Integrated Stormwater Management (iSWM) Subcommittee Meeting

- Staff Planner: Katie Hunter
- January 13, 2026

iSWM™

North Central Texas Council of Governments

Welcome and Introductions

- Please use the function to add your name and organization for attendance.
- Please keep microphone muted unless you're speaking.
- The meeting agenda, presentation and handouts are located on the iSWM Implementation Subcommittee Webpage

AGENDA

1. Welcome and Introductions

Action Items

2. Approval of October 14, 2025, Meeting Summary
3. Approval of FY2026 iSWM Subcommittee Roster

Discussion Items

4. Green Stormwater Infrastructure and the TSI Study
5. iSWM Website Update Survey Result Discussion
6. FY26 Work Program Update

Information Items

7. Regional Public Works Program Update
8. TSI Study Upcoming Events
9. Upcoming Events and Conferences

General Information Items & Roundtable Discussion.

10. Upcoming NCTCOG Meetings
11. Future Agenda Items and Schedule for Next iSWM Meeting
12. Roundtable Discussion

Adjournment

Welcome & Introductions

Action Items

2. Approval of October 14, 2025, Meeting Summary.

- Summary located on the iSWM Implementation Subcommittee Webpage

- iSWM Subcommittee will vote to approve the summary

3. Approval of FY2026 iSWM Subcommittee Roster

Link to Roster: https://www.nctcog.org/getmedia/53562b4d-c53d-48a6-86df-eb3f7268e70b/FY26-Subcommittee-Member-Roster_3.pdf

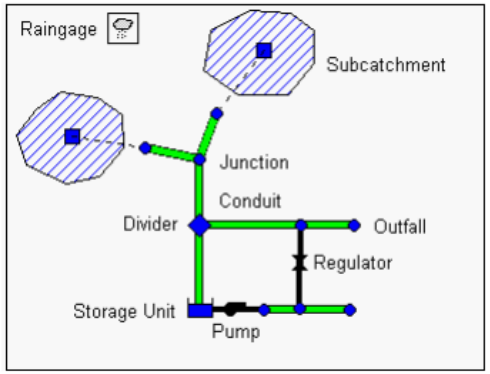
Discussion Items

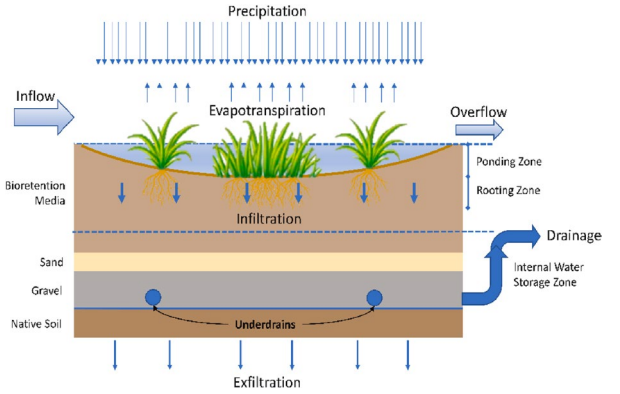
4. The role of Green Stormwater Infrastructure (GSI) in the integrating Transportation and Stormwater Infrastructure (TSI) study

Fouad Jaber, Ph.D., PE, Yufan Zhang, Ph.D., EIT

The role of Green Stormwater Infrastructure (GSI) in the integrating Transportation and Stormwater Infrastructure (TSI) study

Fouad Jaber, Ph.D., PE, Yufan Zhang, Ph.D., EIT

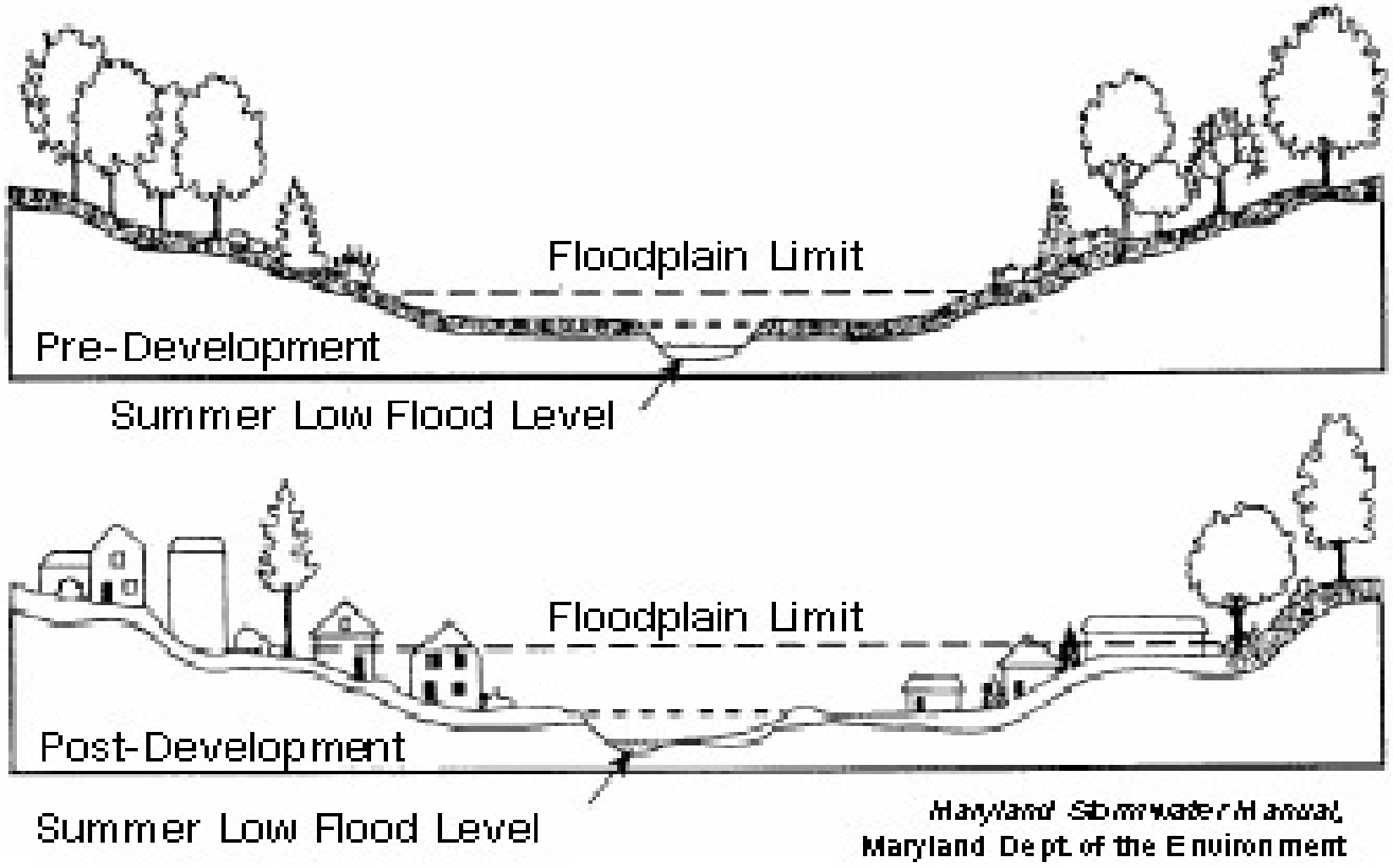




TEXAS A&M AGRILIFE

Why is Stormwater a Concern?

Why is Stormwater a Concern?



Eutrophication

- Impacts due to urbanization:
  - Impact to aquatic habitat: Degradation of habitat structure, loss of pool-riffle structure, reduction in base flow, increased stream temperature, and decline in abundance and biodiversity.

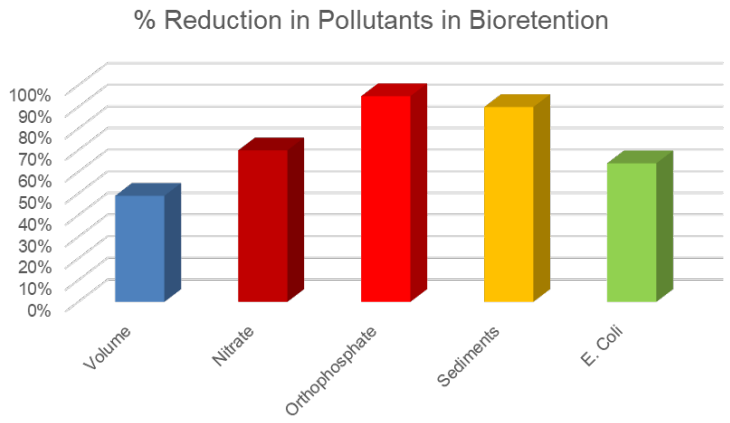
Fish kill at Lake Granbury.

Green Stormwater Infrastructure

- Green Stormwater Infrastructure (GSI) is an engineered system of capturing, managing, and treating stormwater runoff at the source before it reaches waterways such as streams, rivers and lakes
- GSI includes practices such as Rain gardens, bioretention areas, permeable pavement, constructed wetlands and rainwater harvesting

Green Stormwater Infrastructure

- Our program have designed, constructed and monitored GSI for more than 17 years.



Green roof (Fort Worth Botanic Garden)

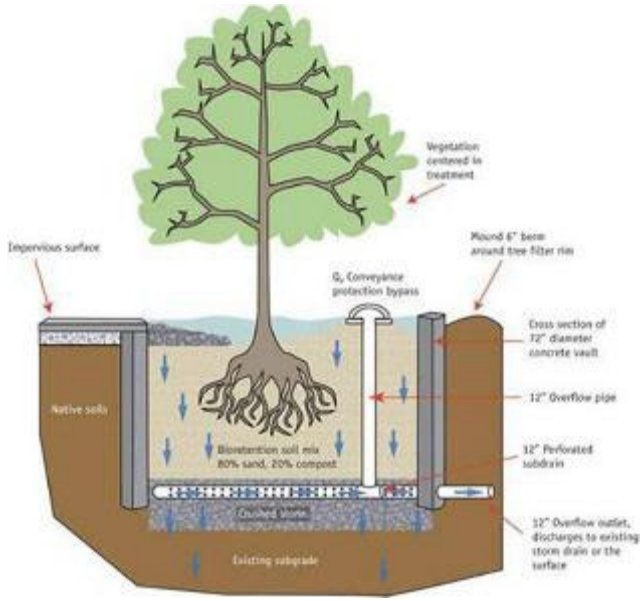
Rainwater harvesting (AgriLife)

Permeable pavement (AgriLife)

Other GSI

- Tree box
- Bioswale
- Constructed wetland

Constructed wetland features (TRWD)



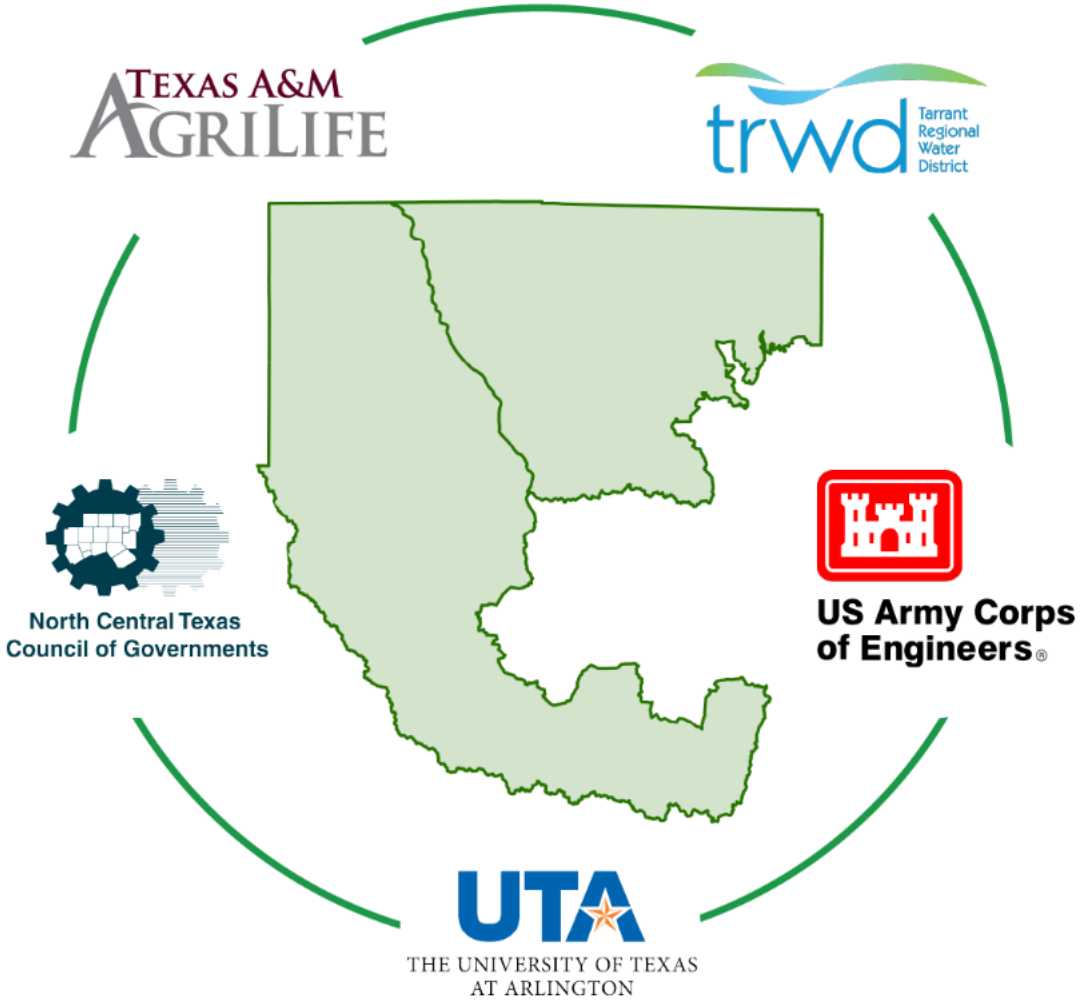
Tree box (New Jersey Agricultural Experiment Station, 2013)

Bioswale/bioretention at a parking lot (AgriLife)

Project Team Members:

A working group of partners and stakeholders to carry out a comprehensive planning effort in Wise County and portions of Dallas, Denton, Ellis, Johnson, Parker, and Tarrant counties

integrating **Transportation & Stormwater Infrastructure**



Timeline & Budget:

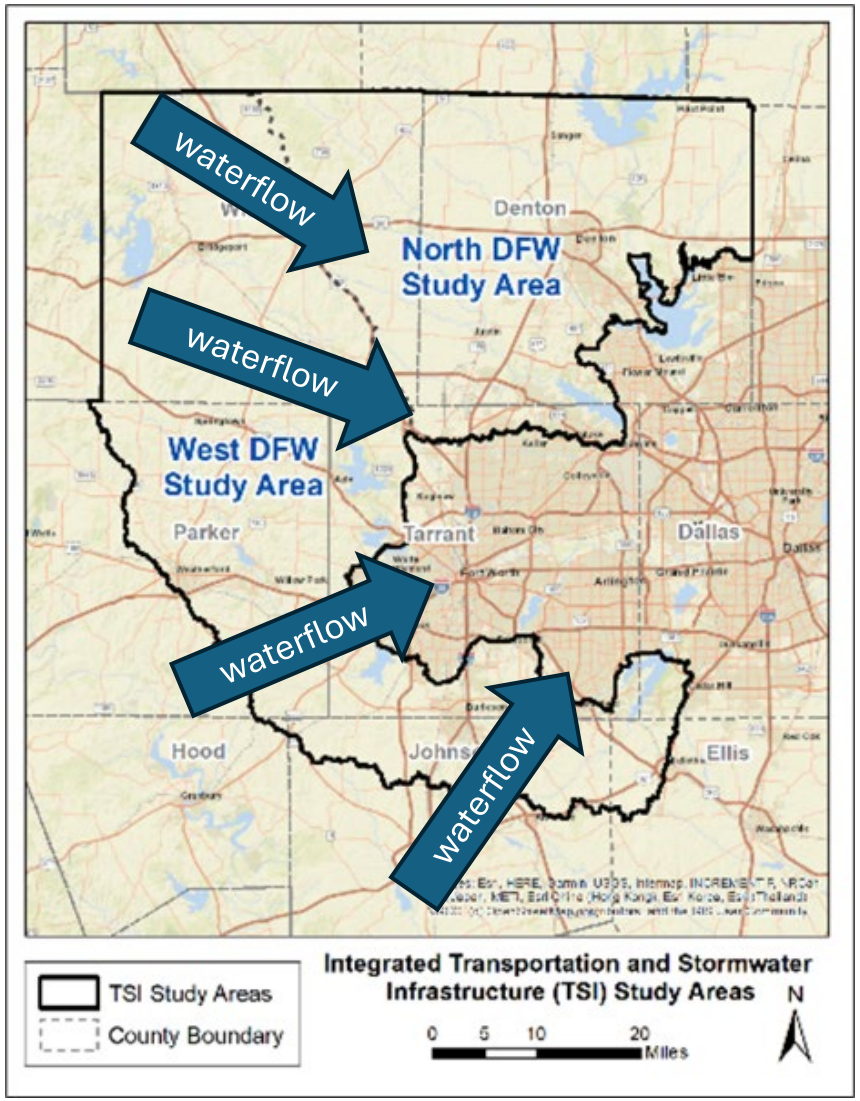
3+ years and $10 million

Funding Partners

- Federal Emergency Management Agency
- Texas Water Development Board
- Texas Department of Transportation / Federal Highway Administration
- Texas General Land Office

Project area details

- Integrating transportation and stormwater infrastructure (TSI)
- 85 cities and portions of 8 counties
- 126% increase in population (2020-2045)
- 60% undeveloped (2015)
- 19% growth in impervious surface (2006-2016)
- >7,000 miles of streams and >274,000 acres of 100-year floodplain



What kind of questions you want to ask yourself when you apply GSI?

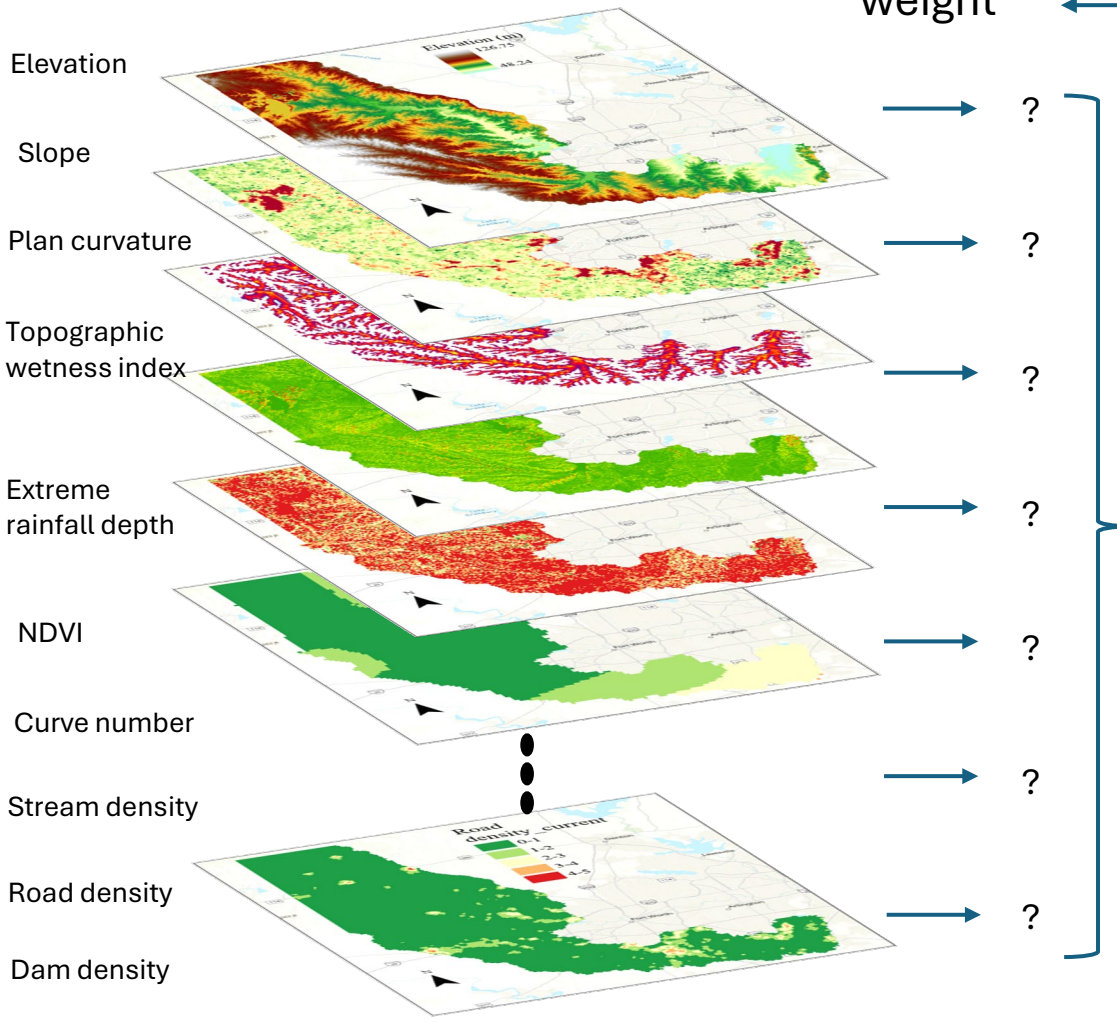
1. Where are the most prioritized areas when we consider GSI to reduce flood risk in a large scale (e.g. multi-county)?

2. How to design/model a GSI (e.g. bioretention) to meet a desired efficiency (e.g. runoff reduction, peak flow attenuation) under a design rainfall event in plot scale?

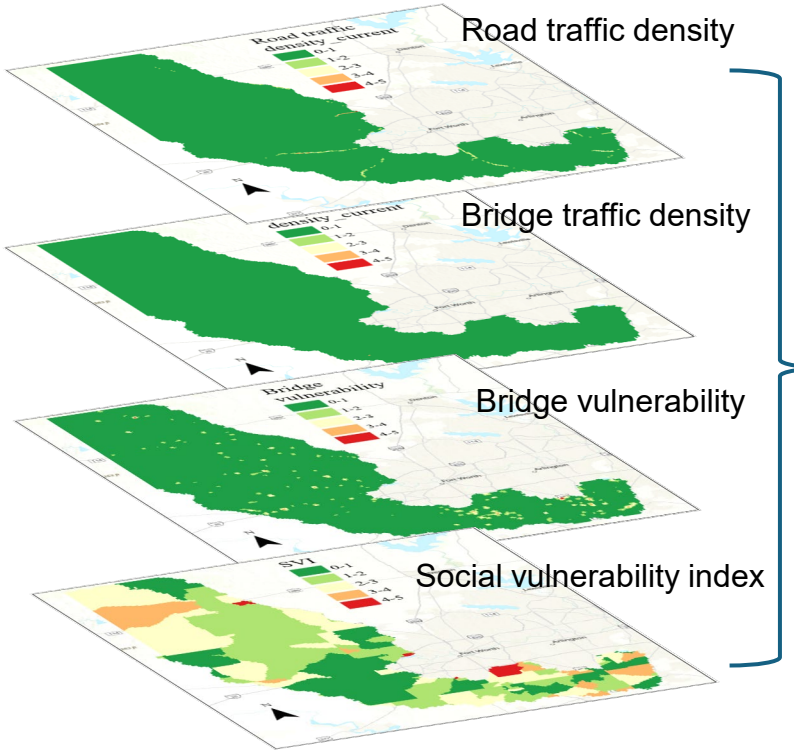
3. What is the efficiency (e.g. runoff reduction, peak flow attenuation) of applying GSI in a watershed scale or community scale?

Our ongoing research at Texas A&M AgriLife aims to answer these questions

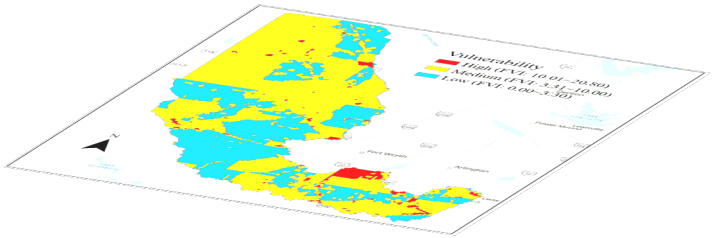
Stacking model in regional scale



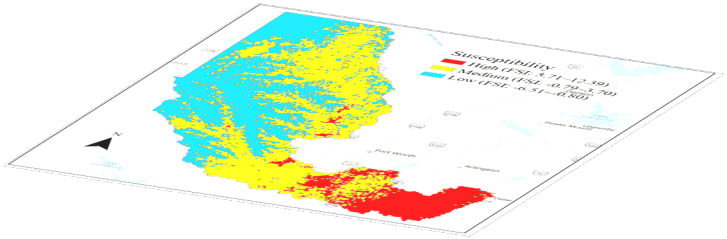
Stacking model in regional scale

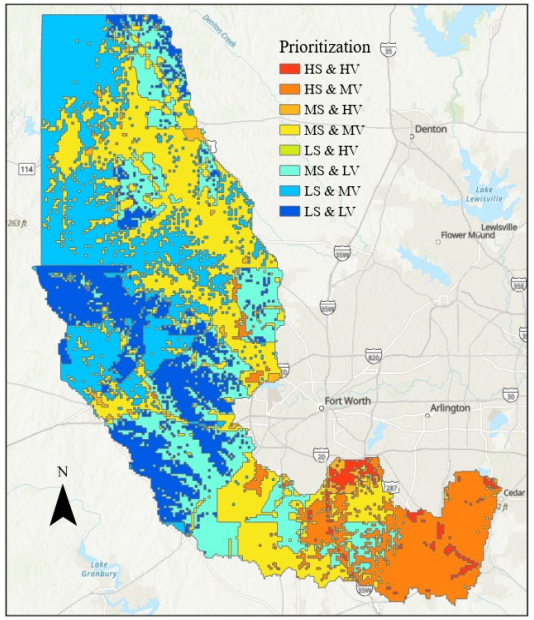


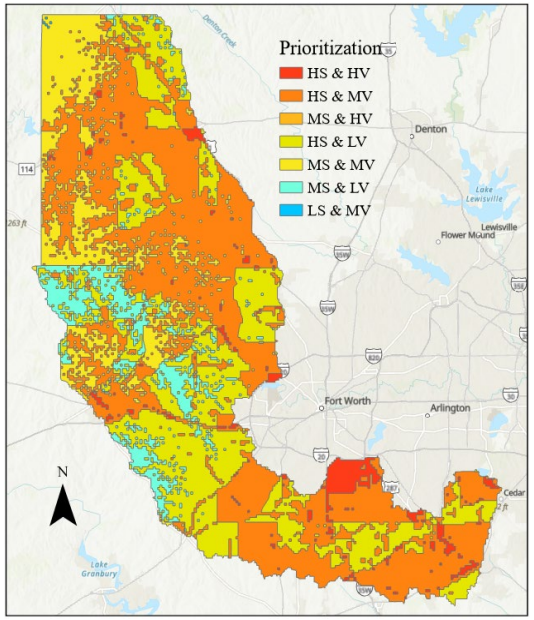
Flood vulnerability map



Flood susceptibility map

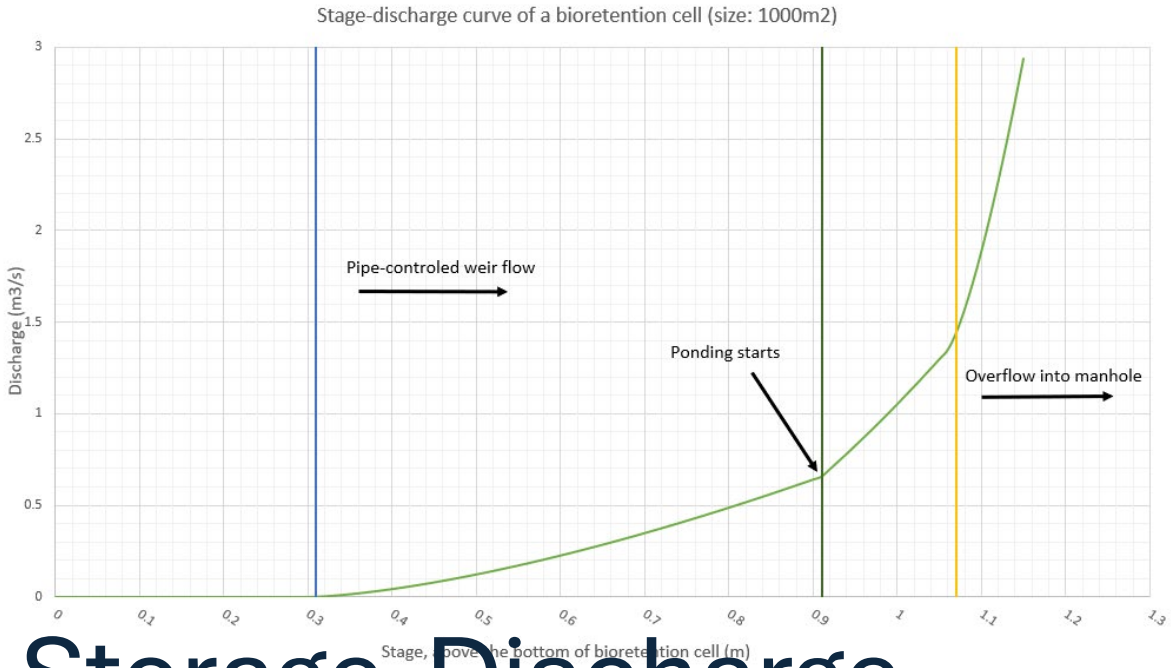


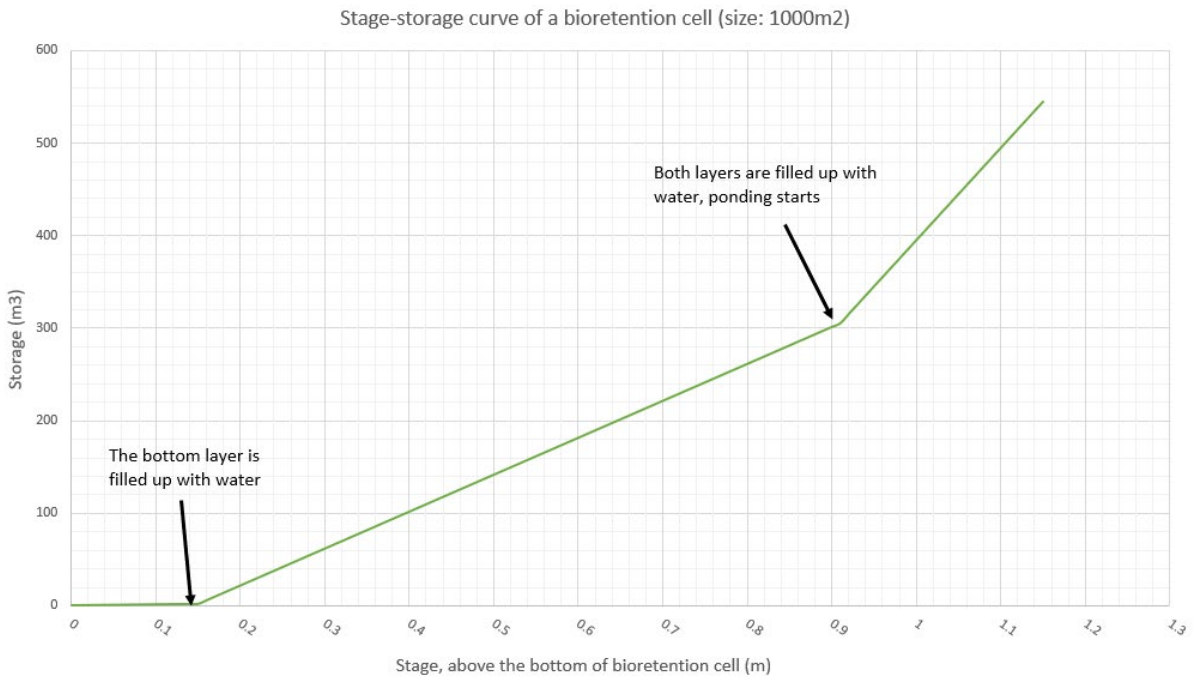




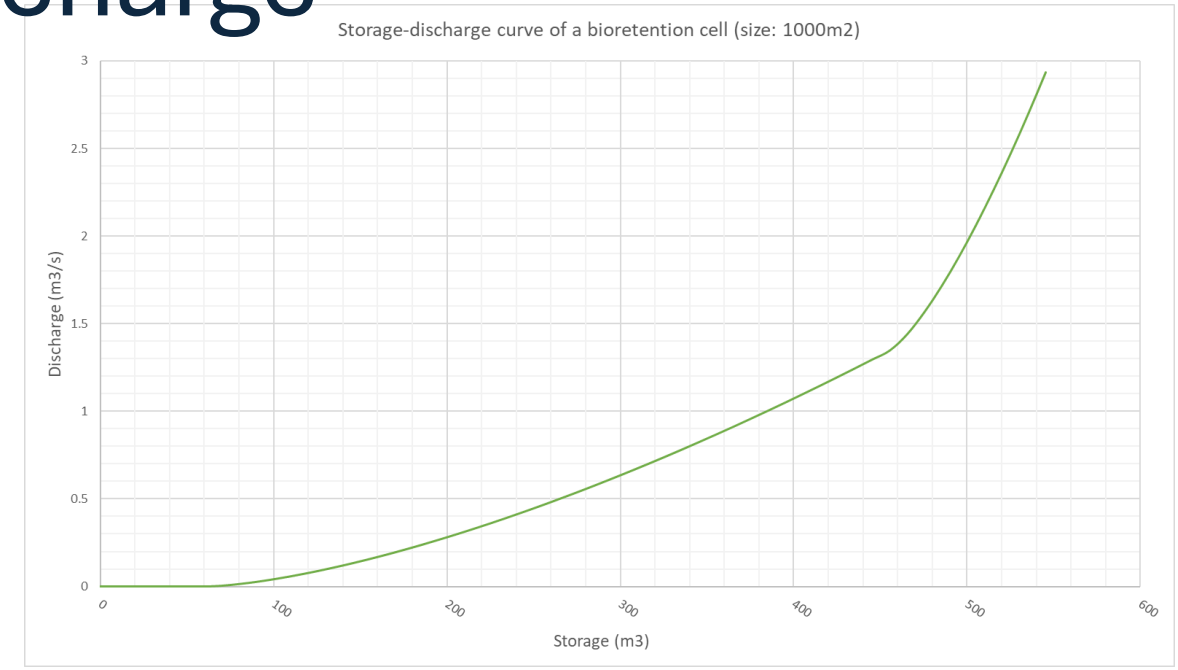
Flood control prioritization map (Left: current; Right: future)

- Identify some areas with both high flood potential and low resilience, pilot area candidate
- Help with efficient resources allocation
- Effective for large-scale area



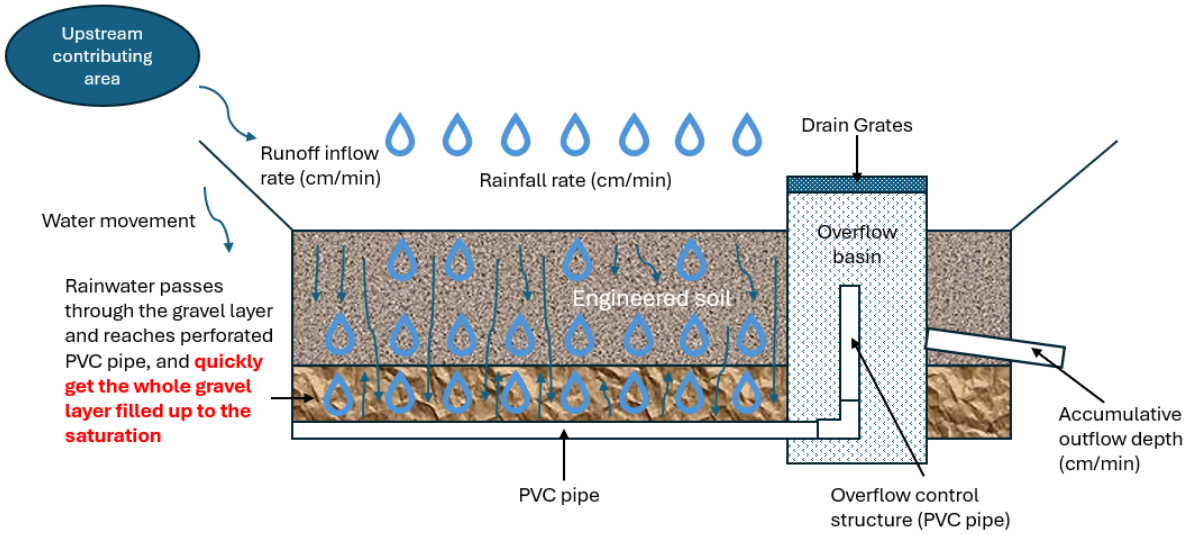


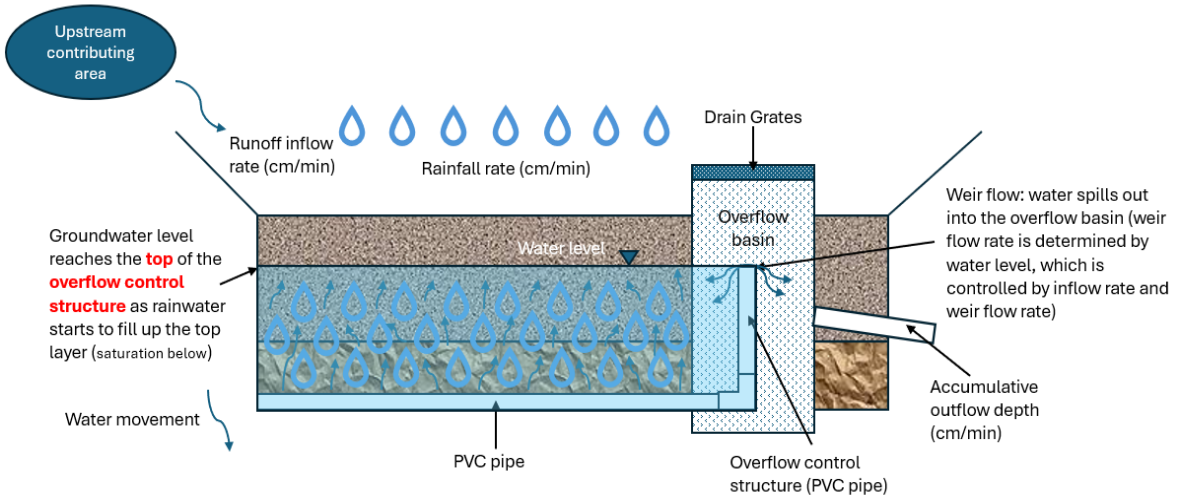
Storage-Discharge Curve

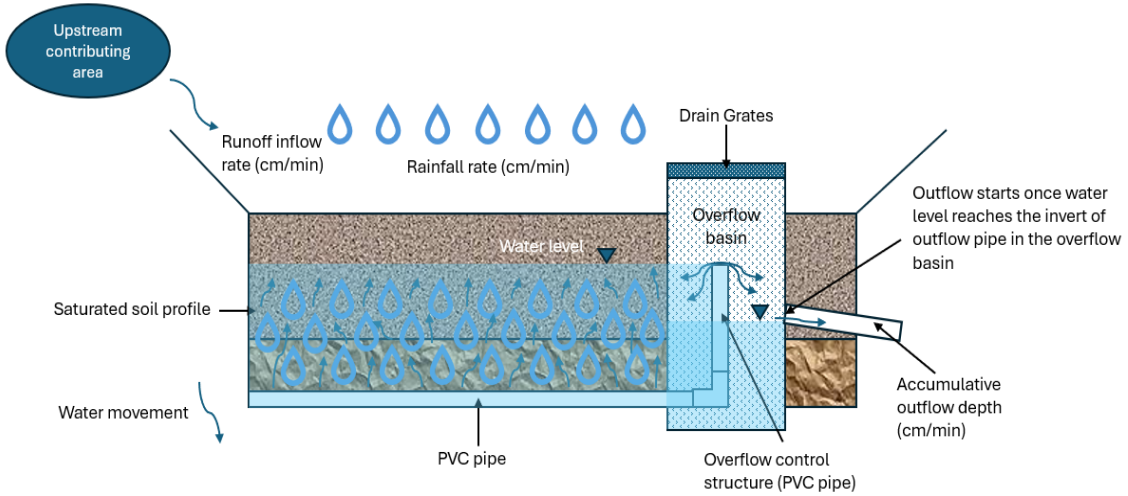


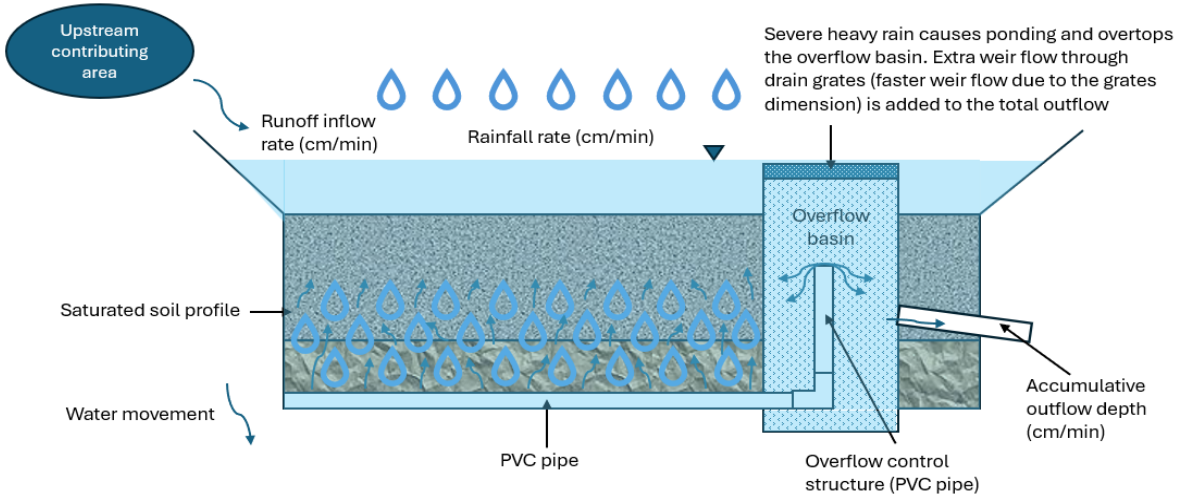
Model conceptualization

A physics-based model simulating the routing process of a bioretention

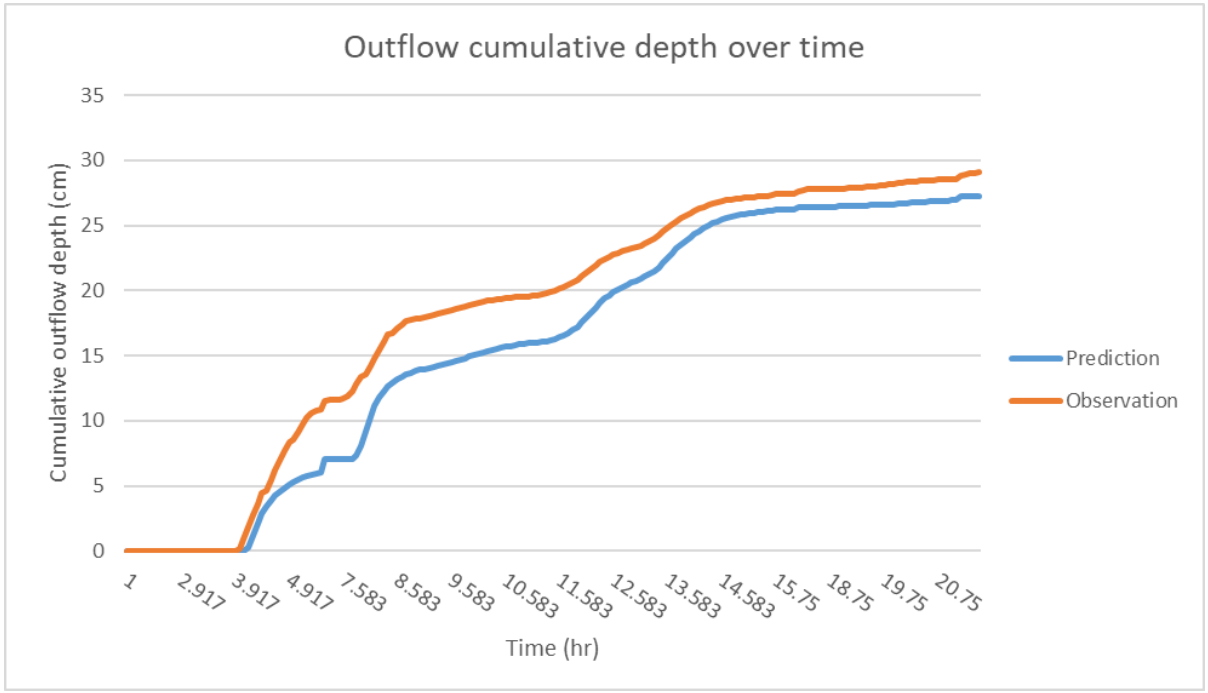


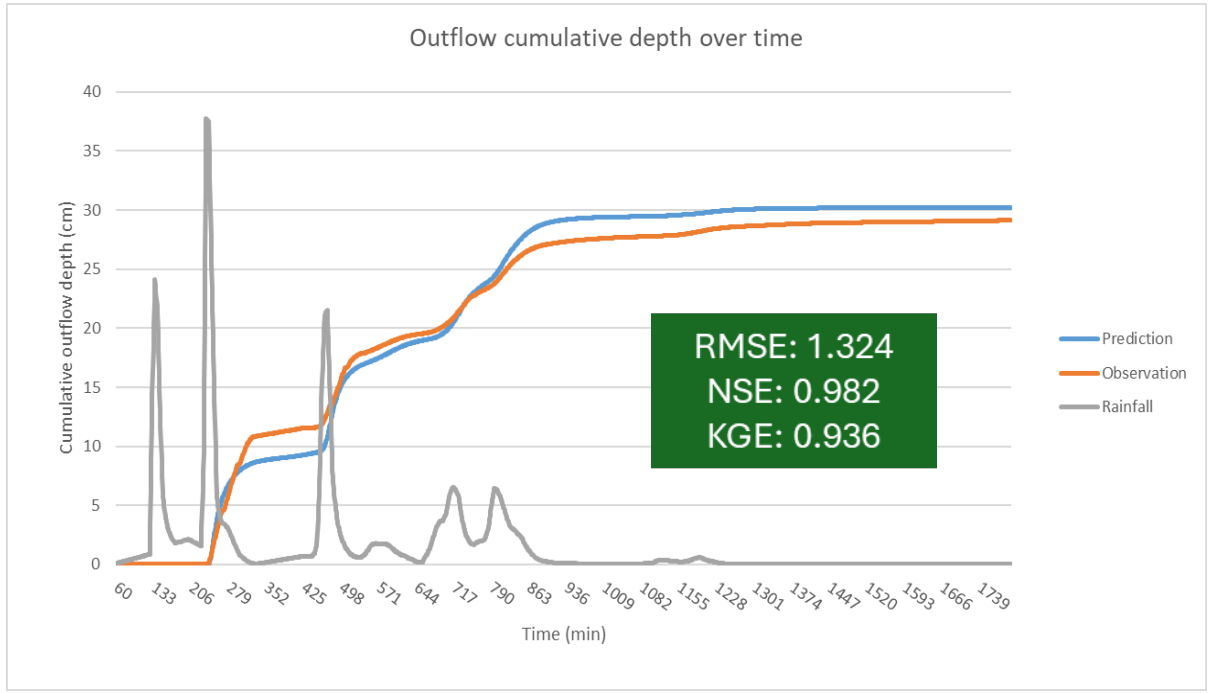






Simulation vs observation results





Coarse temporal resolution (5 mins interval with some missing data)

→

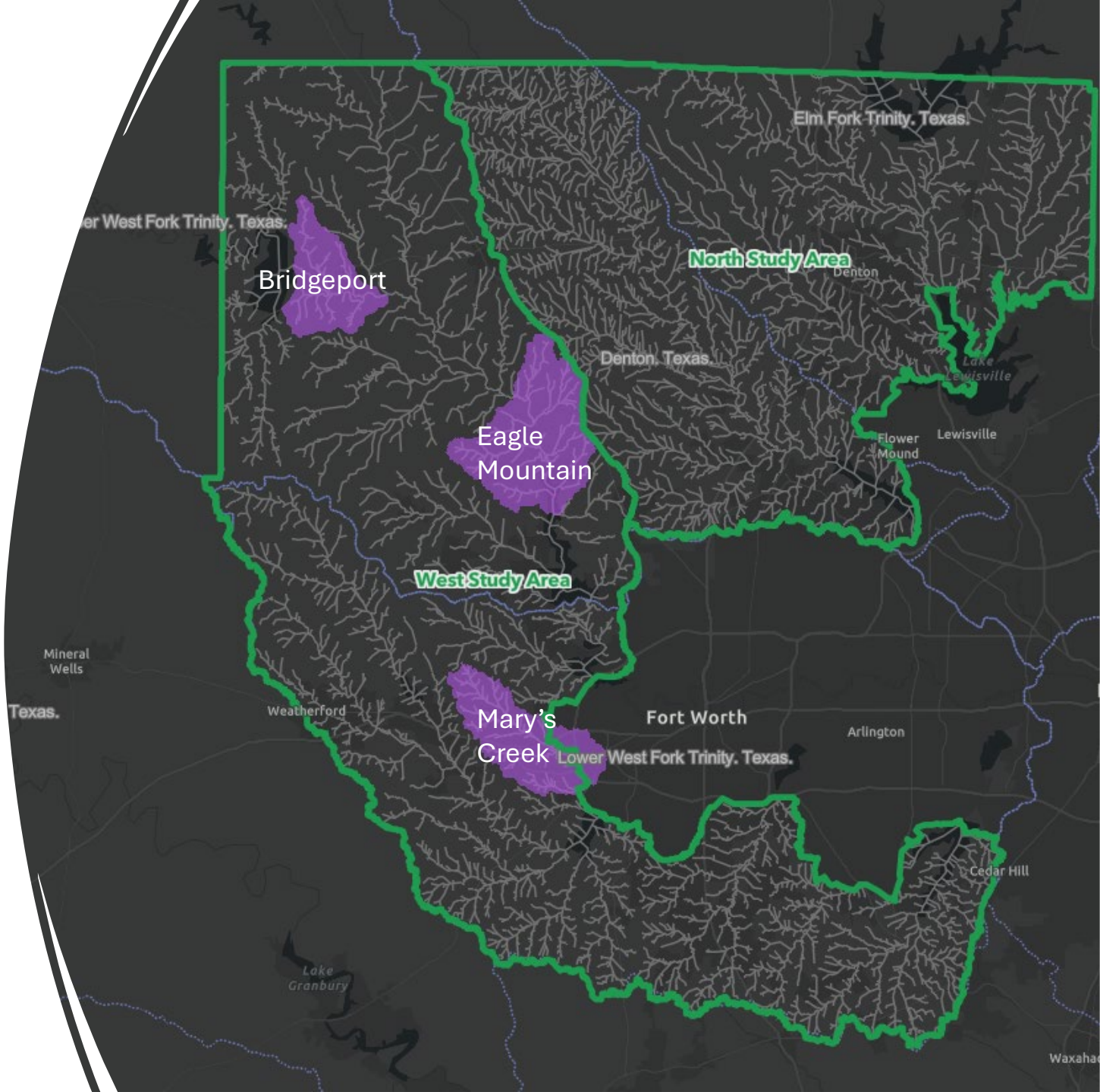
Fine temporal resolution (1 min interval with filled missing data)

Findings:

1. Initial water content, field capacity, and soil porosity are key parameters used in the simulation
2. Weir flow at the overflow control structure controls the outflow rate, instead of orifice flow at the holes on perforated PVC pipes. Weir flow discharge coefficient should be calibrated.
3. Model performs very well with 0.982 NSE and 0.936 KGE.

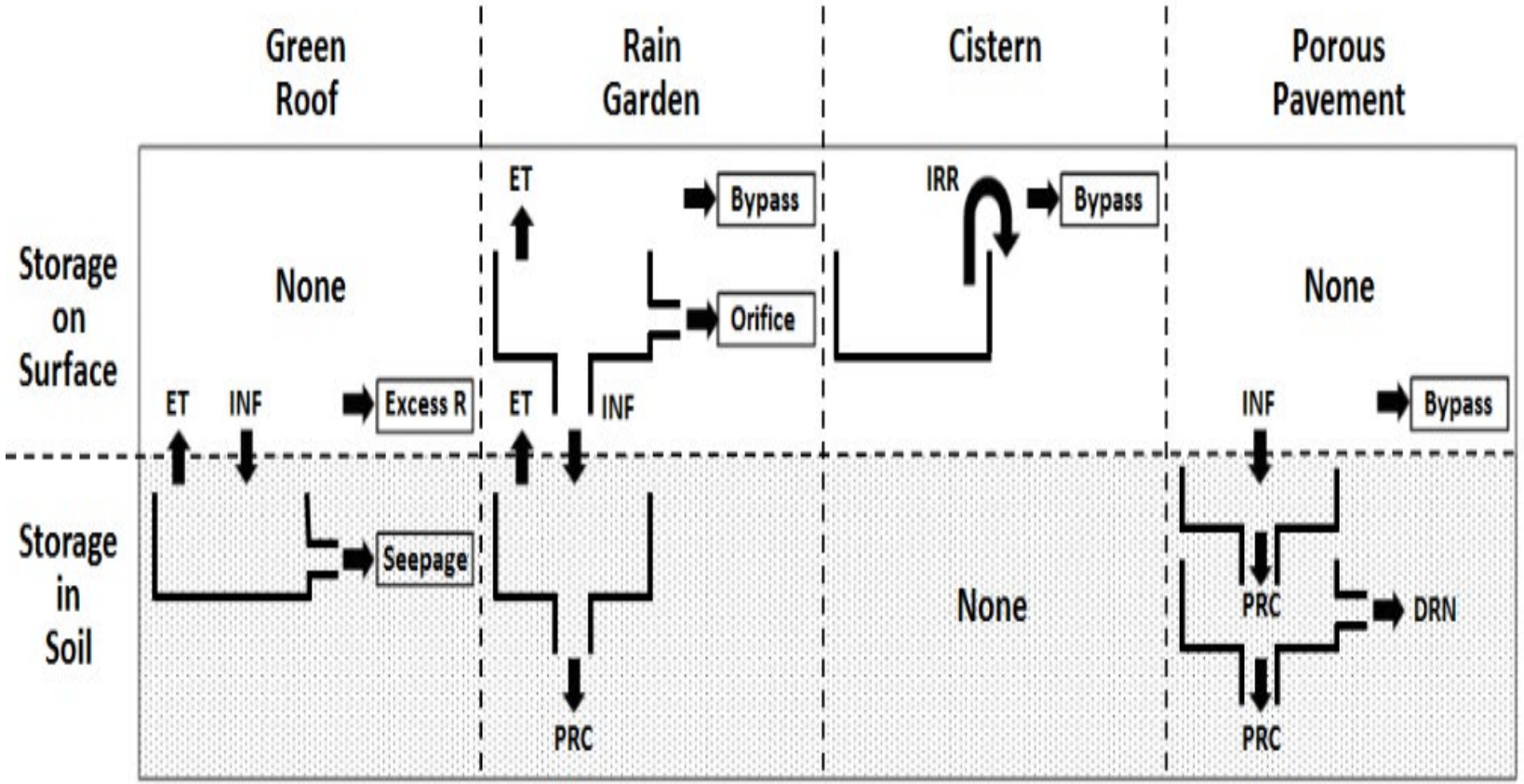
SWAT modeling at watershed scale

- It is nearly impossible to run H&H model or a watershed model in a regional scale (covering several counties) as we have in TSI study
- Where can GSI most effectively enhance urban flood management within the prioritized watersheds?



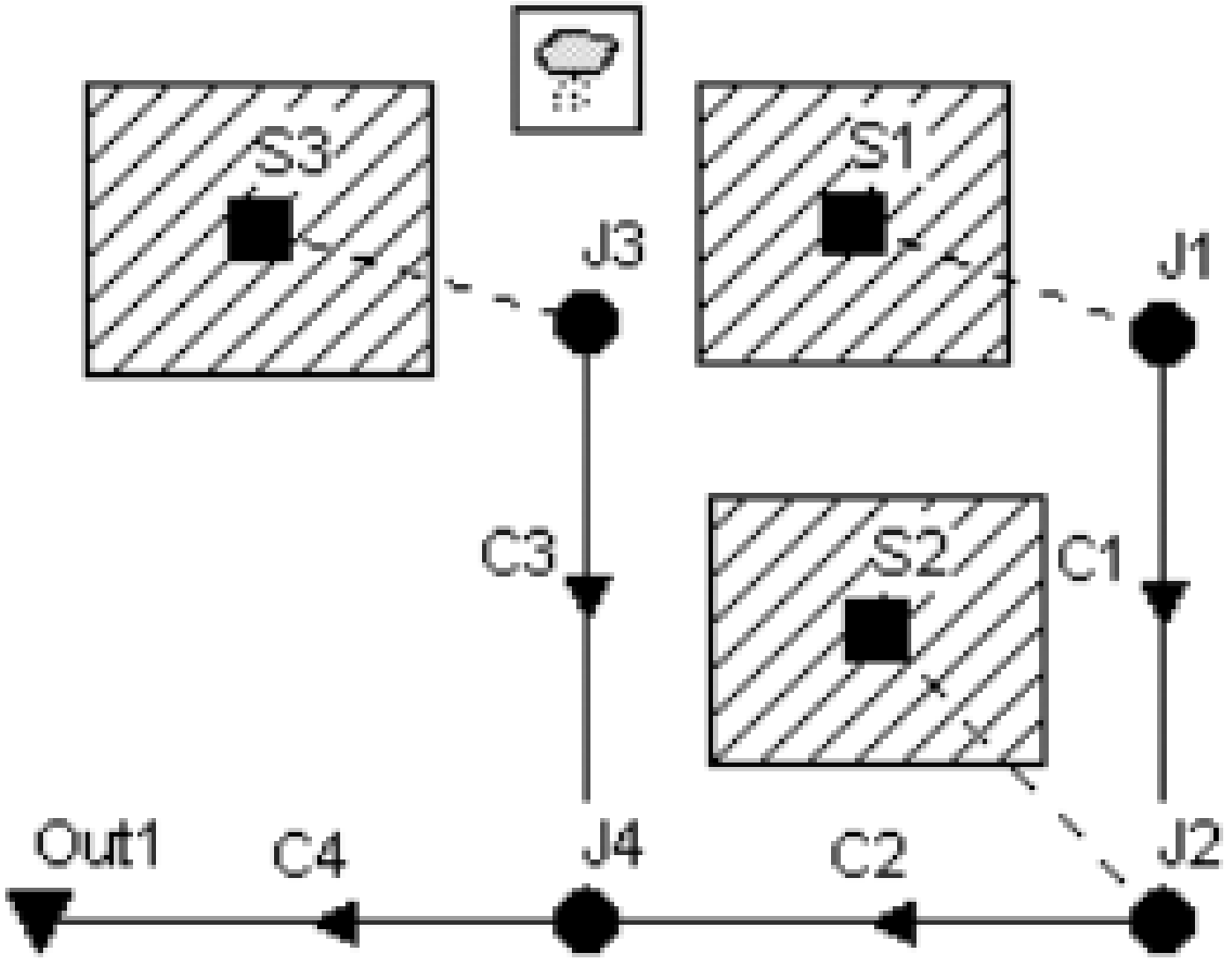
GSI Representation in SWAT

- GSI is represented in layers
- Watershed is discretized into multiple sub-watersheds
- Sub-watershed is further sub-divided into HRU's
- HRU consist of homogenous land use management and soil characteristics
- GSI is placed in an HRU,
- A subbasin contains 7-10 HRU's



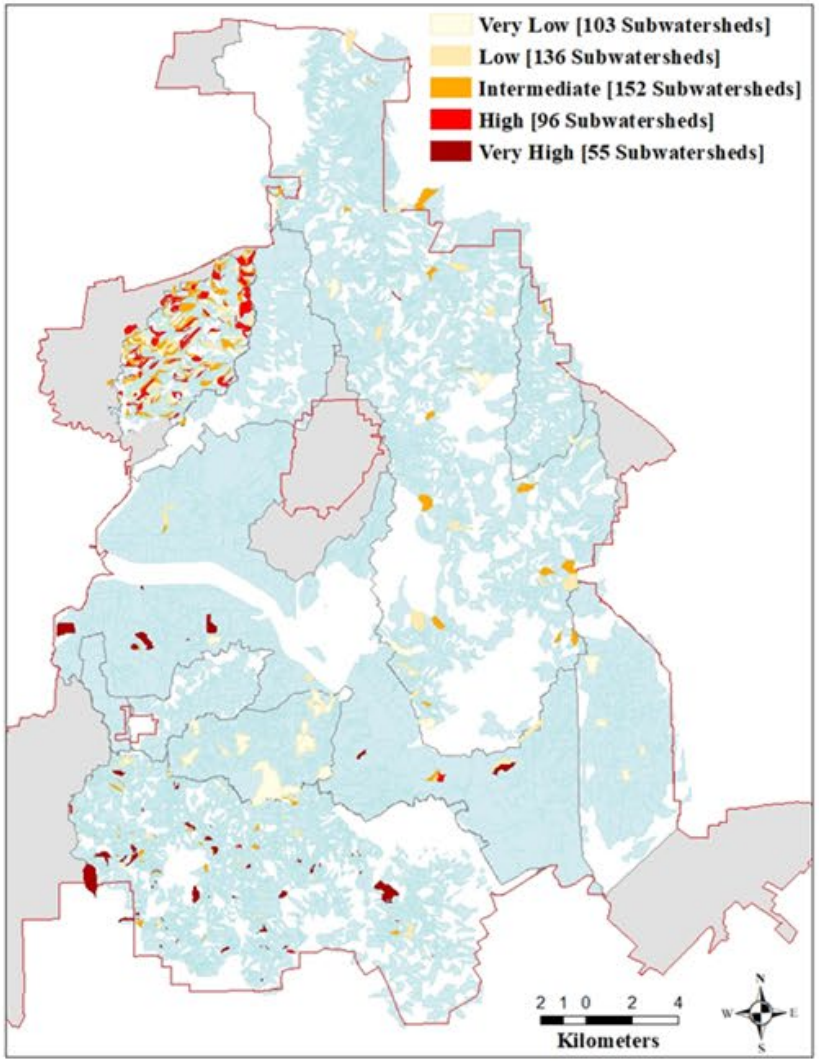
GSI Representation in EPASWMM

- GSI is represented in Layers
- GSI is placed in a sub-catchment or new catchment
- The same type of GSI can be replicated
- Treated runoff flows via conduits and junction nodes to outfall where it is discharged down stream
- The model is equipped with a GUI and three LID editing forms

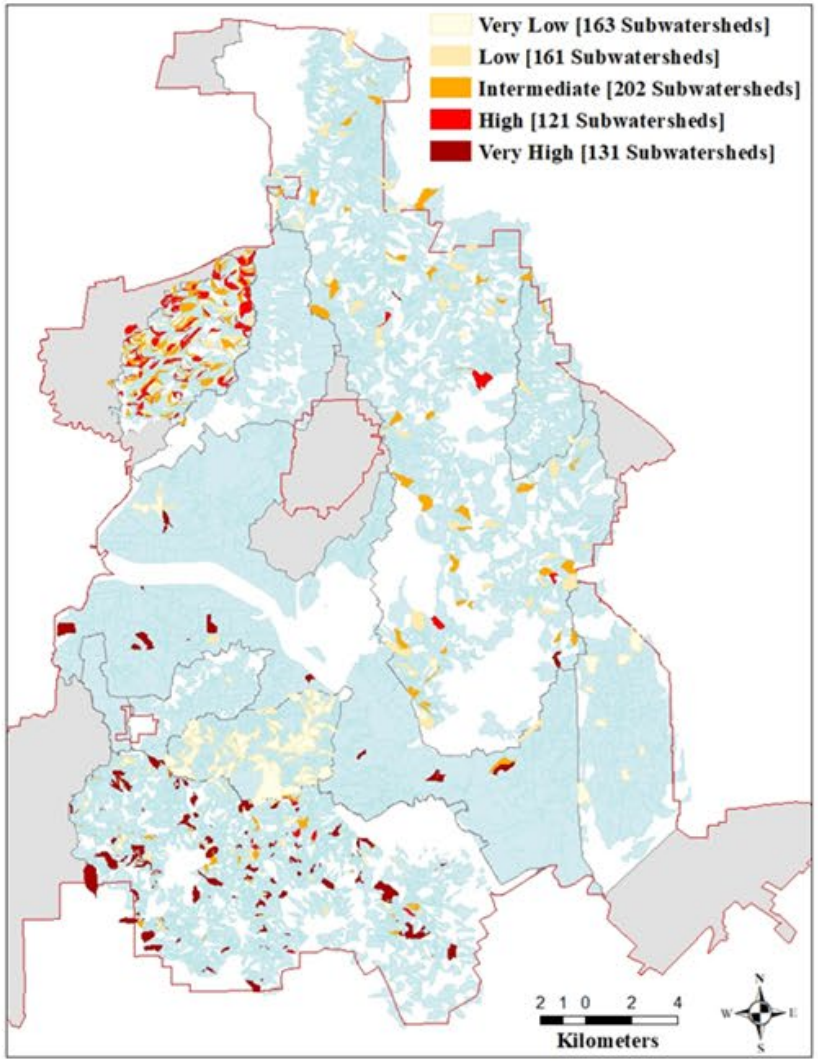


GSI Opportunity Subwatersheds for Stormwater Flooding Management, Ranked by Severity

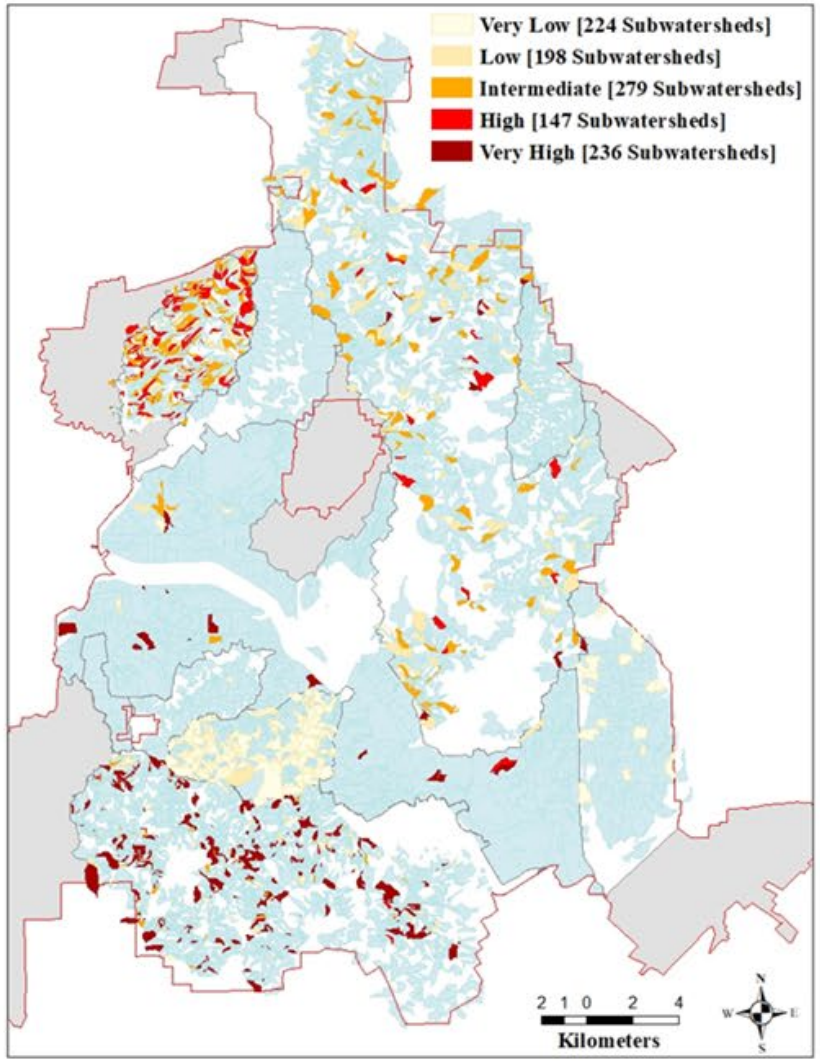
Current Conditions Pre GSI



2-year (50%) storm (4”)



10-year (10%) storm (6”)



100-year (1%) storm (9.5”)

Identify & Quantify Potential Green Stormwater Infrastructure Opportunity

Bioretention

Raingarden

Rainwater Cistern

Spatial Rule

PARKS & TRAILS: 10 % of area

PLANTING STRIPS & MEDIANS: 35% of available planting strip and vegetated medians

PARKING LOTS: 10% of parking lot area

DESIGNATED COMMERCIAL SIDEWALKS: x% of commercial sidewalks ≥ 8 feet wide

RESIDENTIAL & COMMERCIAL SITES:

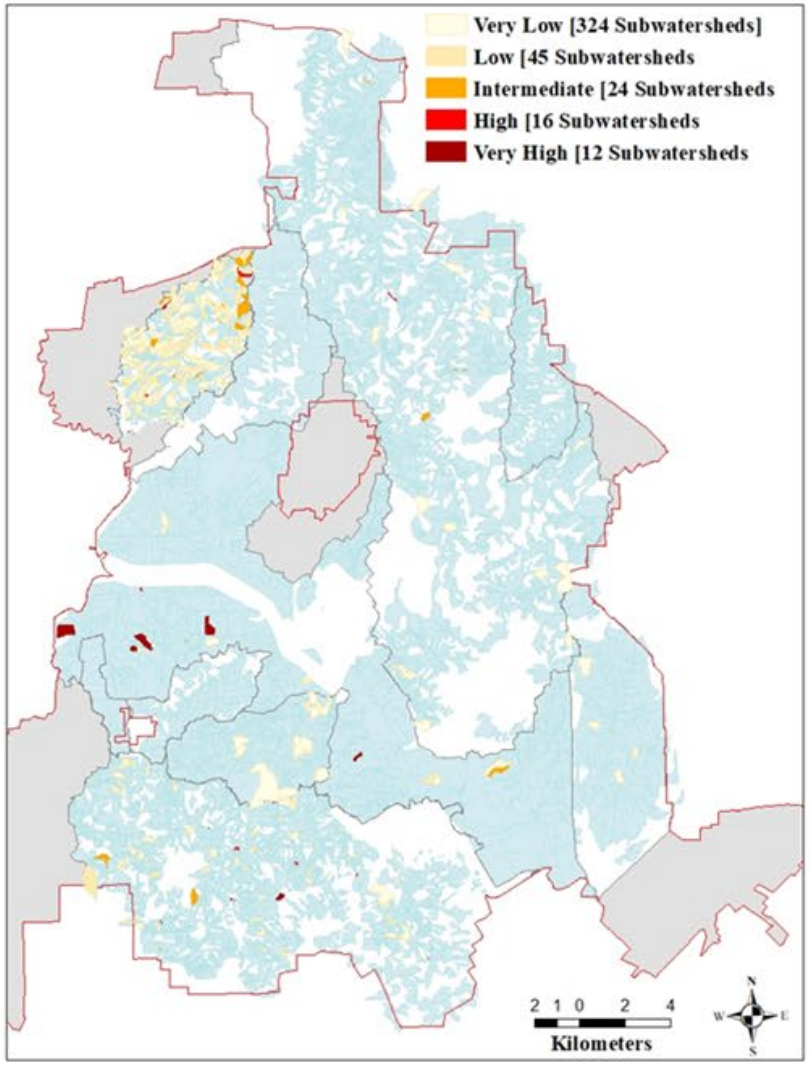
(200 ft^2 raingarden for every structure)

# of Residential and commercial structures

750 Gallon (1000 gallon tank; 75% empty)

GSI Opportunity Subwatersheds for Stormwater Flooding Management, Ranked by Severity

Current Conditions Post GSI



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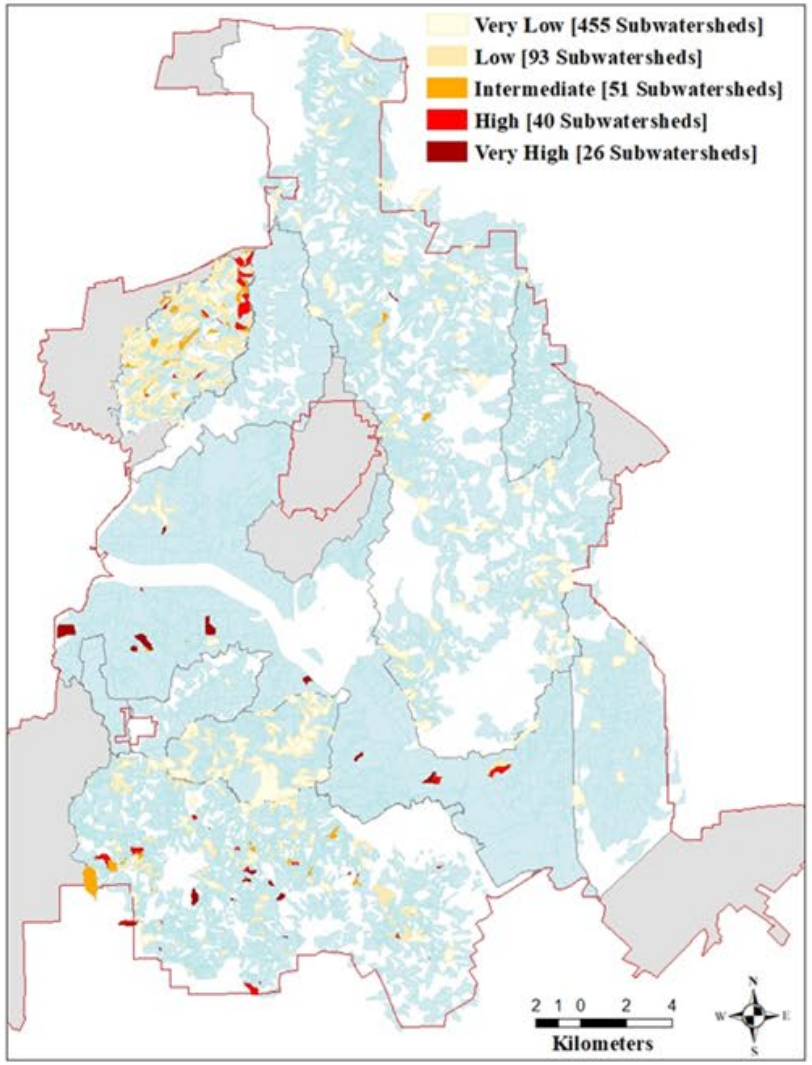

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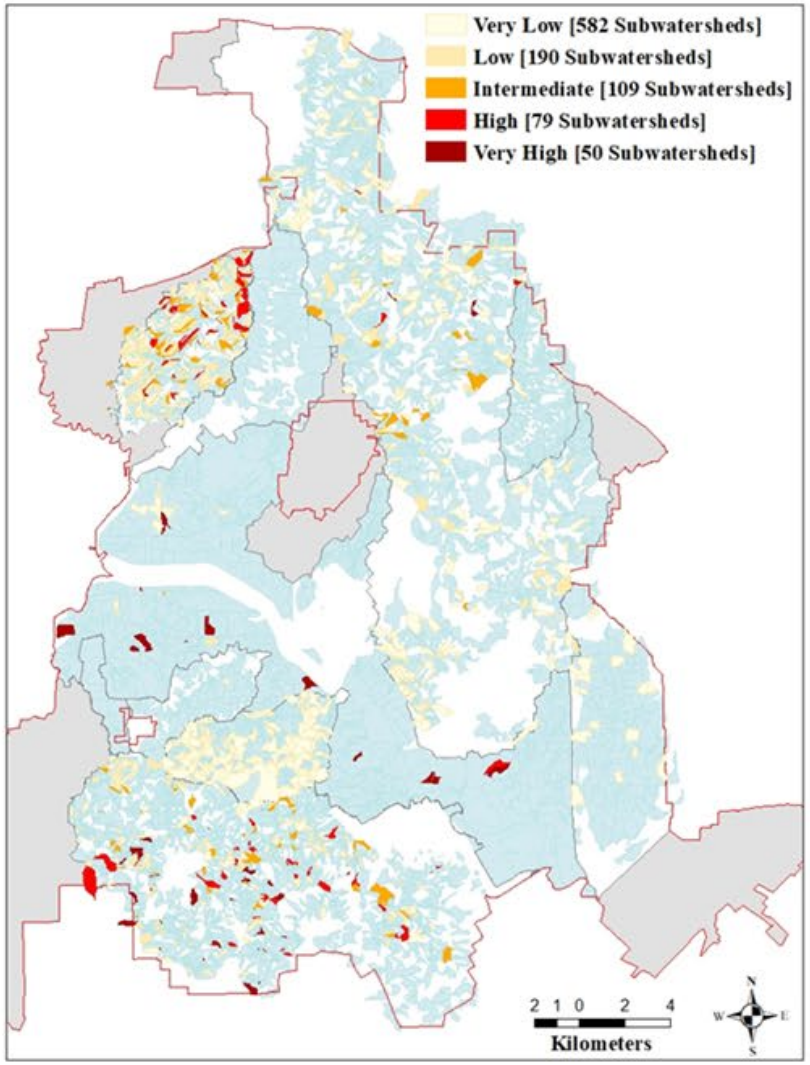
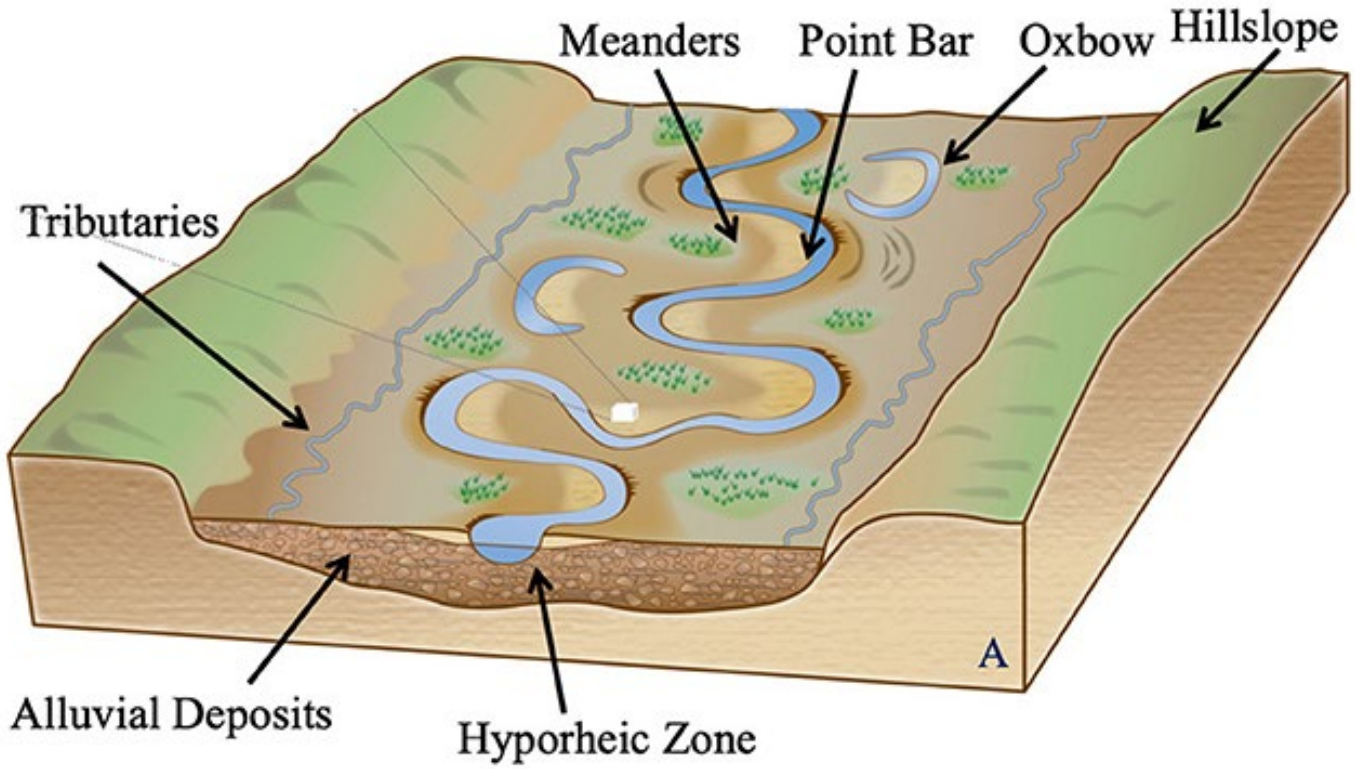


100-year (1%) storm (9.5”)

Linking H&H Modeling for Comprehensive Flood Management

- UT Arlington and USCOE developing H&H model (HEC-RAS or HEC-HMS) for streams
- Watershed model (SWAT) will be linked to H&H Model
- Combined model will be used for environmental constraints (e.g. minimum flows)




THANK YOU!

5. iSWM Website Survey Results

2 responses.

Question:

What information on the iSWM website is most important for you to access?

Responses:

- Technical Manual. I am interested in BMPs for pollutant control on construction sites.
- Construction details

5. iSWM Website Survey Results

Question:

What do you like and dislike about the front page of the iSWM website?

Responses:

- Likes: Smooth interface, top google result. Dislikes: Legacy manuals on the same page as current can be confusing.
- It's fine.

5. iSWM Website Survey Results

Question:

What information do you think should be present on the front page of the website, and how should it be organized?

Responses:

- Search bar needed on top, model ordinances would help Cities standardize
- I would like to know if contractors or SWPPP writers can use the BMP drawings and specifications in their SWPPP without requiring the seal of an engineer. An explanation would be great. As a retired PE, why can't they be used without an engineer's seal? If a modification is made that requires engineering expertise, then it would be appropriate to require a seal.

5. iSWM Website Survey Results

Question:
What sections or pages are hardest to find or navigate?

Responses:

- Legacy manuals
- It’s fine.

5. iSWM Website Survey Results

Question:
How would you improve the site's organization or navigation?

Responses:

- Search bar
- It's fine.

5. iSWM Website Survey Results

Question:

What improvements to the layout or display would make the site more user-friendly?

Responses:

- Better Search
- No comment

5. iSWM Website Survey Results

Question:

Is there any redundant or out-of-date content that should be removed?

Responses:

- Legacy manuals on dedicated page
- No comment

5. iSWM Website Survey Results

Question:

Are there any pages or resources on the website that are not very useful and contribute to clutter?

Responses:

- No
- No comment

5. iSWM Website Survey Results

Question:

Are you aware of any errors in information on the website?

Responses:

- No
- No comment

5. iSWM Website Survey Results

Question:
If you could make one major change to the site, what would it be?

Responses:

- Search Bar
- No comment

5. iSWM Website Survey Results Discussion

- Action items moving forward for the iSWM website?

(Search bar, dedicated legacy manual page, etc.)

6. FY26 Work Program Update
Randy Peterman, Halff

NCTCOG iSWM Task Order Updates

January 13th, 2026

TASK ORDER 3 PROGRESS

1. Project Management
2. Research Cumulative Impacts on Small Footprint Developments
3. iSWM Promotional Presentations for Partnering Organizations
4. Develop Technical Case Studies
5. Stormwater Quality Monitoring Program Development for Existing iSWM BMPs
6. Provide Support Services for iSWM Program Updates

TASK ORDER 3 PROGRESS

Promotional Presentations

- Opportunity from Clean Coast Texas Collaborative
- Late March

Develop Technical Case Studies

- Research in progress
- Review of literature on proprietary inlet protection devices

Stormwater Quality Monitoring Program Development

- Meetings held with City of Denton/NCTCOG

Website Updates

- Survey results
- Halff creates rough mockups of organization of content per webpage

Short Term/Long Term Updates

- Meetings held with NCTCOG
- Sticky dot exercise
- Level of effort per task to be determined

Potential Tasks to Scope

- Manual Updates
- AI/ML-Driven Development Review Tool for iSWM Criteria
- Comprehensive Review of NCTCOG's Stormwater Subcommittees
- Community Rating System (CRS) Integration
- Institute for Sustainable Infrastructure (ISI) Envision Integration
- Development of Contemporary Case Studies
- Development/Implementation of Presentations for Less Developed Communities on Fringe of NCTCOG Area
- Update of Study on Criteria Adopted by Communities
- Presentation/Program for Students at Local Universities
- Thoughts or Suggestions?

QUESTIONS?

halff

Information Items

7. Regional Public Works Program Update

Public Works Council
Digitally voting on subcommittee nominations, including five iSWM appointments
Next Meeting: February 19, 2026, 10 a.m. to 12 p.m. in-person at NCTCOG Offices (https://www.addevent.com/event/BX26489382)

Public Works Roundup
Scheduled for August 20, 2026 at the Hurst Conference Center
Currently gathering input got presentation topics
To provide input, please submit this form by March 6, 2026:
26th Annual Public Works Roundup Topics Request – Fill out form

Public Works Contacts: Crysta Guzman, Senior Planner, cguzman@nctcog.org

Madisson Dunn, Planner, mdunn@nctcog.org

8. TSI Upcoming Events

Flood Warning System (FWS)
Pre-Workshop Meeting
January 15, 2026 – 10:00 a.m. to 11:00 a.m.
Virtual via Microsoft Teams
Details & Add to Your Calendar:
https://www.addevent.com/event/yyqpm7vd2cgh

Flood Warning System (FWS)
Workshop
February 17, 2026 – 10:00am to Noon
Hybrid – NCTCOG Transportation Council Room
(Virtual via Microsoft Teams)
Details & Add to Your Calendar:
https://www.addevent.com/event/skb38xv9sgjc

Model Development Code & Floodplain Ordinances Workshop
January 29, 2026 – 10:00 a.m. to 12:00 p.m.
Hybrid – NCTCOG Transportation Council Room
(Virtual via Microsoft Teams)
Details & Add to Your Calendar:
https://www.addevent.com/event/fcqv17r29868

Additional information & resources:
www.nctcog.org/tsi

Other Business

9. Upcoming Events, Conferences, and Opportunities

- SW3P Plan Review and Field Inspector Training Courses

  (Registration closes Jan. 21st)

  Link to register: https://form.jotform.com/251893896412166

  Plan Reviewers: Feb. 4, 8:30am-12:30pm

  Field Inspectors: Feb. 5, 8:30am-12:30pm

9. Upcoming Events, Conferences, and Opportunities

- NCTCOG Solid Waste Webinar- Organic Waste Services: Guide: January 20, 11am, Virtual
- Texas Municipal League Public Engagement Webinar: February 5, 11am, Virtual
- NCTCOG Webinar- What's Bugging you? Battling Invasive Pests in Community Forests: February 26, 10am, Virtual
- Clean Coast Lunch and Learn on the Successes of iSWM: March 26, 11am, Virtual

10. Upcoming NCTCOG Meetings

- Water Resources Council Meeting: January 14, 9:30am, Virtual
- Regional Stormwater Management Coordinating Committee: January 27, 9:30am, NCTCOG Offices
- RISE Coalition Meeting: January 29, 9:30am, Virtual
- Resource Conservation Council Meeting: February 10, 11am, Virtual
- Public Works Council Meeting: February 19, 10am, NCTCOG Offices
- Trinity River Common Vision Flood Management Task Force Meeting: February 20, 9:30am, NCTCOG Offices
- Sustainable Public Rights of Way (SPROW) Meeting: March 25, 10am, Virtual

Environment & Development Committees Information
Available at nctcog.org/envir/committees

11. Upcoming iSWM Agenda Topics and Next iSWM Meeting

- Next iSWM Meeting: April 14, 2026 at 1:30pm in person at NCTCOG Offices

- Topic recommendations, speaker suggestions for the next meeting?

12. Roundtable Discussion

“Now, it is your turn.”

Contact & Connect

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