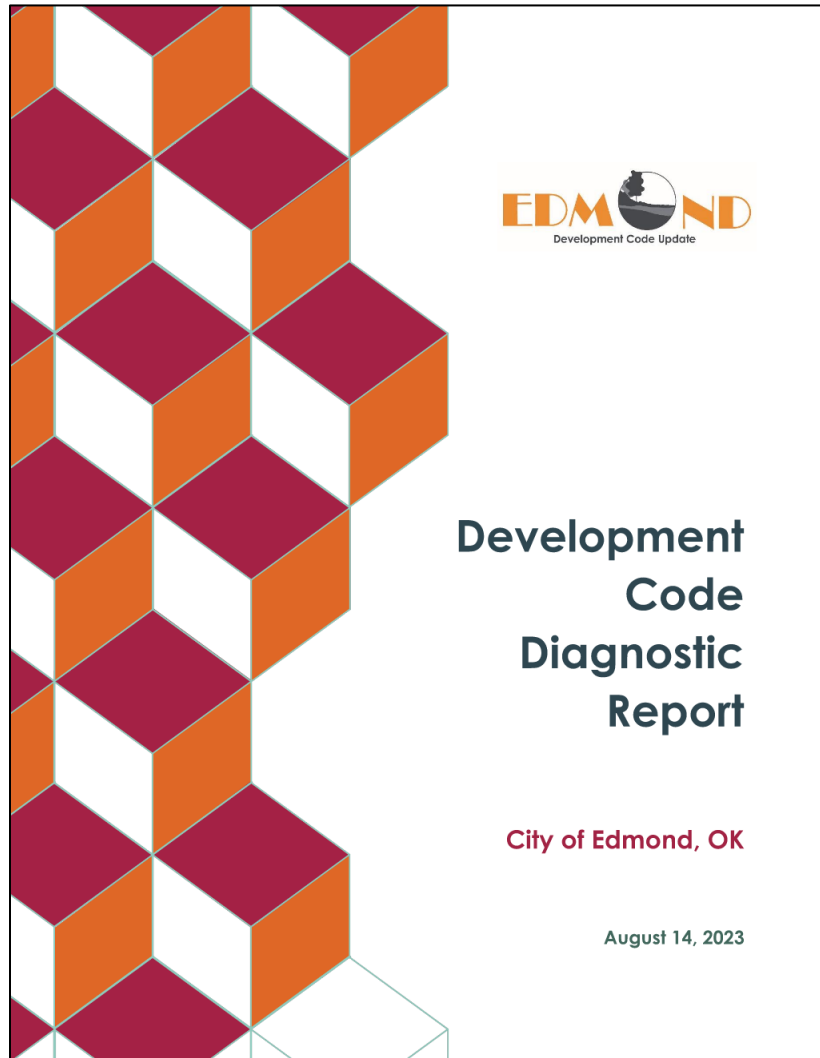
- ☐ Zoning Requirements
- ☐ Subdivision Regulations
- ☐ Development Standards

Incentivize



- ☐ Reduced Fees or Expedited Processes
- ☐ Reduced parking requirements
- ☐ Density Bonuses

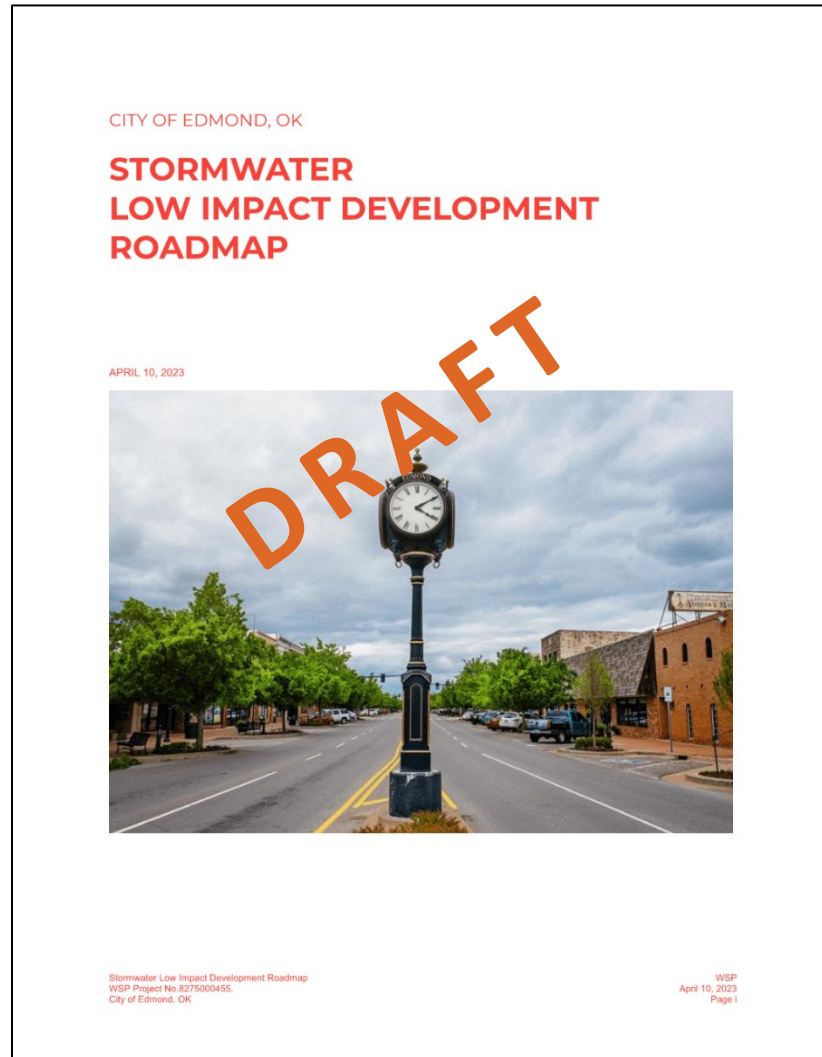
Current Conditions



Diagnostic Report Findings on LID

“The recommended UDC needs to incorporate low-impact development standards to improve development quality, produce better fiscal performance, lessen the strain on the City’s existing infrastructure, and improve water quality.”

Current Conditions



Purpose Statement

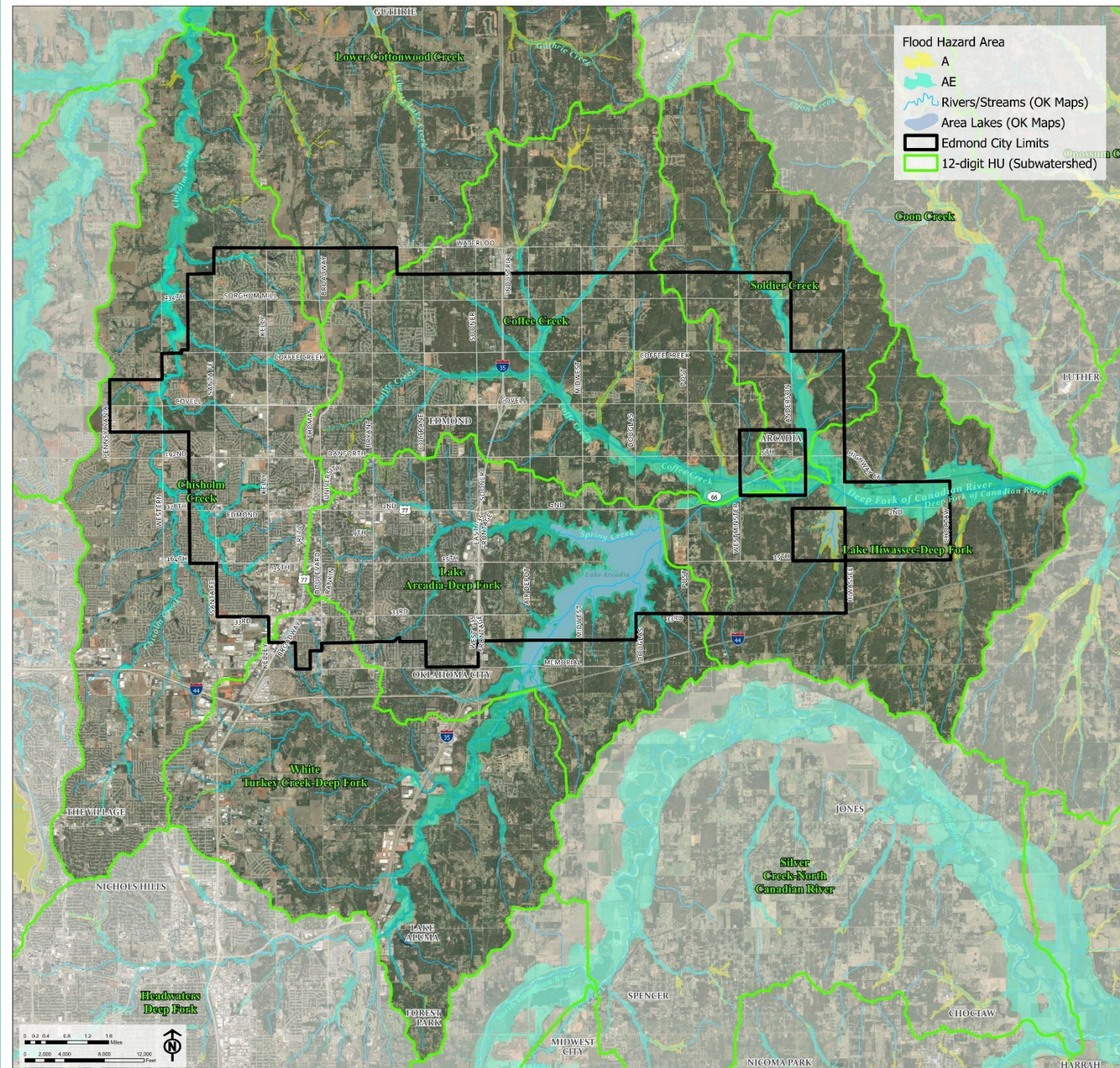
“A Stormwater LID Roadmap is a strategic plan for the integration of stormwater LID practices into a local government’s stormwater permit compliance program, as well as its land development codes and processes and public property maintenance operations [...].”

Stormwater LID Roadmap

Strategies For LID In Private Land Development

- 1** – Update UDC to reference LID Design Manual
- 2** – Create and adopt a “Conservation Subdivision” ordinance
- 3** – Adopt UDC trades for implementing LID practices
- 4** – Establish a riparian/lake buffer program
- 5** – Provide guidance for vegetated LID practices
- 6** – Enhance post-construction BMP signage
- 7** - Establish post-construction BMP maintenance program
- 8** – Increase/add permitting related fees
- 9** – Develop Awards and Recognition Program
- 10** – Provide staff to support the post-construction stormwater program

Current Conditions



Strategy 1

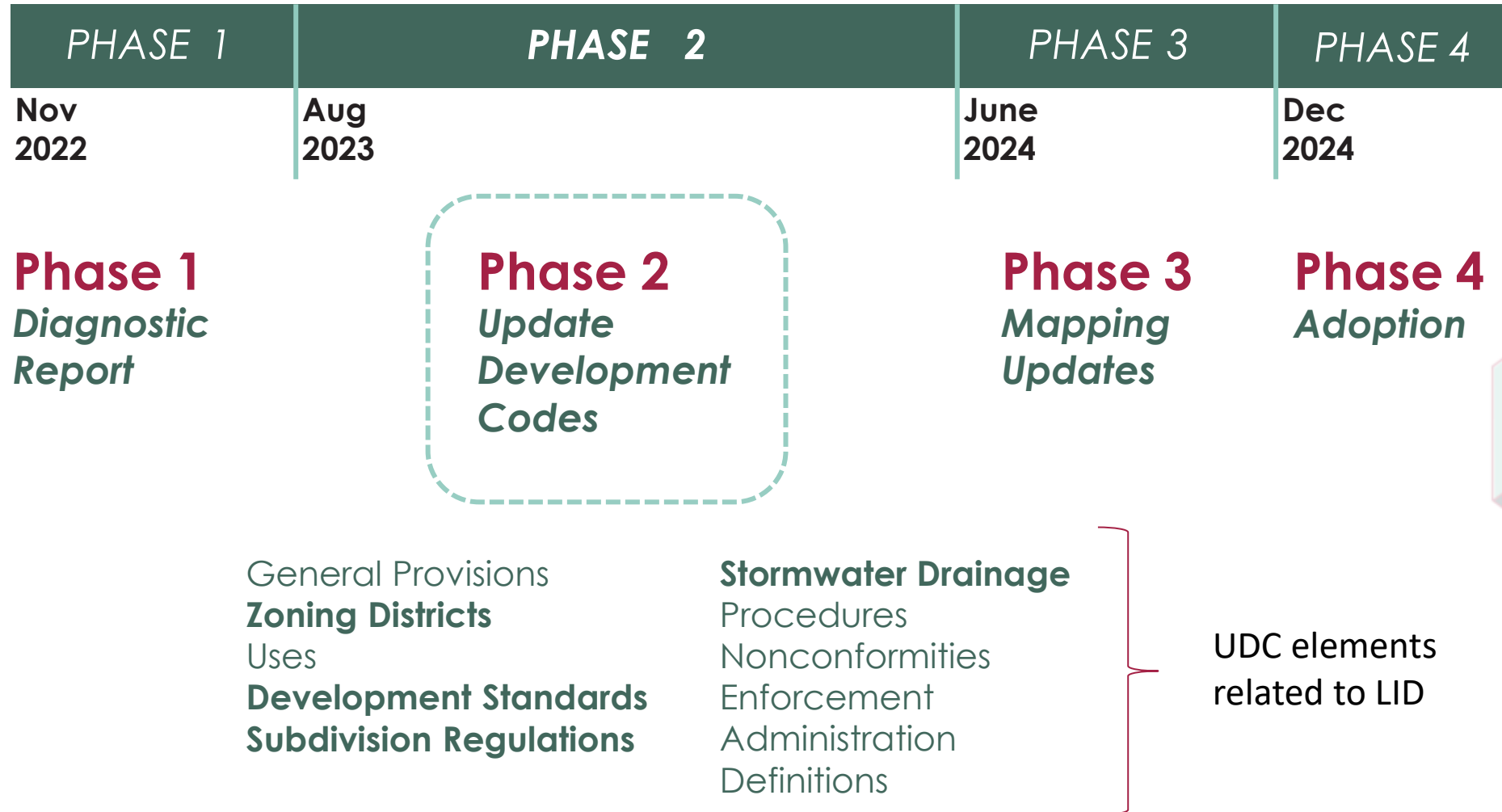
Update UDC to reference LID Design Manual

Currently Titles 21 and 22 have references to LID practices but the City does not have design specifications for such practices. This will change with the addition of the future LID Design Manual. Once adopted, ensure that Titles 21 and 22 of the City's Code of Ordinances cross reference the new LID Design Manual where appropriate.

Purpose

- provide interdepartmental consistency in the land development review and implementation of non-structural and structural LID practices.
- provide consistent design regulations and specifications for the development community

PROJECT SCHEDULE



Strategy 2

Create and adopt a “Conservation Subdivision” Ordinance

Currently, Title 21 does not allow ‘clustering’ or various design alternatives to the minimums. The ‘Conservation Subdivision’ ordinance should be added to Title 21 under subdivision types.

Purpose

- To provide an alternative lot size and layout option that utilizes the clustering of houses and the dedication of remaining land to conservation areas.
- To reduce stormwater runoff from development areas by reducing impervious surface area and increasing the number of natural features within the development.

Intent

- To conserve open land, including those areas containing unique and sensitive natural features such as woodlands, steep slopes, streams, floodplains, and wetlands by setting them aside from development.
- Provide incentives and greater design flexibility and efficiency in the siting of services and infrastructure, including the opportunity to reduce the length of roads, utility runs, and the amount of paving required for residential development.



Traditional Design



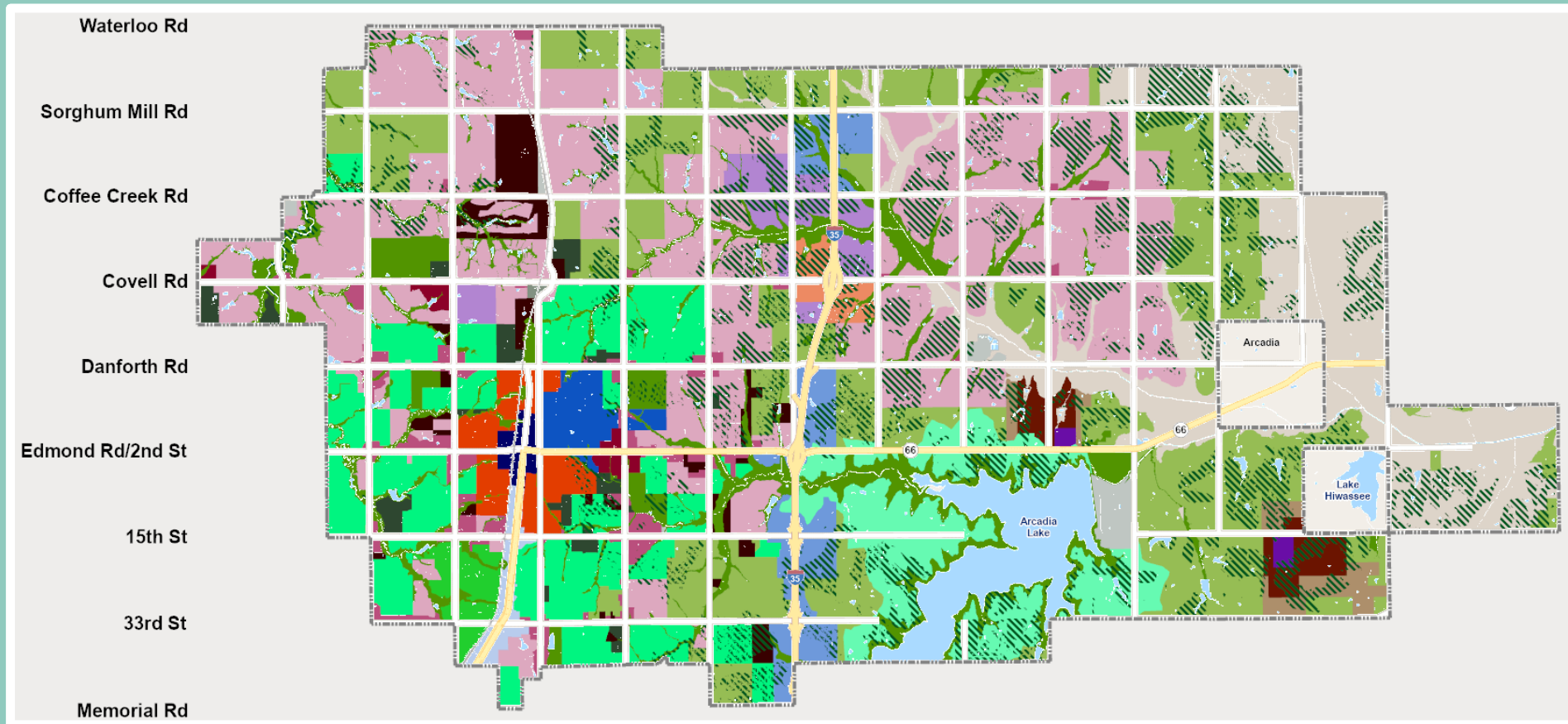
Conservation Design

Relation to the Comprehensive Plan

AR413	Conservation/sensitive areas, such as flood plains, remnant forests, and native prairie should be maintained in a natural state and embraced as an asset to nearby uses. Update the Cross Timbers forest database to show the location and health of this resource. This updated dataset should be used to inform land use regulations.
AR414	Continue to implement recommendations from the 2012 Green Infrastructure Report and Recommendations, including: • Update Sensitive Area analysis and incorporate findings into plan amendment process. • Analyze city ordinances for barriers to low impact development practices. • Strengthen the relationship between the City and local land conservancies.
AR421	Enhance urban forest resources by properly protecting and managing the Urban Tree Canopy and implementing the recommendations from the Urban Tree Canopy Report.
AR424	Do not support development applications that propose modifications to the 100-year flood plain.
AR425	Modify codes to protect ecologically sensitive areas and leverage them to enhance the built environment.
AR460	Based on the results of the East Edmond 2050 Plan, update the City's development code, including the following components: • Update the Zoning (Title 22), Subdivision (Title 21), and Drainage (Title 23) ordinances to accommodate the future land use scenario as shown on the Plan Category map. • Establish a criteria for density bonuses. • Incorporate the use of transfer of development rights (TDR). • Explore the feasibility of using overlay districts.

Relation to the Comprehensive Plan

Edmond Future Land Use Map



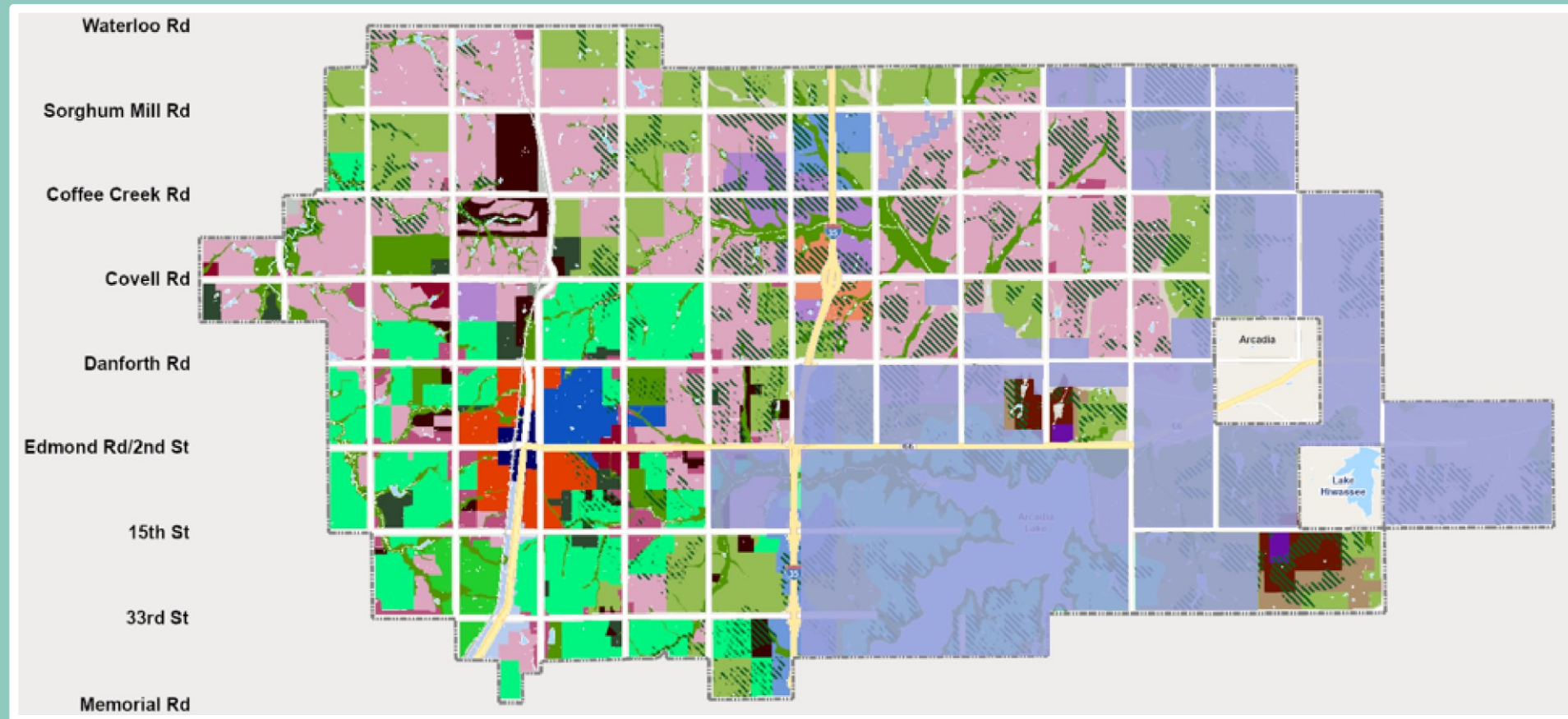
- Agricultural
- Broadway Corridor
- Civic or Institution
- Destination Retail
- Downtown Core
- Employment
- I-35
- Mixed Use Campus
- Open Space
- Rural Neighborhood
- Suburban 1 (S1) Neighborhood
- Suburban 2 (S2) Neighborhood
- Suburban Commercial
- Suburban Infill
- Town Square
- Transit District
- University Neighborhood
- Urban Center
- Urban Neighborhood
- Utilities or Infrastructure
- Village Low
- Village Moderate
- Water Quality Restoration

Water Quality Restoration LUC

Description and Context	Areas in key watersheds that are designed to restore, and then protect, the water quality of impaired waterbodies. Stormwater management practices that filter runoff and allow it to infiltrate in the subsurface are the primary means for improving water quality in these areas. Conservation subdivisions are appropriate in this Category. This Category should be complementary to floodplain management regulations and should not be interpreted to support modifications of the floodplain.
Building Types	Many types of structures are appropriate - 1- and 2- story small and medium structures are the most common. Special attention to rainwater handling should be incorporated.
Site Design	Ensure that rainwater does not leave the site until it has been filtered and given a chance to infiltrate, be used by on-site vegetation, or stored for later use. The first one-inch of rainfall should be captured and kept on-site. Native vegetation and rain-water friendly landscaping should be incorporated into sites in this Category.
Transportation Network, Circulation, and Access	Transportation projects should be designed to incorporate environmentally compatible systems that limit runoff from impervious roads from directly entering surface water bodies. All modes and street hierarchy can be accommodated when necessary. Trails may be common due to their co-benefits being located in this Category.
Utility Access	Public sewer should be provided, either now or planned in the future. No new private on-site wastewater treatment should be allowed, and existing ones should be phased out. Public water may be available now or is planned in the future.
Public Space Types	Trail system components, parks, natural areas, conservation easements can all be found in this Category.

Relation to the Comprehensive Plan

Possible Conservation Subdivision Overlay



Case Study: Durham, North Carolina

[Sec. 6.2 Residential Rural \(RR\) Development Intensity | Durham Unified Development Ordinance \(municipal.codes\)](#)

Ownership of the development site

- May be held in a single and separate ownership or in multiple ownership.
- If held in multiple ownership, the site must be developed according to a single plan with common authority and responsibility

Max density

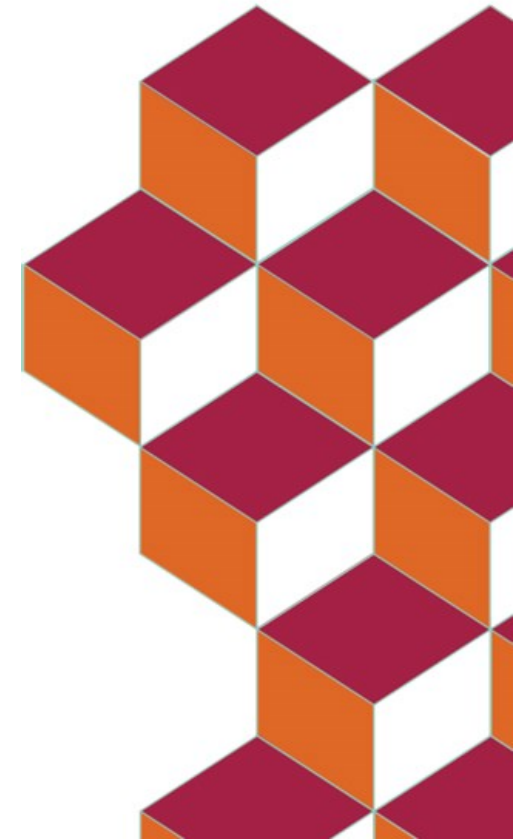
- Determined by multiplying the gross area of the contiguous land under one ownership or under multiple ownership either developed as a single unit or recorded as a single unit by the maximum gross density for the site

Mass grading

- Allowed in conservation subdivisions that receive public water/sewer service or use community wastewater treatment facilities or package treatment plants.

Open space and primary conservation area requirements

- 50% of the total gross area of a conservation subdivision must be open space
- At least 80% of the open space in a conservation subdivision must be primary conservation areas, therefore **40% of the total gross area of a conservation subdivision must be primary conservation areas**



Case Study: San Diego, California

[Chapter 4 Sec. 81.401 \(r\) San Diego County Code of Regulatory Ordinances](#)

Location

- The development should be located and designed to minimize impacts to environmental resources and maximize defensibility from natural disasters such as wildfires.

Size

- Development must be built to the maximum extent permitted by County regulations and the applicable Community Plans.

Design Features and exceptions

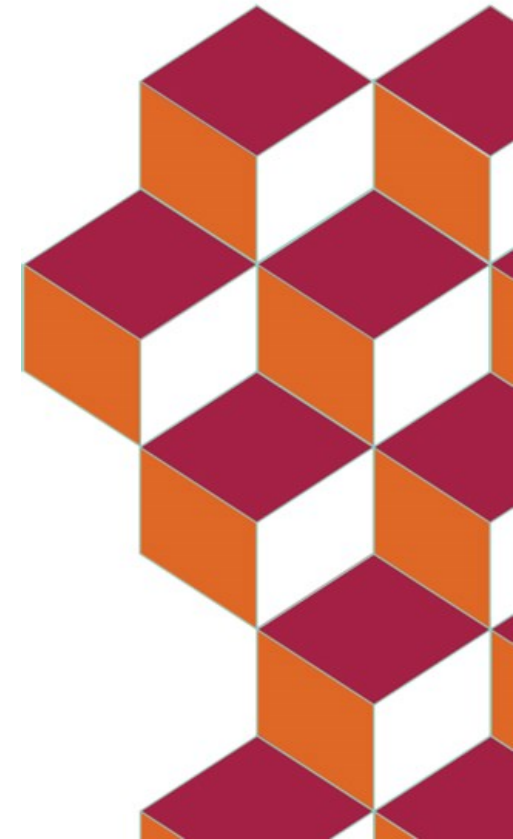
- Exceptions to the maximum permitted encroachment into steep slopes may be allowed to avoid environmental impacts

Road Design

- Siting roads to reduce grading impacts
- Consolidating developments
- Utilizing permeable paving materials and methods
- Reduced paved road widths
- Reduced curve radii

Open space requirements

- Conserve the largest blocks of unfragmented and interconnected open space
- Maximize surface open space area to perimeter ratios
- Protect unique and/or sensitive resources in the core of open space areas



Case Study: Travis County, Texas

[Chapter 482. Travis County Development Regulations \(traviscountytexas.gov\)](https://traviscountytexas.gov/development-regulations)

Ownership of the development site

- Fee simple title to the conservation area and historic or rural buffers must be held by the owner, the property owners association for the development, or another entity approved by the County.
- The conservation easement must be individually held by the county or jointly held with another entity approved by the County.

Application requirements and process

- Pre-submittal meeting and draft ecological assessment and land plan
- Conservation development agreement
- Opportunity for expedited approval
- Administrative adjustments and variances

Design Requirements

- Conservation area
- Credible acreage
- Rural and historic buffers
- Impervious cover
- Roads and driveways, landscaping, and recreation space
- Energy conservation
- Water conservation
- Materials conservation
- Alternative standards

Example developments:

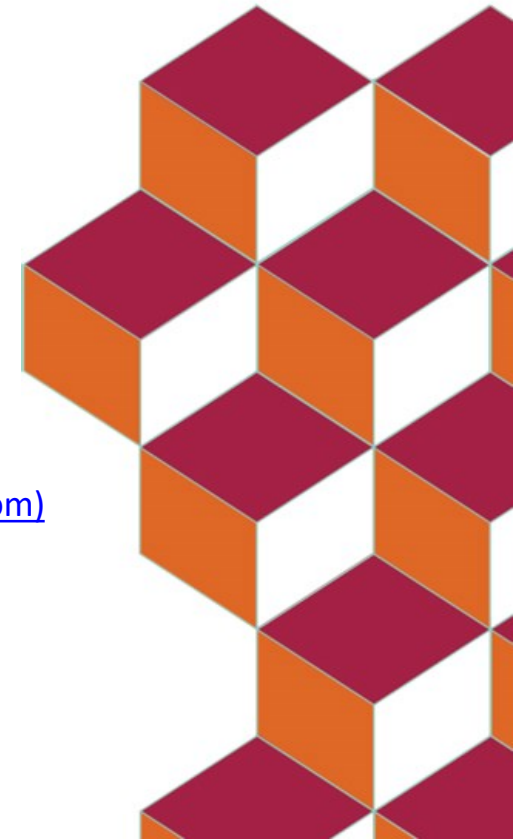
[Calterra Siteplan 11x17 \(caliterralive.com\)](https://caliterralive.com/)

[Site Plan – Arrowhead Ranch](https://arrowheadranchtx.com/)

[\(arrowheadranchtx.com\)](https://newhomecommunity.com/), [New Home](https://newhomecommunity.com/)

[Community in Dripping Springs, TX |](https://drippingwaters.com/)

[Headwaters \(liveheadwaters.com\)](https://liveheadwaters.com/),



Strategy 3

Adopt UDC trades for implementing LID practices

Currently the City does not have any development incentives in Titles 21 and 22 for the use of LID practices

Purpose

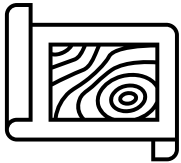
- Provide a reason for designers and developers to use the new stormwater management approach

Intent

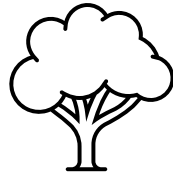
- Create incentives through development code compliance trades for all privately-owned developments where LID practices will not be mandatory

Typical Developer Incentives

Incentivize sustainable stormwater development



**Modify landscape
requirements**



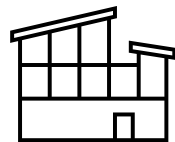
**Modify Forest Area
dedication
requirements**



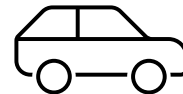
**Increase impervious
cover limitations**



**Increase density
limitations**



**Increase building
height allowance**



**Modify parking space
requirements**



**Implement green
permits**

Typical Developer Credits

Credit-based system options to promote sustainable development



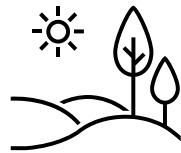
**Water quality
volume credit**



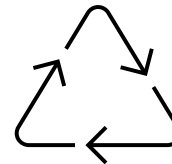
**Conservation
landscaping credit**



**Soil amendment
credit**



**Natural area
preservation credit**



**Adaptive reuse
credit**

Strategy 4

Establish a riparian/lake buffer program

This strategy addresses the initiation of a riparian and shoreline buffer program for both developing properties and existing properties located along streams and lakes.

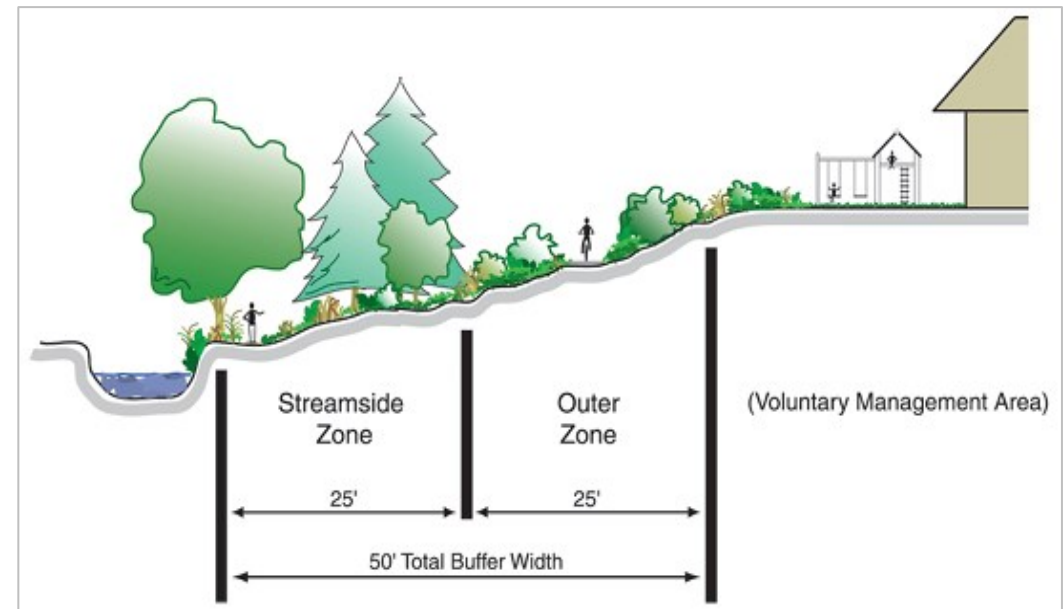
Purpose

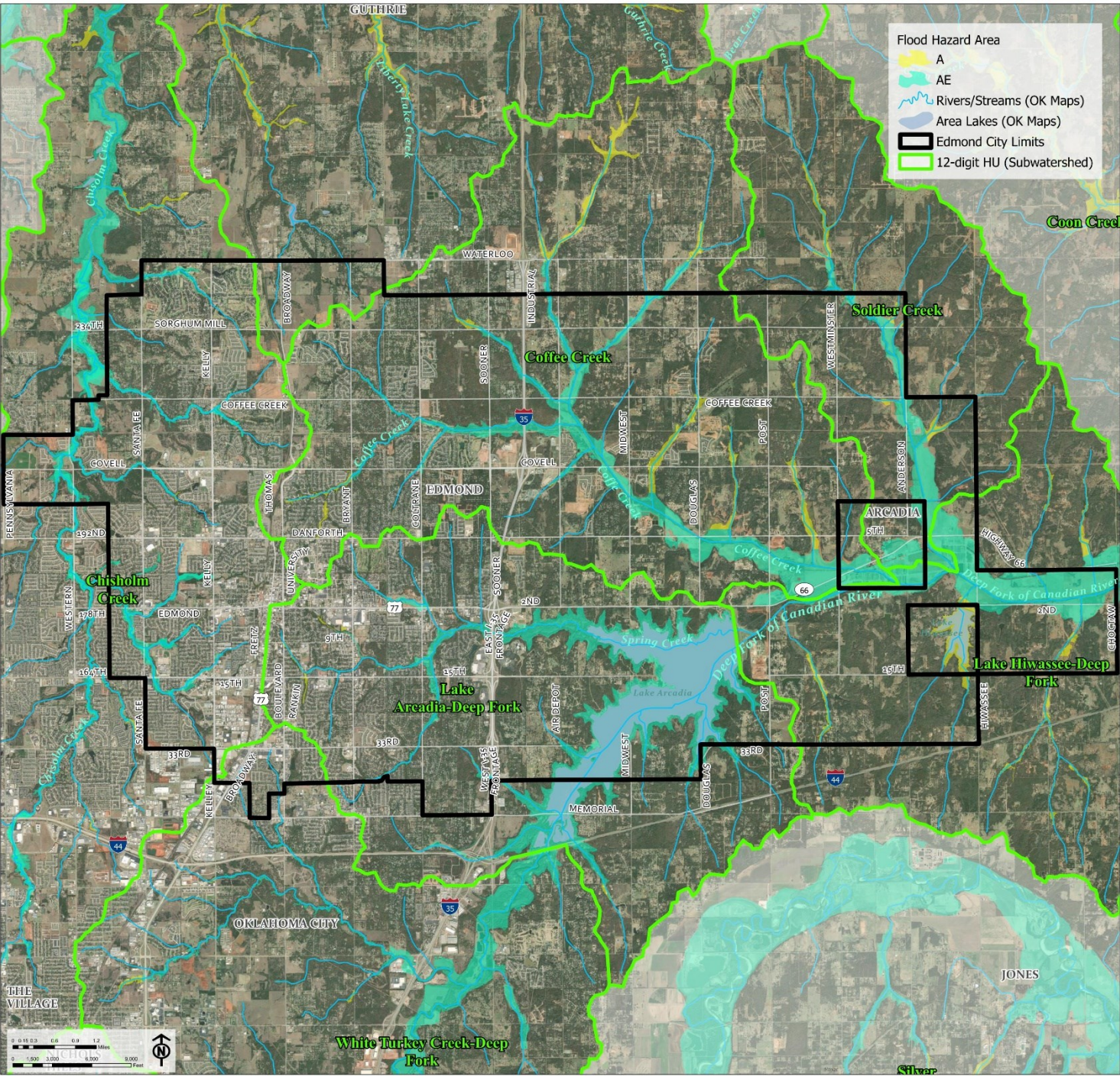
- The buffer shades the stream or shoreline, stabilizes its stream/shore banks, filters stormwater entering the stream/lake as overland flow, controls erosion near the stream/lake, and provides habitat and nutrient input.

Intent

- To create a separate ordinance for buffers to be established, protected, and placed in a permanent easement during and after construction.

Example of a Riparian Buffer

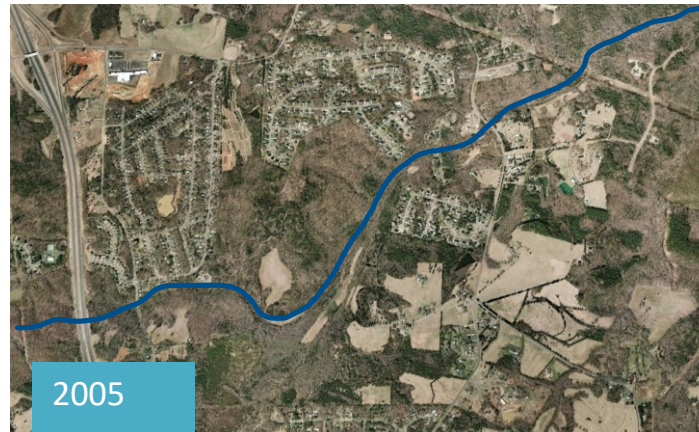
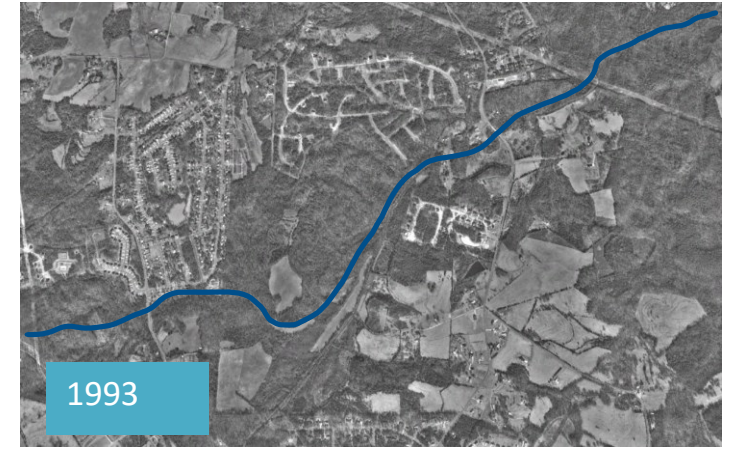




Channel Evolution

Common Causes

- Natural Causes
 - Climate change (larger floods, droughts)
 - Wildfires
 - Invasive species (Pine beetle)
- Anthropogenic
 - Urbanization
 - Channel modification





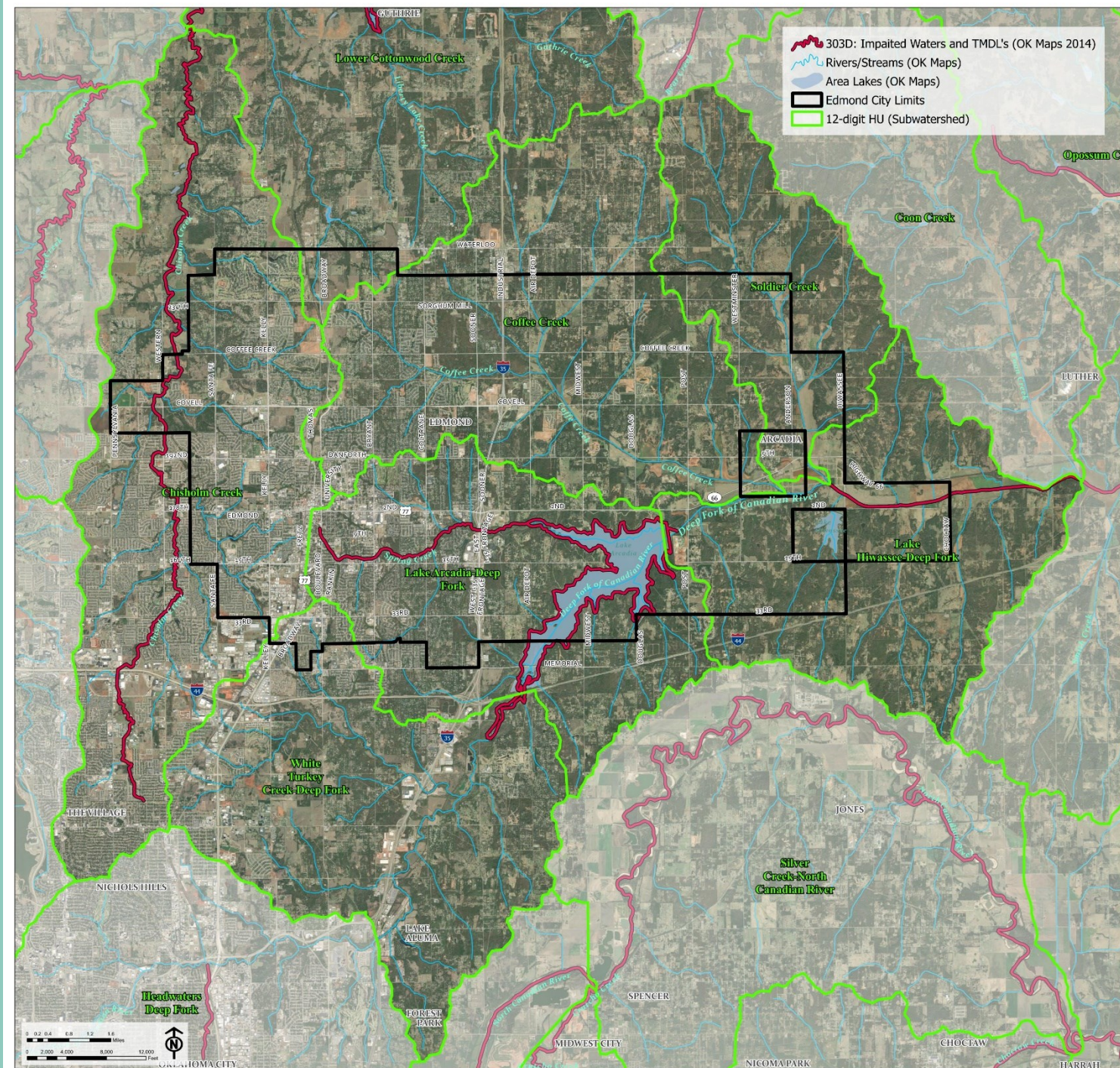


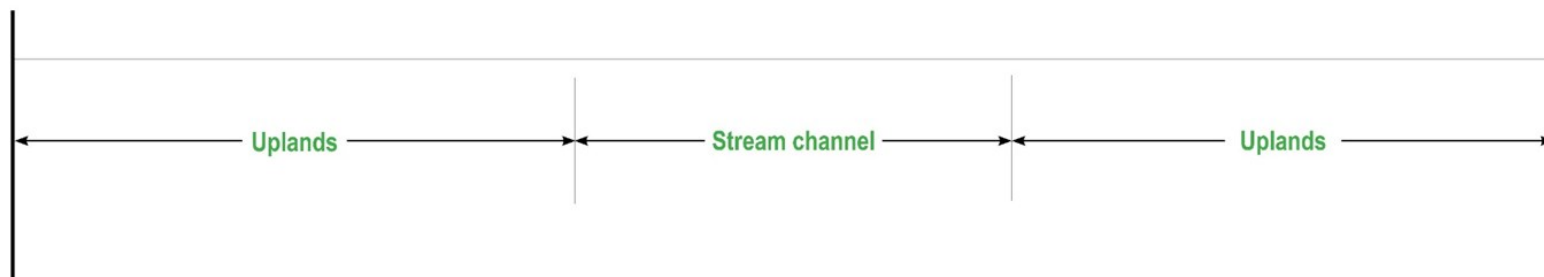
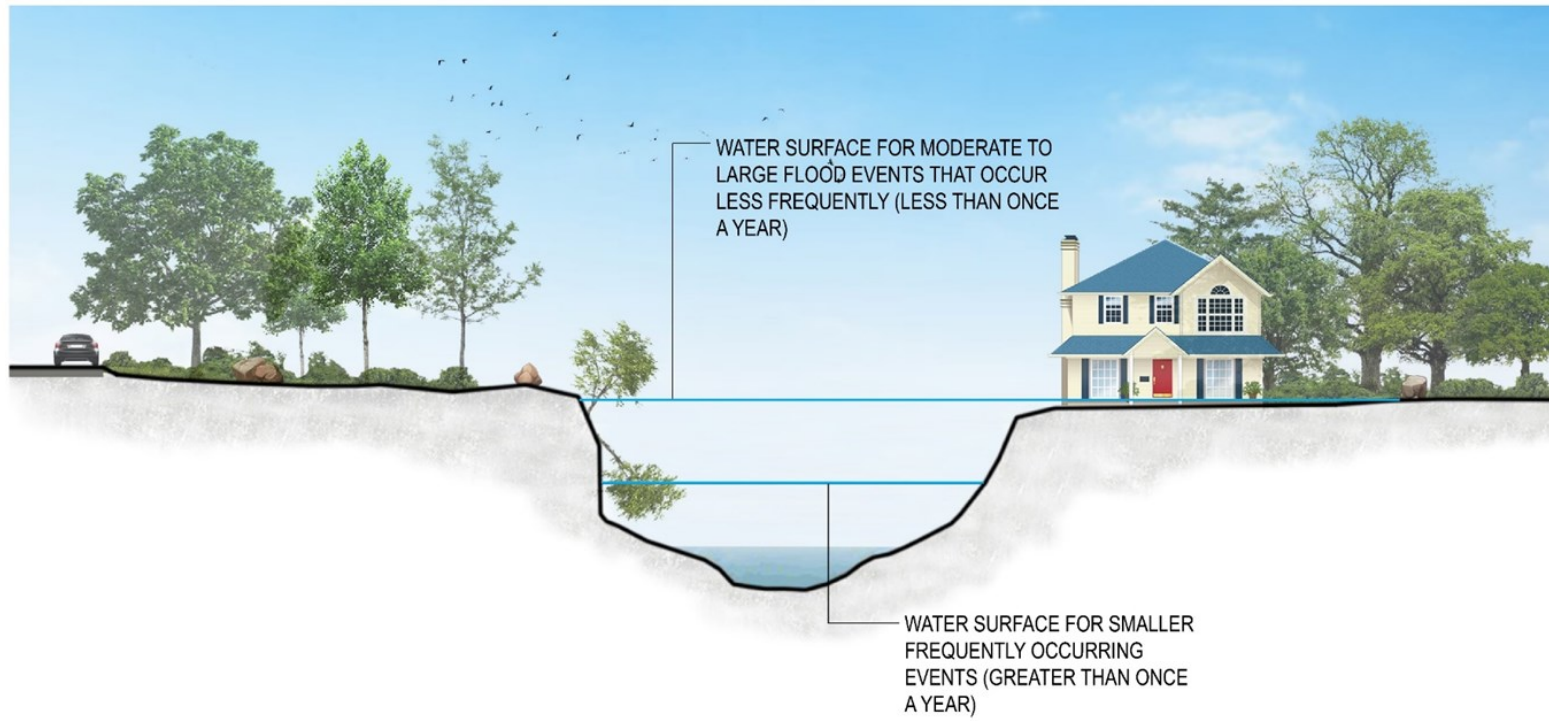
Plan form changes cause erosion at
bridges, homes, pipelines

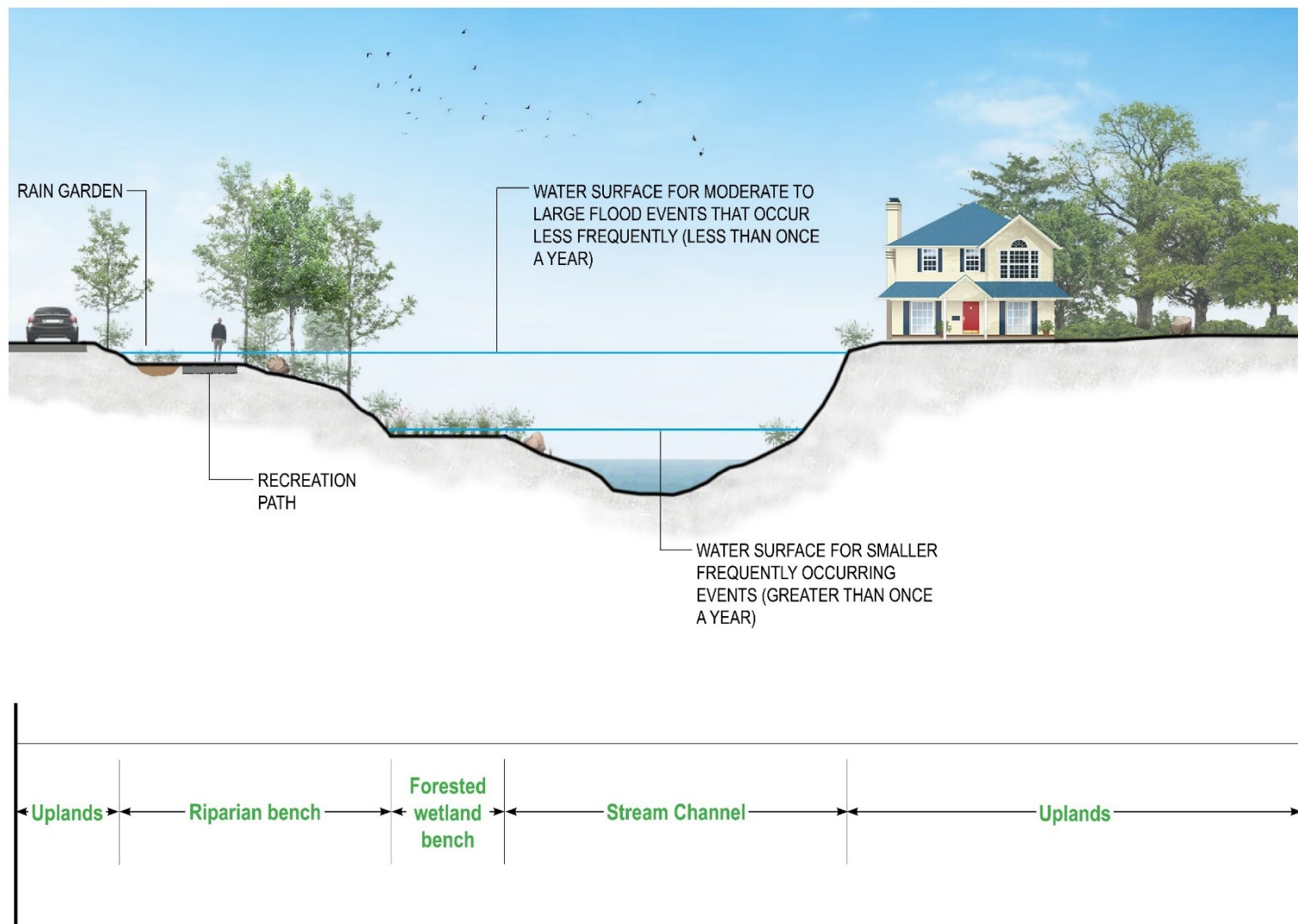


Over widened channel design results in
sediment deposition

Impaired Waters





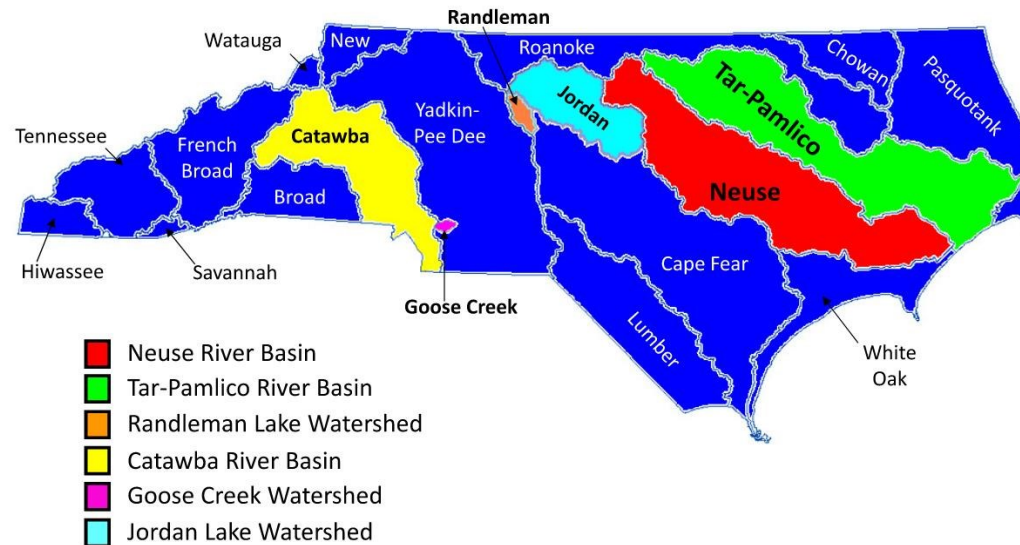


Case Study: Riparian Buffer Protection Program, North Carolina DWR

Jordan Reservoir Watershed

- 50-foot-wide riparian buffers
- Exemptions based on on-site determination
- Exemption when existing uses are present and ongoing
- Zones of the riparian buffer
- Diffuse flow requirements

Riparian Buffer Protection Programs



[Source: Riparian Buffer Protection Program | NC DEQ](#)

Case Study: Lower Colorado River Authority, Highland Lakes Watershed

Buffer Zone Regulations

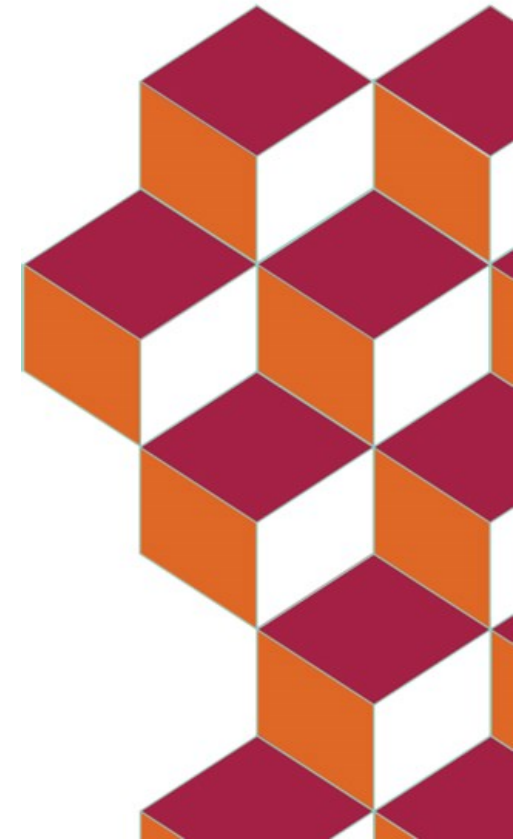
- Remain free of construction and development except for utility and roadway crossings, low impact park development, and stormwater detention structures
- Stormwater discharge from the development shall be dispersed into overland patterns before reaching the Buffer Zone

Maintenance

- Remove only invasive species
- Avoid trimming vegetation
- Remove vegetation by hand only
- Enhance native vegetation
- Plant native vegetation at the upper end of the buffer zone

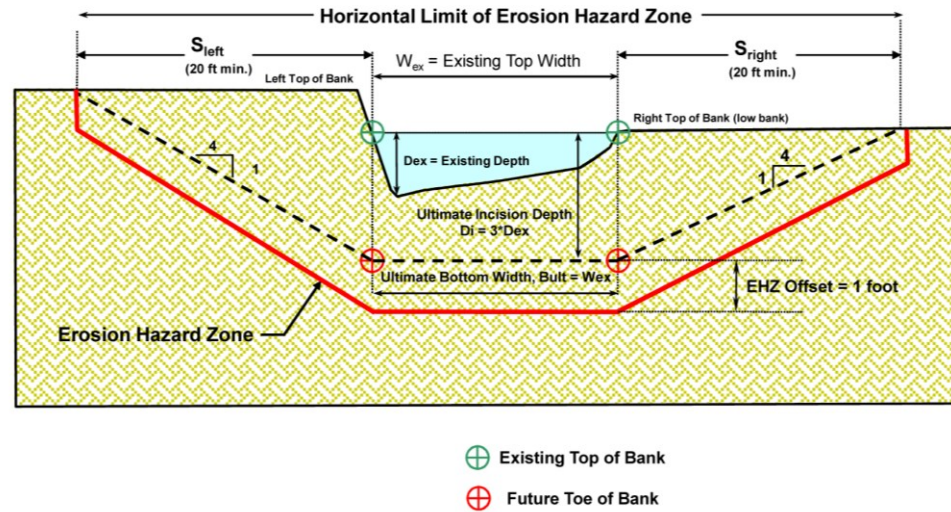
Buffer zone requirements for creeks or swales

Draining Area (acres)	Minimum Buffer Width (feet)
>5	25
5 - 40	25
40 - 128	75
128 - 320	100
320 - 640	200
>640	300

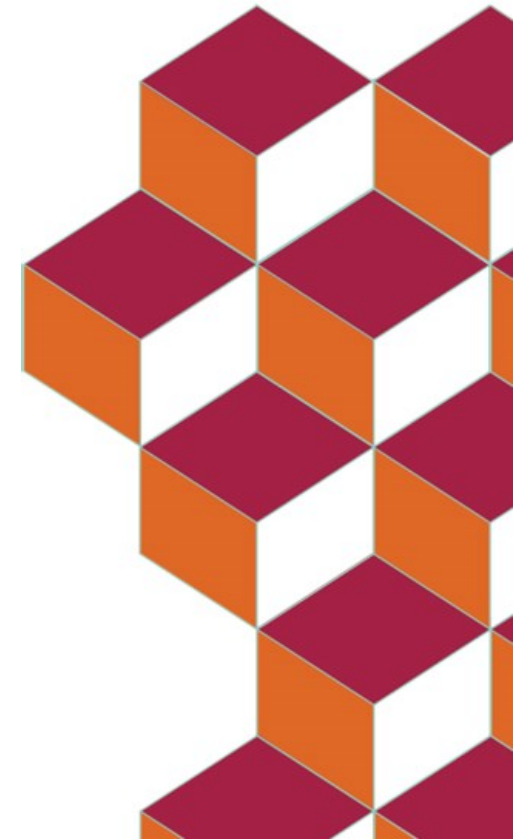


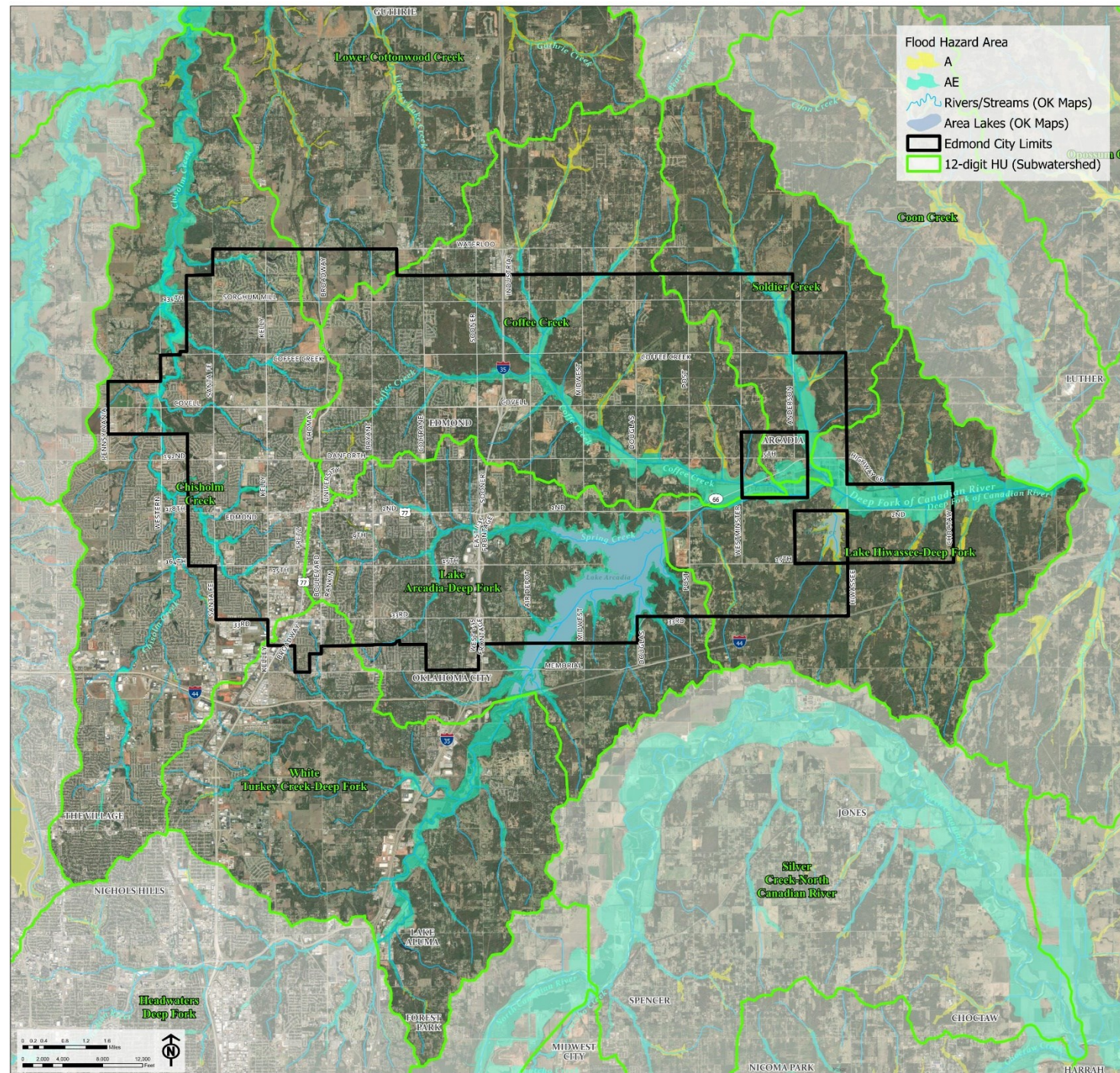
Case Study: City of Austin, Erosion Hazard Zone (EHZ)

- Buffer zone to protect resources from future erosion
- Establish EHZ for a proposed development if:
 - 100' > of creek centerline of >= 64 ac DA
 - Significant erosion present
- All development outside of EHZ or protection measures provided
- Two types of analysis



Source:
City of
Austin
DCM





Strategy 5

Provide guidance for vegetated LID practices

Purpose

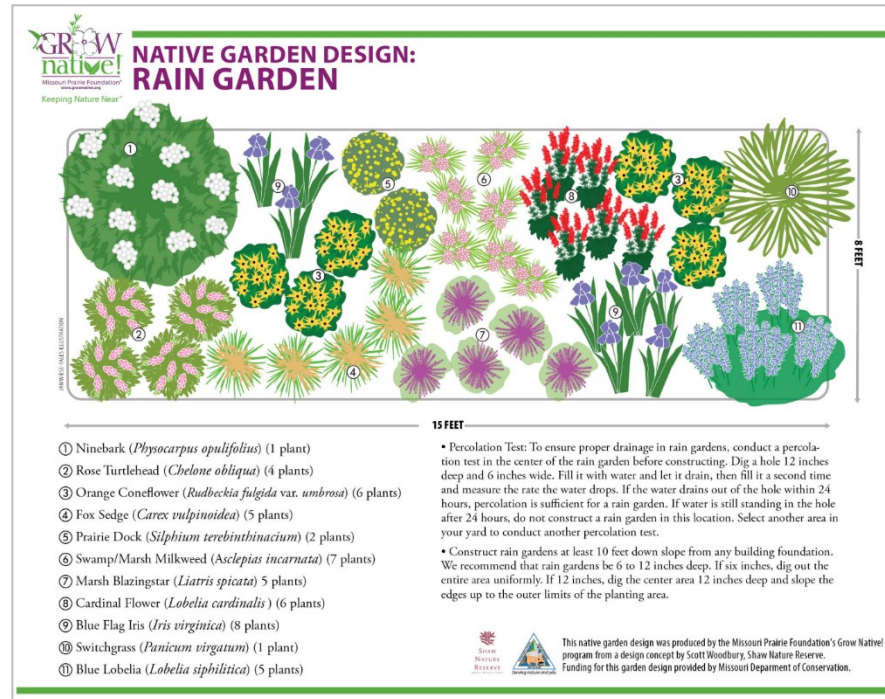
- To develop consistent and sustainable design plans
- To gain a better understanding of post-construction stormwater BMPs function and design needs
- To provide a more robust and successful vegetated post-construction stormwater BMPs.

Intent

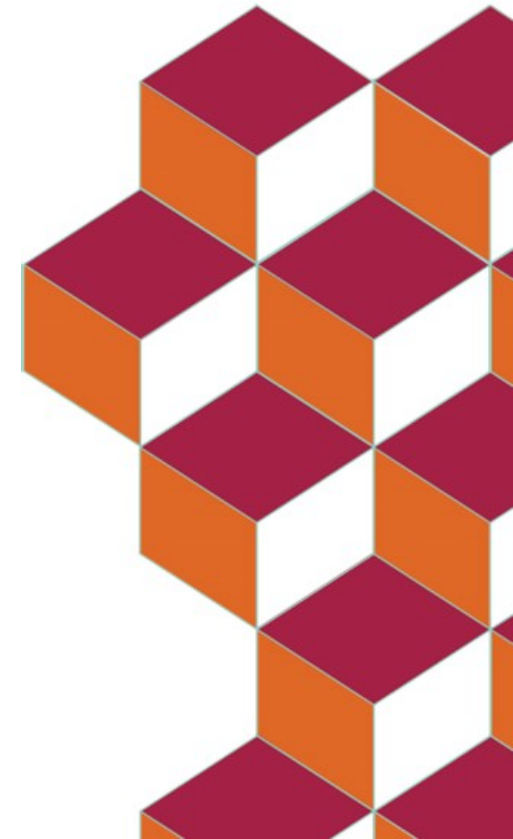
- Create a training and certification program for vegetation design for BMPs

Case Study: Grow Native! Program, Missouri Prairie Foundation

- Native plant marketing and education program
- **Grow Native!** Awards
- Professional Certification Program
- Online resources via **Grow Native!** website



Source: Grow Native! Missouri Prairie Foundation

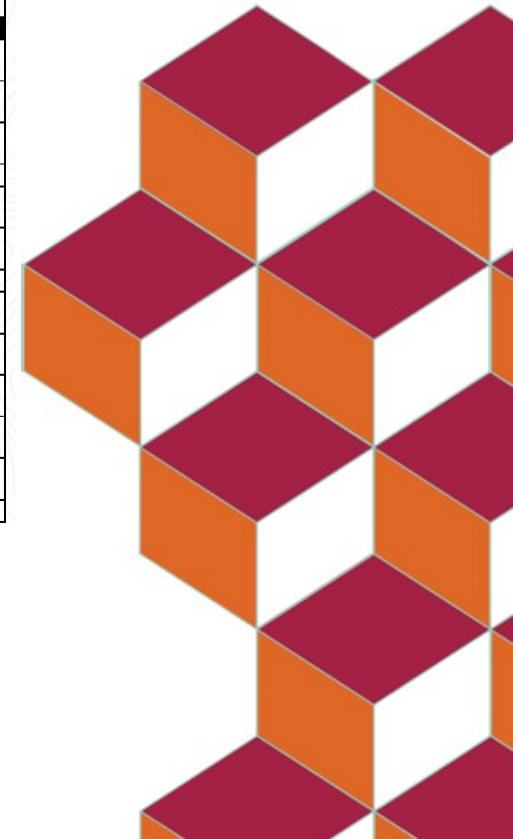


Case Study: LID Tools, San Antonio River Authority

- LID Technical Design Manual
- Natural Channel Design Protocol Manual
- LID Training Program
 - Site Planning
 - Design of Common Practices
 - Construction Inspection
 - Annual Inspection and Maintenance

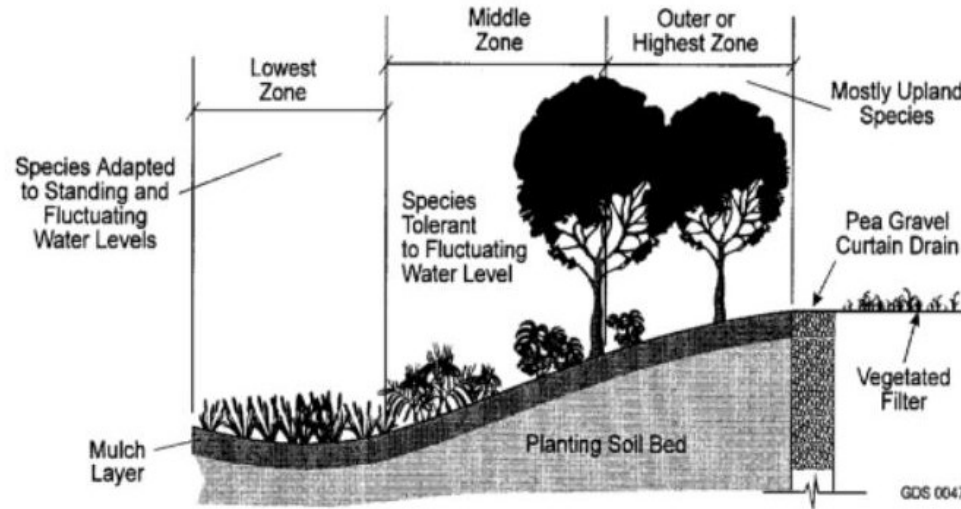
Common name	Scientific name	Native to SARB'	Size		Evergreen (E) Deciduous (D) or Semi (S)	Lifespan / Duration (Annual [A], Perennial [P], Biennial [B])	Light			Soil Moisture				Comments
			Height	Spread			Sun	Part sun/shade	Shade	Dry	Moist	Wet	Shallow water	
SHADE TREES														
American elm	<i>Ulmus americana</i>	✓	72'-90'	50'-70'	D	200+ yrs	✓	✓						
American sycamore	<i>Platanus occidentalis</i>	✓	75'-100'	50'-70'	D	200+ yrs	✓	✓	✓					
Anaqua	<i>Ehretia anacua</i>	✓	20'-45'	20'-45'	E	60+ yrs	✓	✓						Showy flowers & fruit. Attracts pollinators, birds
Arizona ash	<i>Fraxinus velutina</i>		36'-72'	45'-60'	D	30+ yrs	✓							Fast-growing
Bald cypress	<i>Taxodium distichum</i>	✓	50'-75'	30-60'	D	600+ yrs	✓	✓						
Black walnut	<i>Juglans nigra</i>	✓	72'-100'	72'-100'	D	100+ yrs	✓	✓						Certain plants sensitive to tannins from walnut husks
Black willow	<i>Salix nigra</i>	✓	36'-72'	36'-72'	D	65+ yrs	✓	✓	✓					Fast-growing, stabilizes soil
Box elder	<i>Acer Negundo</i>	✓	35'-50'	30'-40'	D	75+ yrs	✓	✓						Fast-growing, susceptible to breakage
Bur oak	<i>Quercus macrocarpa</i>		36'-100'	36'-100'	D	200+ yrs	✓	✓	✓					
Monterrey Oak	<i>Quercus polymorpha</i>		36'-72'	20'-35'	S		✓	✓						
Cedar elm	<i>Ulmus crassifolia</i>	✓	50'-70'	40'-60'	D	100+ yrs		✓						Fast growing, long-living
Cottonwood	<i>Populus deltoides</i>	✓	12'-36'	12'-30'	D	100+ yrs	✓	✓	✓					Fast-growing, susceptible to breakage
Honey mesquite	<i>Prosopis glandulosa</i>	✓	12'-36'	12'-36'	D	75+ yrs	✓							Thorny, Attracts pollinators

Source: SA River Basin LID Technical Design Manual

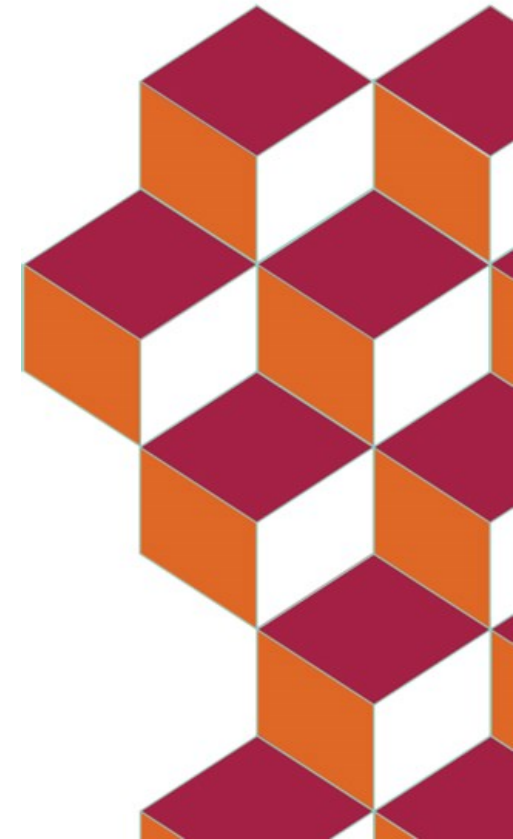


Case Study: Planting and Soil Guidance, GA SW Mgmt Manual

- General Planting Guidance
- Site Characteristics and Soil
- Plant Selection for Stormwater Facilities
- Landscaping Criteria for BMPs
- Plant List for Stormwater BMPs
- Minimum Requirements for Landscape Plans
- Plant Establishment and Maintenance



Planting Zones for Bioretention Facilities
Source: GA SW Mgmt Manual



Strategy 6

Enhance
post-construction
BMP signage

Purpose

- To allow easy identification of BMPs after construction is complete to alert the public
- To comply with the Public Education and Involvement requirements of the City's OKR04 permit.

Intent

- Create an educational BMP signage program

Stormwater Facility Location

Do not enter, alter, or remove

KEEP
EDMOND'S
WATERWAYS
CLEAN



Post construction BMP Signs Examples



DRAINS TO CREEK
MANHOLE COVER
NOT TO SCALE



Strategy 7

Establish
post-construction
BMP maintenance
program

Purpose

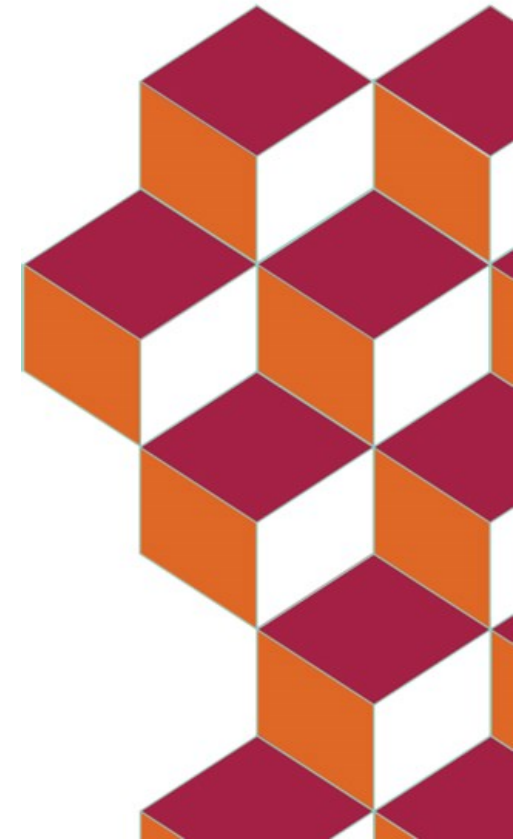
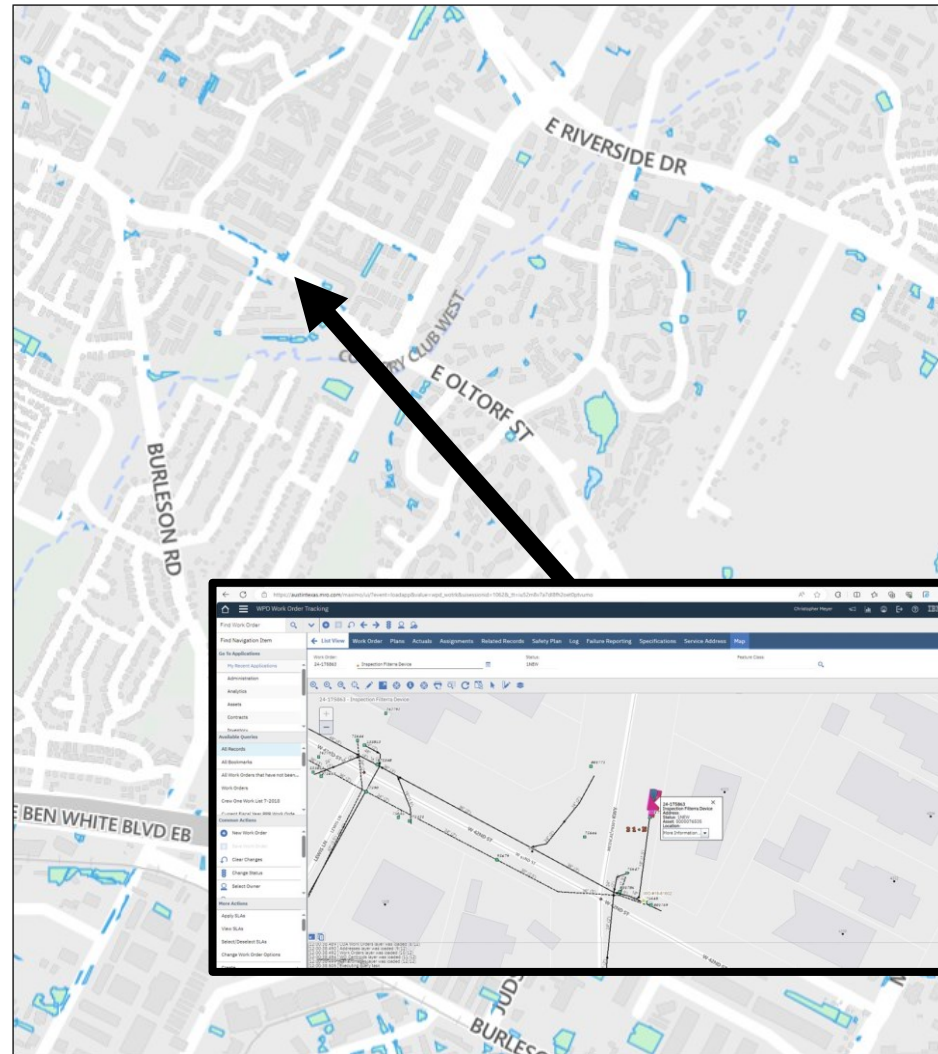
- To ensure the proper function of all post-construction stormwater BMPs
- To comply with the requirements of the small MS4 permit: “ensure adequate long-term operation and maintenance” of post-construction stormwater BMPs.

Intent

- To develop the City’s policies for a BMP maintenance program and any desired guidance for BMP maintenance.

Case Study: SCM Maintenance Protocol, Austin, Texas

- **Commercial Development SCMs**
 - Maintained by the owner(s)
 - WPD inspects every three years
 - Subsurface ponds – annual report from P.E. required
- **Residential Development SCMs**
 - Maintained by WPD once accepted
 - WPD inspects every three years
- **Capital Project SCMs**
 - Maintained by WPD once accepted (except vertical construction)
 - WPD inspects annually



Case Study: New York State Stormwater Management Design Manual

Operation and Maintenance Responsibility

- A responsible party by means of a legally binding and enforceable mechanism such as a maintenance agreement, deed covenant, or other legal measure.
- Included in the SWPPP
- Erect a conspicuous and legible sign (18" x 24" min)

Construction Inspection Checklist per LID Practice

- Preconstruction materials and equipment
- Subgrade Prep
- Appurtenances Installation
- Vegetative Stabilization
- Miscellaneous
- Final Inspection

Maintenance Inspection Checklist per LID Practice

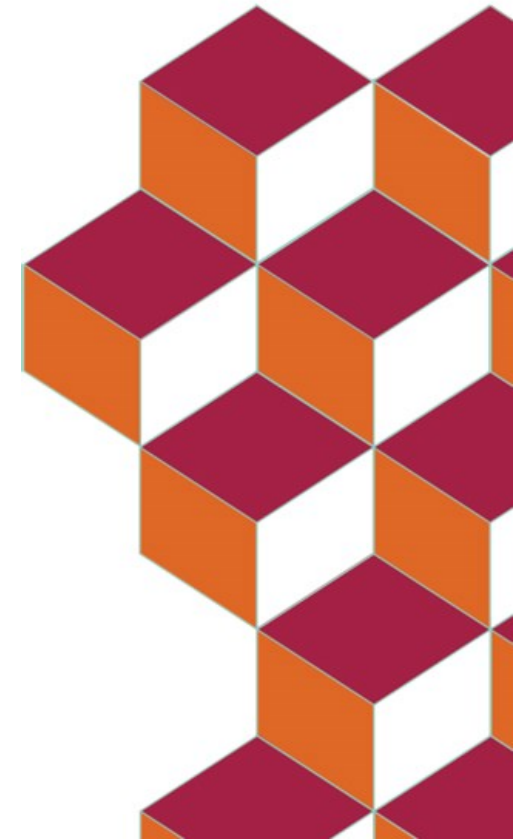
- Elements to inspect per feature
- Frequency of inspection

Appendix G: Maintenance Inspection Checklists

Stormwater Pond/Wetland Operation, Maintenance and Management Inspection Checklist

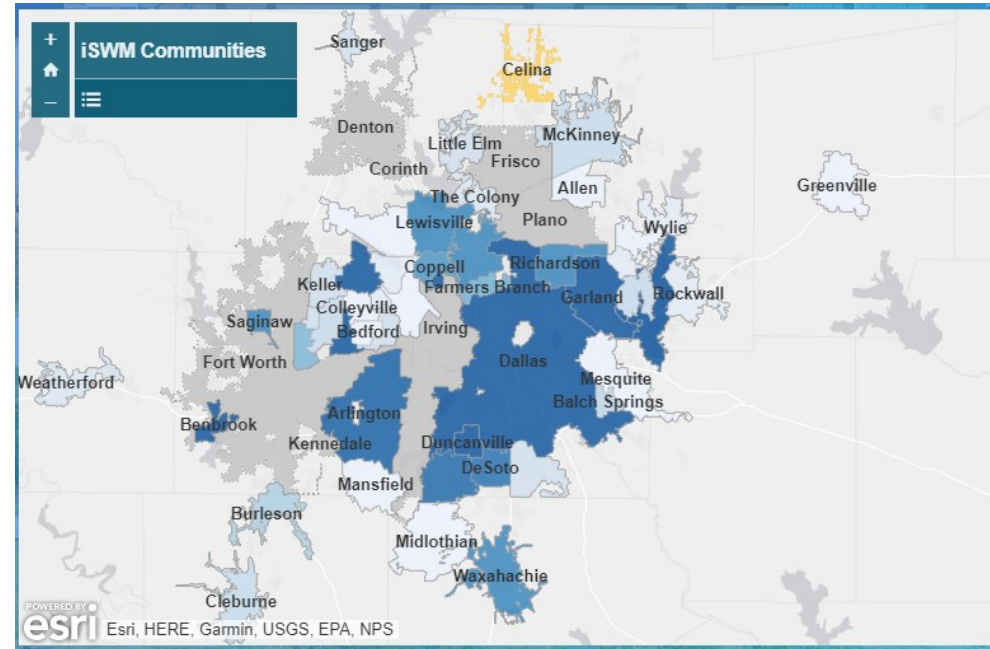
Project: _____
Location: _____
Site Status: _____
Date: _____
Time: _____
Inspector: _____

Maintenance Item	Satisfactory/ Unsatisfactory	Comments
1. Embankment and emergency spillway (Annual, After Major Storms)		
1. Vegetation and ground cover adequate		
2. Embankment erosion		
3. Animal burrows		
4. Unauthorized planting		
5. Cracking, bulging, or sliding of dam		
a. Upstream face		
b. Downstream face		
c. At or beyond toe		
downstream		
upstream		
d. Emergency spillway		
6. Pond, toe & chimney drains clear and functioning		
7. Seeps/leaks on downstream face		
8. Slope protection or riprap failure		
9. Vertical/horizontal alignment of top of dam "As-Built"		

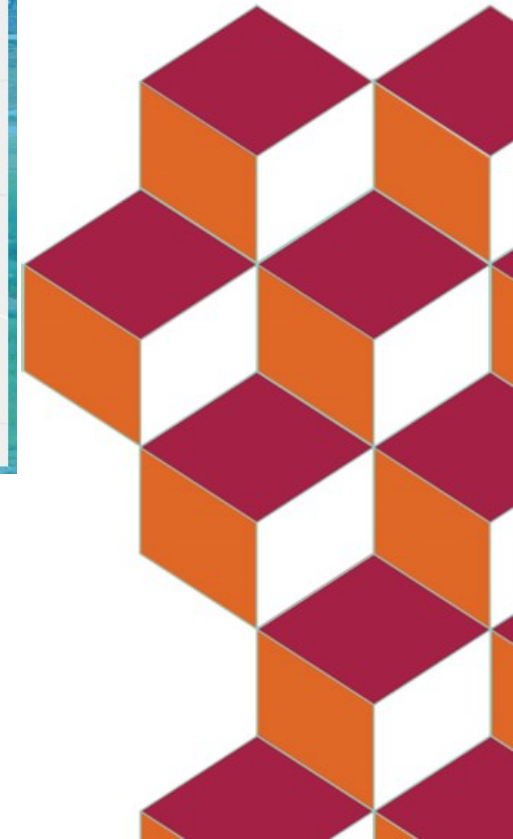


Case Study: iSWM Program, North Central Texas Council of Governments

- Cooperative initiative that assists cities and counties to achieve their goals and obligations
- NCTCOG Resources
 - iSWM Criteria Manual
 - iSWM Technical Manual
 - Ordinance templates
 - post-construction stormwater management
 - operations and maintenance plan
 - Recourse for noncompliance
 - Sample agreements
 - Inspection Forms
 - Training video for city staff



Source: iswm.nctcog.org



Strategy 8

Increase/add
permitting related
fees

Purpose

- To adequately support the level of effort required by the City staff to review design plans

Intent

- To increase/add permit, site inspection, and maintenance inspection fees for residential and commercial land development

Case Study: Highland Lakes Watershed Ordinance, LCRA, Texas

Development Permit \$1,830 + \$366/acre (0-10 acres) + \$165/acre (10-100 acres) + \$146/acre (> 100 acres)

Alternative Standards Development Permit (fast track)
\$1,830 + \$73/acre (0-100 acres) + \$18/acre (>100 acres)

Master Plan Review

- \$3.50 per acre for projects seeking alternate standards
- \$5.00 per acre for projects not seeking alternate standards approval

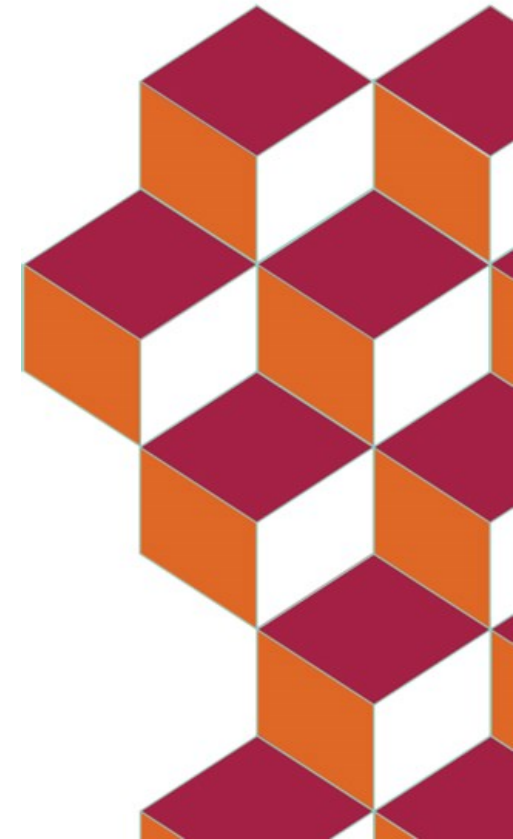
Permit Amendment \$100

Plan Revisions \$50 per plan sheet

Annual Maintenance Inspection Fee

- \$400/year (one to five water quality basins + \$50 for each additional BMP)
 - First fee paid at project completion by developer at issuance of BMP Maintenance Permit.
 - Subsequent fee paid by owner/maintenance association.

Reinspection Fee \$100



Case Study: Site Development Review, Austin, Texas

Site Plan Review Fees (1 of 5)

If Commission (SCP), a Site Plan Public Hearing Preparation fee & Basic Notification fee will always apply.

A 4% Development Services Surcharge fee will be added to all permit fees.

	DSD Fees ^{F,G}	Basic Notification ^S	Completeness Check ^{*,S}	Subtotal	DSD 4% Tech Surcharge	AW - UDS Engineering ^A	PARD ^{DS}	TPWD ^{ES}	TPWD + 4% Tech Surcharge	AFD ^S	AE ^S	Total
Land Use Only - "A" Site Plan ^{BS}												
Land Use Site Plan - Permitted Use	\$3,692.70	\$261.90	\$399.40	\$3,954.60	\$158.18		\$717.00	\$3,160.00	\$3,286.40	\$340.00	\$162.00	\$8,618.18
Land Use Site Plan - Conditional Use	\$5,463.90	\$261.90	\$399.40	\$5,725.80	\$229.03		\$717.00	\$3,160.00	\$3,286.40	\$340.00	\$162.00	\$10,460.23
Construction Element Only - "B" Site Plan ^{B,C,S}												
Site Plan - Construction Element												
up to 5 acres	\$11,644.20	\$261.90	\$399.40	\$11,906.10	\$476.24	\$241.00	\$717.00	\$3,160.00	\$3,286.40	\$340.00	\$162.00	\$17,128.74
above 5 acres	\$12,587.00 + \$152.10 /acre over 5 acres	\$261.90	\$399.40	\$12,848.90	\$513.96	\$241.00	\$717.00	\$3,160.00	\$3,286.40	\$340.00	\$162.00	\$18,109.26 + \$158.18 /acre over 5 acres
Consolidated - "C" Site Plan ^{B,C,S}												
Site Plan - Consolidated												
up to 5 acres	\$14,735.70	\$261.90	\$399.40	\$14,997.60	\$599.90	\$241.00	\$717.00	\$6,320.00	\$6,572.80	\$340.00	\$162.00	\$23,630.30
above 5 acres	\$16,423.20 + \$169.00 /acre over 5 acres	\$261.90	\$399.40	\$16,685.10	\$667.40	\$241.00	\$717.00	\$6,320.00	\$6,572.80	\$340.00	\$162.00	\$25,385.30 + \$175.76 /acre over 5 acres
"D" Site Plan ^{B,C,S}												
Building, Parking & Other Site Work	\$11,430.90 + \$152.10 /acre over 10 acres	\$261.90	\$399.40	\$11,692.80	\$467.71	\$241.00	\$717.00	\$3,160.00	\$3,286.40	\$340.00	\$162.00	\$16,906.91 + \$158.18 /acre over 10 acres
Utility Lines or Street & Drainage												
base fee	\$5,533.00	\$261.90	\$399.40	\$5,794.90	\$231.80	\$241.00	\$717.00			\$340.00	\$162.00	\$7,486.70
5,001 linear feet and above	\$5,756.00 + \$0.0316 / per linear ft. over 5,000 linear ft.	\$261.90	\$399.40	\$6,017.90	\$240.72	\$241.00	\$717.00			\$340.00	\$162.00	\$7,718.62 + \$0.03 /5,000 linear ft over 5,000
Major Drainage												
up to 5 acres	\$6,257.70	\$261.90	\$399.40	\$6,519.60	\$260.78	\$241.00	\$717.00			\$340.00		\$8,078.38
above 5 acres	\$6,575.40 + \$190.80 /acre over 5 acres	\$261.90	\$399.40	\$6,837.30	\$273.49	\$241.00	\$717.00			\$340.00		\$8,408.79 + \$198.43 /acre over 5 acres

Case Study: Site Development Review, Austin, Texas

Site Plan Review Fees (1 of 5)

If Commission (SCP), a Site Plan Public Hearing Preparation fee & Basic Notification fee will always apply.
A 4% Development Services Surcharge fee will be added to all permit fees.

	DSD Fees ^{F,G}	Basic Notification ^S	Completeness Check ^{A,S}	Subtotal	DSD 4% Tech Surcharge	AW - UDS Engineering ^A	PARD ^{DS}	TPWD ^{ES}	TPWD + 4% Tech Surcharge	AFD ^S	AE ^S	Total
Land Use Only - "A" Site Plan ^{BS}												
Land Use Site Plan - Permitted Use	\$3,692.70	\$261.90	\$399.40	\$3,954.60	\$158.18		\$717.00	\$3,160.00	\$3,286.40	\$340.00	\$162.00	\$8,618.18
Land Use Site Plan - Conditional Use	\$5,463.90	\$261.90	\$399.40	\$5,725.80	\$229.03		\$717.00	\$3,160.00	\$3,286.40	\$340.00	\$162.00	\$10,460.23

Construction Element Only - "B" Site Plan ^{B,C,S}

Site Plan - Construction Element												
up to 5 acres	\$11,644.20	\$261.90	\$399.40	\$11,906.10	\$476.24	\$241.00	\$717.00	\$3,160.00	\$3,286.40	\$340.00	\$162.00	\$17,128.74
above 5 acres	\$12,587.00 + \$152.10 /acre over 5 acres	\$261.90	\$399.40	\$12,848.90	\$513.96	\$241.00	\$717.00	\$3,160.00	\$3,286.40	\$340.00	\$162.00	\$18,109.26 + \$158.18 /acre over 5 acres

Consolidated - "C" Site Plan ^{B,C,S}

Site Plan - Consolidated

up to 5 acres
above 5 acres

"D" Site Plan ^{B,C,S}

Building, Parking & Other Site Work

Utility Lines or Street & Drainage

base fee
5,001 linear feet and above

Major Drainage

up to 5 acres
above 5 acres

Site Plan Review Fees (5 of 5)

Watershed Protection Fees ^S

Miscellaneous Fees (All Site Plans)

Completeness Check

Site Plan Revisions

Site Plan Revision - Floodplain Modification Review

Site Plan Revision - Hydrogeologist Review

Site Plan Revision - Wetland Biologist Review

Site Plan Variance Other than Floodplain Variance - Administrative

Site Plan Variance Other than Floodplain Variance - Commission

Site Plan Floodplain Variance - Administrative

Site Plan Floodplain Variance - Council

	WPD	DSD 4% Tech Surcharge	Total
Completeness Check	\$34.00	\$1.36	\$35.36
Site Plan Revision - Floodplain Modification Review	\$154.00	\$6.16	\$160.16
Site Plan Revision - Hydrogeologist Review	\$154.00	\$6.16	\$160.16
Site Plan Revision - Wetland Biologist Review	\$154.00	\$6.16	\$160.16
Site Plan Variance Other than Floodplain Variance - Administrative	\$254.00	\$10.16	\$264.16
Site Plan Variance Other than Floodplain Variance - Commission	\$4,495.00	\$179.80	\$4,674.80
Site Plan Floodplain Variance - Administrative	\$1,431.00	\$57.24	\$1,488.24
Site Plan Floodplain Variance - Council	\$4,715.00	\$188.60	\$4,903.60

\$23,630.30
\$25,385.30 + \$175.76 /acre over 5 acres
\$16,906.91 + \$158.18 /acre over 10 acres
\$7,486.70
\$7,718.62 + \$0.03 /5,000 linear ft over 5,000
\$8,078.38
\$8,408.79 + \$198.43 /acre over 5 acres

Strategy 9

Develop an LID practice awards and recognition program

Purpose

- To increase awareness of LID practices by the public and decision-makers at a broad level

Intent

- To create an awards and recognition program for all privately-owned developments where LID practices will not be mandatory

Awards and Recognition Program Examples



Social Media Highlight



Newspaper Article



Utility Bill Mailings



Yard Sign



State of the City

Strategy 10

Hire (or outsource) an engineer to support the post-construction stormwater program

Purpose

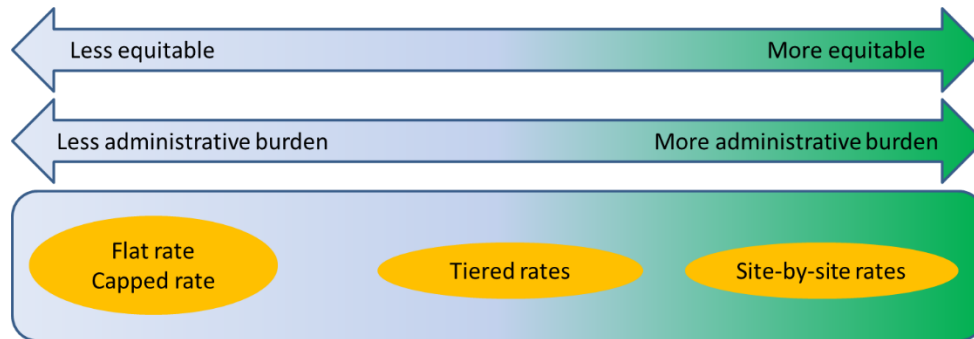
- Effectively administer the Stormwater LID Manual and strategies identified in the LID Roadmap

Intent

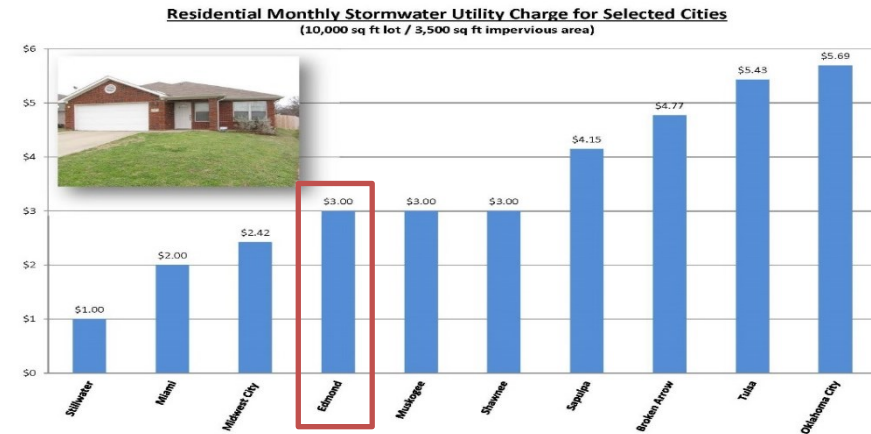
- Assign dedicated staff to be responsible for Stormwater Program, which would include:
 - LID plan review/approval
 - BMP construction inspection and maintenance inspection
 - Educate BMP design, construction and maintenance team
 - Advocate for LID practices on public projects
 - Implementation of LID Roadmap strategies

Revamp Stormwater Utility Fee

- Low rate compared to other OK cities
- Using Flat Rate Method



- Fee reduction for LID practice implementation



Case Study: Structural Control Inspection Program, San Marcos, Texas

- Compliance with MS4 Permit and Stormwater Management Program
- Owner inspection at least < 3 years
- Inspection performed by PE
- Inspector pre-certified by City

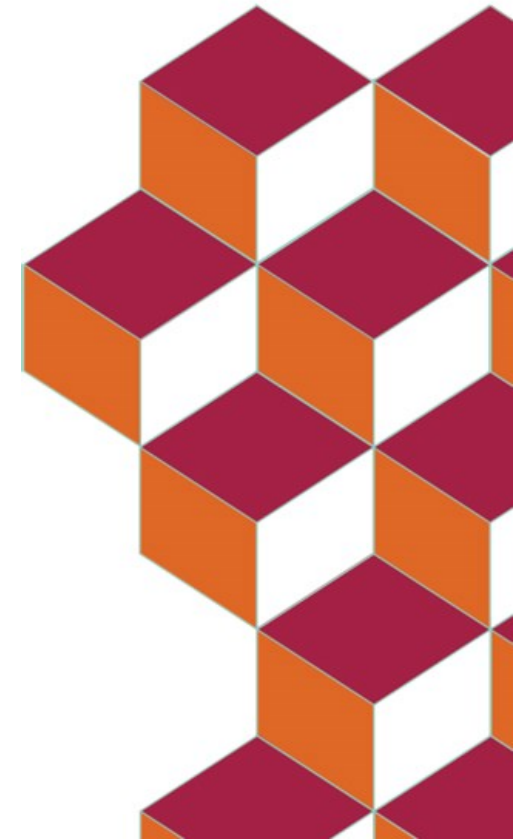


Spillway Assessment (Area where surplus water can pass through)

Inspection	S	U	N/A	Corrective Actions	Expected Completion
Eroded/bare areas in spillway					
Unwanted vegetation present (invasive or woody species)					
Spillway obstructed					
Comments					

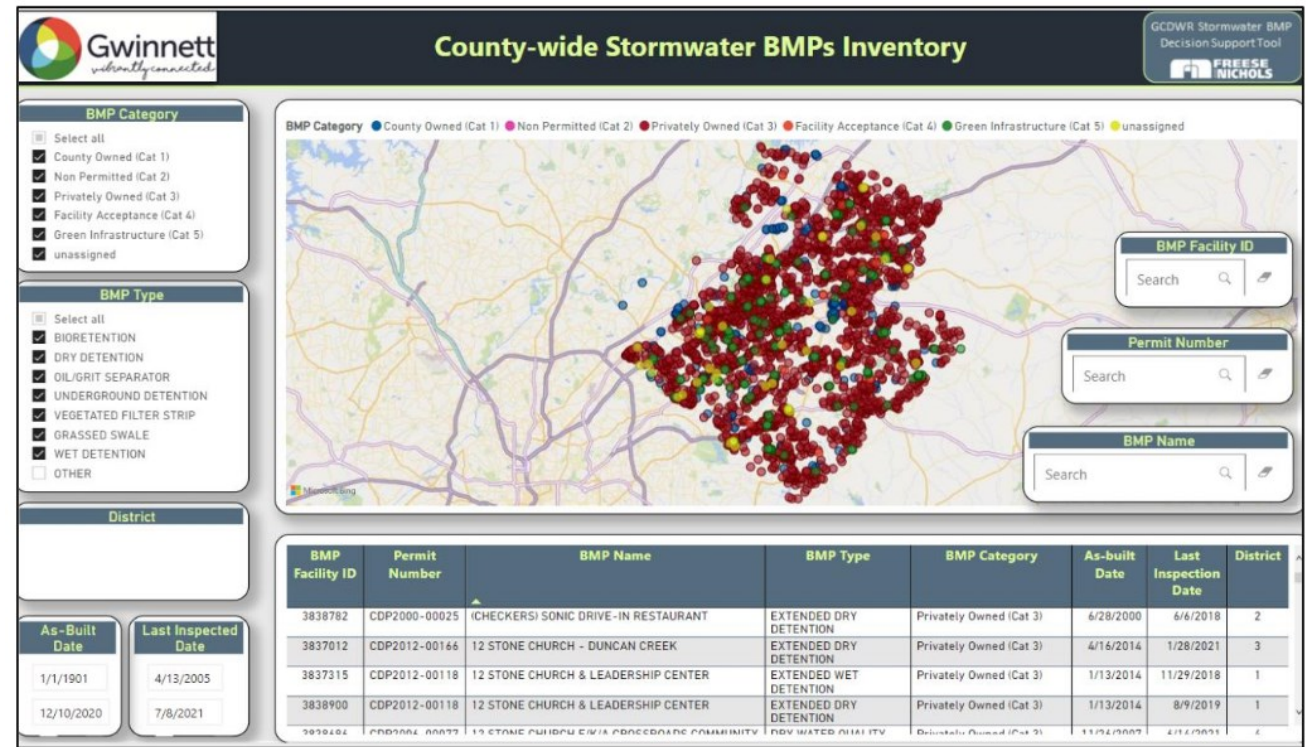
Miscellaneous Assessment

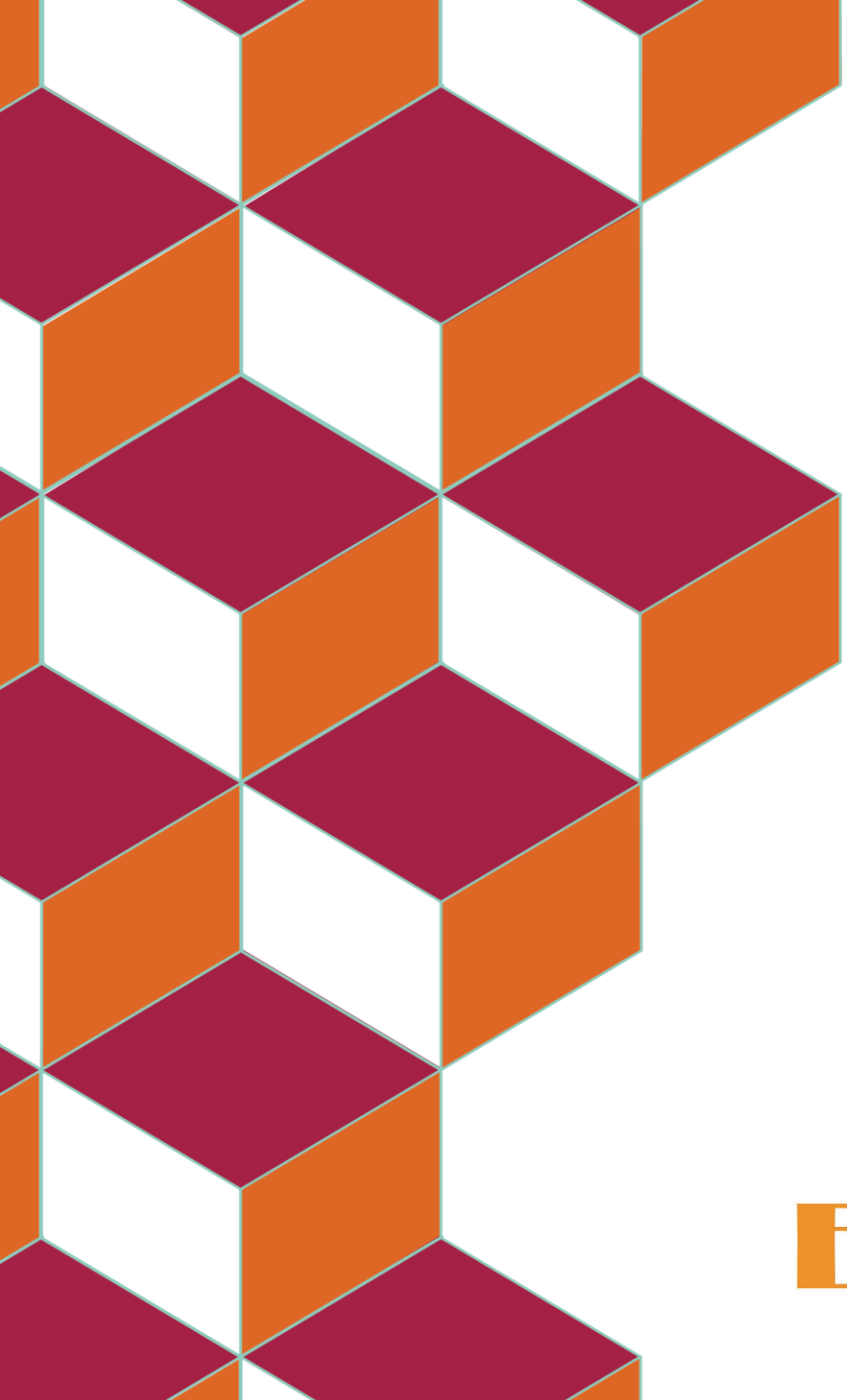
Inspection	S	U	N/A	Corrective Actions	Expected Completion
Access restricted (ex: fence, vegetation, etc.)					
Evidence of routine maintenance not being performed					
Issues with additional features (ex: walkways, fences, etc.)					
Undesired species (animal, insect, etc...)					
Comments					



Case Study: SW Asset Management, Gwinnett County, GA

- Built a database to manage existing asset data that is linked to geolocated features.
- Performed field inspections using a mobile application of Survey123.
- Inspection data was uploaded to the database in real-time.
- Dashboards can be used to filter by various elements.





Thank you!

Discussion

