

Nonpoint Source Summary Page
Project ### FY 2019 CWA Section 319(h)

- 1. Title of Project:** Markham Street Water Quality Demonstration Project
- 2. Project Goals/Objectives:** Demonstrate LID/GI techniques in a flood-prone one block area in downtown Conway and educate the public about the methods and how they can enhance water quality.
- 3. Project Tasks:**
 - 1) Financial Audit
 - 2) Design & Engineer LID and Green Infrastructure
 - 3) Build LID and Green Infrastructure
 - 4) Educate and Involve the Community about Key Aspects
 - 5) Reporting
- 4. Measures of Success:**
 - Stormwater entering the site is slowed, passes through "treatment train"
 - Public's use of the site is enhanced
 - 5 - 1 minute videos about the project are developed and uploaded to YouTube, social media sites, and City's web site
 - Public's general knowledge and understanding of GI/LID practices demonstrated is enhanced, evident by number of views of the videos/hits to the website, and results of survey posted to the City's website.
- 5. Project Type:** Statewide () Watershed () Demonstration (X)
- 6. Waterbody Type:** River () Groundwater () Other (X)
- 7. Project Location:** Conway, AR, is in the eastern portion of the Lake Conway-Point Remove Watershed (HUC 11110203). Project activities will be between Markham and Spencer Streets to the east and west, and Mill and Garland streets to the north and south.
- 8. NPS Management Program Reference:** Lake Conway-Point Remove Watershed (HUC 11110203) has been designated a Priority Watershed in the Arkansas 2018-2023 NPS Management Plan
- 9. NPS Assessment Report Status:** Impaired (X) Impacted () Threatened ()
- 10. Key Project Activities:** Education (X) BMP Implementation (X) Demonstration Project (X) Planning ()
- 11. NPS Management Program Elements:** NPS Pollution Management Plan 2018-2023. Section 9 Common Best Management Practices, Common Best Management Practices Associated with Urban Runoff - Residential Activities - Low Impact Development p. 100.
- 12. Project Costs:** Federal: \$599,995 Non Federal: \$880,553 Total: \$1,480,548
- 13. Project Management:**

Phillip J. Vick, P.E.
Civil Engineer
Conway Street & Engineering Dept.
100 E. Robins St.
Conway, AR 72032
Phillip.vick@cityofconway.org
(501) 450-6165
- 14. Project Period:** October 1, 2019 to September 30, 2022

Project 19-###
Markham Street Water Quality Demonstration Project
FY 2019, CWA Section 319(h)

Introduction of Watershed Area

The City of Conway, Arkansas, the state's second fastest growing city in the nation's 75th fastest growing county (out of 3,143 counties and county-equivalents in the U.S.), resides in the eastern portion of the Lake Conway-Point Remove Watershed (11110203 HUC). Lake Conway-Point Remove Watershed is a designated 2018-2023 Priority Watershed by the Arkansas Natural Resources Commission (ANRC) Nonpoint Source Management Program (NPS Program).

The Markham Street Water Quality Demonstration Project is a component of the larger Conway Urban Watershed Framework Plan, the goal of which is to mitigate water quality problems in the Little Creek-Palarm Creek sub-watershed (111102030403 HUC), which includes the urbanized area of Conway (Appendix C). The sub-watershed drains approximately 42 square miles and contains two major streams of concern, Stone Dam Creek and Little Creek.¹ Run-off from the project area drains to Stone Dam Creek, and ultimately to Lake Conway. Stone Dam Creek has been listed on the ADEQ 2010 303(d) list since at least 2012,² and is on the draft 2018 303(d) list.³

The Lake Conway-Point Remove Watershed Alliance has been working since 2012 to complete a 9 element watershed management plan (WMP). The NPS Management Program funded Project 17-500, (enhanced monitoring) in an effort to collect additional water quality monitoring data to further assist in the development of the WMP.

The Conway Urban Watershed Framework Plan proposed a variety of infrastructure retrofits such as green streets, water treatment art parks, urban eco-farms, conservation neighbor-hoods, parking gardens, riparian corridor improvements, lake aerators, vegetative harvesters and floating bio-mats, and a city greenway as a means of protecting the Lake Conway-Point Remove Watershed. The project is of the type envisioned by the Framework Plan.

Problem/Need Statement

The project area is in the Stone Dam Creek Tributary.⁴ Water in this area flows through downtown and the industrial district along the railroad, and is piped underneath industrial structures. Runoff in this corridor is managed through channelization and piping that exacerbates the downstream problems. The channelization and piping are hard-engineered solutions that have disrupted the natural abilities of Stone Dam Creek to deal with the industrial pollutants and runoff from agricultural chemicals, fertilizers and pesticides.

At the present time, levels of dissolved oxygen are problematic in the creek and its waters have become eutrophic.⁵ Eutrophication is typically caused by the presence of nitrogen and phosphorus. The main source of nitrogen pollutants is run-off from agricultural land and residential uses, where most phosphorus pollution comes from households and industry.⁶ These uses are all present in the Stone Dam Creek area; the project will help remove these types of nonpoint source pollutants from the water.

¹ http://watersheds.cast.uark.edu/find_your_watershed.html; also, http://watersheds.cast.uark.edu/reports/pdf/1111020304hydro_sub.pdf, p. 5 of 6.

² ANRC Project 12-700, Initiation of Watershed Management Plan for Little Creek-Palarm Creek Sub-Watershed and a Lot Impact Development Plan for Lake Conway Urban Watershed.

³ <https://www.adeq.state.ar.us/water/planning/integrated/303d/pdfs/2018/2018-draft-list-public-notice.pdf>

⁴ Conway Urban Watershed Framework Plan, University of Arkansas Community Design Center, 2016.

⁵ <https://www.adeq.state.ar.us/water/planning/integrated/303d/pdfs/2018/2018-draft-list-public-notice.pdf>

⁶ <https://www.epa.gov/sites/production/files/documents/nandpfactsheet.pdf>

Coordination, Roles and Responsibilities:

The City of Conway is the lead party for this project, responsible for coordination and implementation. Other groups such as the Lake Conway-Point Remove Watershed Alliance, and the University of Arkansas Community Design Center and Office for Sustainability will be brought in as needed to assist with public outreach and education, plus feedback on design elements.

General Project Description

The Markham Square project builds upon efforts of the Lake Conway-Point Remove Watershed Alliance now active in crafting urban watershed policy and implementing projects, along with efforts to prepare a re-development plan for the Pine Street neighborhood. Re-development efforts in the area include the recently completed brownfield mitigation at the site of the old Markham Street scrap yard, and hydrological modeling of the Markham Square site through a 2013 HUD Jump Start Planning Grant from Metroplan, the metropolitan planning organization for Central Arkansas. The square will be surrounded by a green infrastructure network of streets and auto parking, featuring Low Impact Development treatment landscapes also funded by the Jump Start grant.

The proposed project will transform this flood-prone remediated brownfield site into a 300' x 300' town square that integrates wetland-based stormwater treatment landscapes with an outdoor performance facility. The project is needed to demonstrate how Low Impact Development (LID) and Green Infrastructure (GI) techniques can be used for stormwater mitigation. The project will help educate the public and enhance knowledge about these environmentally friendly methods.

Markham Square will function as an urban public space that utilizes Low Impact Development and Green infrastructure techniques. These techniques will work with nature to manage rainwater as close to its source as possible, using a variety of measures to slow, filter, infiltrate, and evaporate the run-off in this low-lying area. A portion of the Markham Street site will be financed by a Jump Start grant from Metroplan, the metropolitan planning organization for Central Arkansas. Markham Square will be artfully engineered to be a unique demonstration of how an urban setting can function in an environmentally responsible way, to reduce nonpoint source pollution in the Lake Conway-Point Remove Watershed and deliver the ecosystem services identified in Table 1.

Table 1: Ecosystem Services and Functions⁷

Ecosystem Service	Ecosystem Function	Provided By Project
Air Quality Regulation	Improvement of atmospheric composition	✓
Water Regulation	Restoration of hydrologic flows	✓
Water Infiltration	Storage and water retention	✓
Erosion Control	Retention of soil within a system	✓
Nutrient Cycling	Storage, internal cycling, processing, and acquisition of nutrients	✓
Waste Treatment	Recovery of mobile nutrients and removal/breakdown of excess nutrients & compounds	✓
Recreation	Providing opportunities for human recreation	✓

⁷ From R. Constanza et al., (1997) "The Value of the World's EcoSystem Services and Natural Capital." *Nature* 387:253-260.

LID/Green Infrastructure Methods to Be Implemented

The Low Impact Development Treatment Train (See Appendix D) to be used in the project will consist of the following elements:

Permeable Hardscape – Porous pavers at parking and plaza areas, plus perforated deck

The porous pavers and perforated deck material will allow rain water to move through to the soil below. The porous pavers will allow rain water flowing from impervious surfaces to infiltrate moving through stone media and eventually through the rest of the treatment train.

Bio-Mats - Buffalo turf grass with sand filtration

The Buffalo grass-covered lawn will work as an internal filter with a 2 foot course of sand beneath the sod. These areas will be graded at a 1% slope so rain water filters through the sand and exits through a living wall. Buffalo grass is known to remediate petroleum hydrocarbons. Buffalo grass is known to clean petroleum hydrocarbons from water.

Vegetated Living Walls – Ivy-covered retaining walls

These gabion construction walls will be terraced to help slow and filter the water. Additionally, the ivy will help dissipate radiant heat and clean the air.

Bio-Remediation systems – Trees and plants that will help clean the water.

These areas planted with aquatic tupelo and blue pickerel rush will act as the phytoremediation beds pulling any remaining chemicals from the water or suppressing in the soil for later uptake prior to moving downstream. These plant communities are also important for evapotranspiration and pollinator species. The City of Conway will pay for this component.

Evapotranspiration – Deep rooted trees will assist with evapotranspiration

Evapotranspiration from plants is an important process in the water cycle because it is responsible for 15% of the atmosphere's water vapor. The poplar trees to be planted, along with preservation of existing large mature trees, will assist in evapotranspiration, thereby contributing to climate regulation.

Rain Garden – A small, planted depression design to infiltrate runoff, but not hold it.

A small rain garden will be placed in the northwest corner of the site.

Secondary LID components - Although the square is not designed as a detention area, during large rain events the existing stormwater infrastructure in the surrounding areas will not be able to handle the volumes and the square will flood. During these rare events the urban square will provide the following LID benefits:

- Ability to hold up to 1.5 million gallons of offsite stormwater and releasing at a reduced rate through the LID components of the urban plaza.
- Bio-remediation, bio mat, and phytoremediation treatment of rain water prior to being released downstream.

See Appendix E for a model of the project.

Other Project Elements – Public Involvement and Education

Workshops will be held to educate the public about the project and to refine project programmatic needs in the design phase. The project will provide informative graphics, informational signage, and educational videos to educate the public on the project and how it delivers ecological services. As the project goes to construction, short (1 minute) videos will be filmed and posted to YouTube and the city's website. The number of views will be monitored quarterly throughout construction and for the first year after project completion. After the project is constructed, informational signage will be placed on-site to help educate Markham Square users about LID/GI methods used. Links to the website and videos will be written on the signs for those seeking more information on the project.

A ribbon-cutting ceremony will be held to celebrate the project's completion. The press release and accompanying media attention will also help to educate the public about the project. The City will post a brief survey about the project on the website at this point, the "Low Impact Development Quiz," to find out what people have learned about the LID/GI aspects of the project. Results will be collected for 2-3 weeks and a report written about results, to be filed with the project final report.

Measures of Success

The project will be a success if the following occur:

- Stormwater entering the site is slowed, passes through "treatment train"
- Public's use of the site is enhanced
- 5 - 1 minute videos about the project are developed and uploaded to YouTube, social media sites, and City's web site
- Public's general knowledge and understanding of GI/LID practices demonstrated is enhanced, as evidenced by number of views of the videos/hits to the website, and results of survey posted on the City's website.

Schedule

The project will take 36 months from design to end of construction. Phillip Vick of the Conway Street and Engineering Department will be responsible for all aspects of the project.

Phillip J. Vick, P.E.
Civil Engineer
Conway Street & Engineering Dept.
100 E. Robins St.
Conway, AR 72032
Phillip.vick@cityofconway.org
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Tasks, Objectives, Subtasks, Schedules, Deliverables, and Estimated Costs

Task 1, Financial Review

	Costs		
Federal	Non-Federal Match		Total
\$0	\$6,000		\$6,000

Objectives: A financial review of all financial records by CPA following agreed upon procedures.

Subtask 1.1 Financial review year 1

Subtask 1.2 Financial review year 2

Subtask 1.3 Financial review year 3

Deliverables:

1. CPA report of Financial review Year 1
2. CPA report of Financial review Year 2
3. CPA report of Financial review Year 3

Task 2, Design and Engineer LID and Green Infrastructure

	Costs		
Federal	Non-Federal Match		Total
\$0	\$169,621		\$169,621

Objectives: To design and engineer the LID/Green Infrastructure

Subtask 2.1 Select Engineer

- 2.1.1:** Advertise Request for Qualifications
- 2.1.2:** Interview engineers
- 2.1.3:** Select engineers
- 2.1.4:** Prepare contract with engineers
- 2.1.5:** City Council approves contract

Subtask 2.2 Approve Design

- 2.2.1:** Engineers develop conceptual design
- 2.2.2:** Engineers submit design to City
- 2.2.3:** Design is revised, if necessary, after public meetings
- 2.2.4:** City approves design
- 2.2.5:** ANRC approves design

Deliverables:

1. Advertisement for Request for Qualifications
2. List of responding engineers
3. Construction drawings for project

Task 3, Build LID and Green Infrastructure

Infrastructure to be funded by ANRC includes porous pavers and other permeable hardscape, living/vegetated walls, a raingarden, and necessary drainage modifications.

Costs		
Federal	Non-Federal Match	Total
\$599,995	\$700,432	\$1,300,427

Objective: To build LID/Green Infrastructure project

Subtask 3.1 Contract goes out for bid

- 3.1.1: Engineers prepare bid documents
- 3.1.2: Advertise request for bids
- 3.1.3: Open bids
- 3.1.4: Select Contractor
- 3.1.5: Prepare contract
- 3.1.6: City Council approves contract

Subtask 3.2 Build infrastructure

- 3.2.1: Hold pre-construction conference
- 3.2.2: Obtain permits
- 3.2.3: Build
- 3.2.4: Engineers inspect
- 3.2.5: Compare completed infrastructure with contractual requirements to see what needs to be completed or repaired by contractor before final payment.

Deliverables

- 1. Bid Specifications for construction
- 2. Engineer's certificate of completed work

Task 4, Educate and Involve Community about Key Aspects of the Project

Federal	Non-Federal Match	Total
\$0	\$4,500	\$4,500

Objective: To educate and involve the public about the project.

Subtask 4.1 Involve public in design

- 4.1.1: Determine date/location for 3 public meetings (1 before design completed, 1 after design completed, 1 with Lake Conway-Point Remove Watershed Alliance)
- 4.1.2: Conduct meetings
- 4.1.3: Incorporate public design comments/revise as needed

Subtask 4.2 Educate public about project

- 4.2.1: Film 5 one minute videos about aspects of the project
- 4.2.2: Upload videos to YouTube, City website
- 4.2.3: Monitor number of hits/views
- 4.2.4: Report website/YouTube activity quarterly during project and for 12 months after
- 4.2.5: Press Release about Project Completion/Ribbon Cutting Ceremony
- 4.2.6: Post Survey to website, collect results
- 4.2.7: Report on survey results

Subtask 4.3 Install 4 informational signs at the project site

- 4.3.1: Design signs/write copy
- 4.3.2: ANRC approves signs
- 4.3.3: Take bids to produce signs
- 4.3.4: Select vendor
- 4.3.5: Make signs
- 4.3.6: Install signs

Deliverables

- 1. Sign-in sheets from 3 public meetings
- 2. 5 1 minute videos uploaded to YouTube, website
- 3. Quarterly reports of number of views/hits YouTube, website
- 4. 4 installed signs
- 5. Press release/Ribbon cutting
- 6. Survey results

Task 5, Reporting

Federal	Non-Federal Match	Total
\$0	\$0	\$0

Objective: Provide ANRC information regarding the progress of this project on a quarterly and annual basis; further more provide a Final Report detailing the project.

Subtask 5.1 Quarterly Reports that include implementation documentation

Subtask 5.2 Annual Reports

Subtask 5.3 Attend and participate in annual project review meetings as requested by ANRC

Subtask 5.4 Final Report

Deliverables:

- 1. Quarterly Reports with implementation documentation
- 2. Annual Reports submitted by October 1 each year of the project
- 3. Presentation and a copy of presentation/documentation of project activities provided at annual review meetings if requested by ANRC
- 4. Two copies of Final Report at the conclusion of the project activities

Overall Schedule of Tasks and Outputs:

(Note: You may use the month after project initiation for start and completion dates)

Task	Subtask Number	Description	Start Date	Completion Date	
1	1.1	Financial Review Year 1	Jan 2020	June 2020	
	1.2	Financial Review Year 2	Jan 2021	June 2021	
	1.3	Financial Review Year 3	Jan 2022	June 2022	
2	2.1	Select Engineer	Oct 2019	Jan 2020	
	2.1.1	Advertise Request for Qualifications	Oct 2019	Oct 2019	
	2.1.2	Interview Engineers	Nov 2019	Nov 2019	
	2.1.3	Select Engineers	Nov 2019	Nov 2019	
	2.1.4	Prepare contract with engineers	Dec 2019	Dec 2019	
	2.1.5	City council approves contract	Jan 2020	Jan 2020	
	2.2	Approve Design	Jan 2020	June 2020	
	2.2.1	Engineers go to work	Jan 2020	June 2020	
	2.2.2	Engineers submit design to City	Apr 2020	Apr 2020	
	2.2.3	Design is revised, if necessary, after public meetings	June 2020	June 2020	
	2.2.4	City approves design	June 2020	June 2020	
	2.2.5	ANRC approves design	July 2020	July 2020	
	3	3.1	Contract goes out for bid	Aug 2020	Sep 2020
		3.1.1	Engineers prepare bid specs	Aug 2020	Aug 2020
		3.1.2	Advertise request for bids	Sep 2020	Sep 2020
3.1.3		Open bids	Oct 2020	Oct 2020	
3.1.4		Select contractor	Oct 2020	Oct 2020	
3.1.5		Prepare contract	Oct 2020	Oct 2020	
3.1.6		City Council approves contract	Nov 2020	Nov 2020	
3.2		Build infrastructure	Nov 2020	July 2022	
3.2.1		Hold preconstruction conference	Nov 2020	Nov 2020	
3.2.2		Obtain permits	Nov 2020	Nov 2020	
3.2.3		Build	Nov 2020	July 2022	
3.2.4		Engineers inspect	July 2022	July 2022	
3.2.5		Compare completed infrastructure w contract to see what needs to be completed before final payment	July 2022	July 2022	
4		4.1	Involve public in design	Apr 2020	June 2020
		4.1.1	Determine date/location for 3 meetings	Feb 2020	Mar 2020
	4.1.2	Conduct meetings	Apr 2020	June 2020	
	4.1.3	Incorporate public comments as needed	May 2020	June 2020	
	4.2	Educate public about project	Apr 2020	Sep 2022	
	4.2.1	Film 5 one minute videos	Nov 2020	July 2022	
	4.2.2	Upload videos to YouTube, website	Nov 2020	July 2022	
	4.2.3	Monitor number of hits/views	Nov 2020	July 2022	
	4.2.4	Monitor/report website/YouTube activity quarterly	Jan 2021	Aug 2022	
	4.2.5	Ribbon cutting ceremony/Press release	July 2022	Aug 2022	
	4.2.6	Post survey to website/collect responses	July 2022	Aug 2022	
4.2.7	Report on survey results	Aug 2022	Aug 2022		
5	5.1	Quarterly Reports	Jan 2020	Sep 2022	

	5.2	Annual Reports	Sep 2020	Sep 2022
	5.3	Annual Project Review Meetings	As needed	As needed
	5.4	Final Report	Aug 2022	Sep 2022

Schedule of Task and Outputs to be completed within 12 months of project start date

Year 1				
Task	Subtask Number	Description	Start Date	Completion Date
Task	Subtask Number	Description	Start Date	Completion Date
1	1.1	Financial Review Year 1	Jan 2020	June 2020
2	2.1	Select Engineer	Oct 2019	Jan 2020
	2.1.1	Advertise Request for Qualifications	Oct 2019	Oct 2019
	2.1.2	Interview Engineers	Nov 2019	Nov 2019
	2.1.3	Select Engineers	Nov 2019	Nov 2019
	2.1.4	Prepare contract with engineers	Dec 2019	Dec 2019
	2.1.5	City council approves contract	Jan 2020	Jan 2020
	2.2	Approve Design	Jan 2020	June 2020
	2.2.1	Engineers go to work	Jan 2020	June 2020
	2.2.2	Engineers submit design to City	Apr 2020	Apr 2020
	2.2.3	Design is revised, if necessary, after public meetings	June 2020	June 2020
	2.2.4	City approves design	June 2020	June 2020
	2.2.5	ANRC approves design	July 2020	June 2020
3	3.1	Contract goes out for bid	Aug 2020	Sep 2020
	3.1.1	Engineers prepare bid specs	Aug 2020	Aug 2020
	3.1.2	Advertise request for bids	Sep 2020	Sep 2020
	4.1.1	Determine date/location for 3 meetings	Feb 2020	Mar 2020
	4.1.2	Conduct meetings	Apr 2020	June 2020
	4.1.3	Incorporate public comments as needed	May 2020	June 2020
5	5.1	Quarterly Reports	Jan 2020	Sep 2022
	5.2	Annual Reports	Sep 2020	Sep 2021
	5.3	Annual Project Review Meetings	As needed	As needed

Schedule of Task and Outputs to be completed within 24 months of project start date

Year 2				
Task	Subtask Number	Description	Start Date	Completion Date
1	1.2	Financial Review Year 2	Jan 2021	June 2021
3	3.1.3	Open bids	Oct 2020	Oct 2020
	3.1.4	Select contractor	Oct 2020	Oct 2020
	3.1.5	Prepare contract	Oct 2020	Oct 2020
	3.1.6	City Council approves contract	Nov 2020	Nov 2020
	3.2	Build infrastructure	Nov 2020	July 2022
	3.2.1	Hold preconstruction conference	Nov 2020	Nov 2020
	3.2.2	Obtain permits	Nov 2020	Nov 2020
	3.2.3	Build	Nov 2020	July 2022
5	5.1	Quarterly Reports	Jan 2020	Sep 2021

	5.2	Annual Reports	Sep 2020	Sep 2021
	5.3	Annual Project Review Meetings	As needed	As needed
	5.4	Final Report	Sep 2021	Sep 2021

Schedule of Tasks and Outputs to be completed within 36 months of project start date

Task	Subtask Number	Description	Start Date	Completion Date
1	1.3	Financial Review Year 3	Jan 2022	June 2022
3	3.2	Build infrastructure	Nov 2020	July 2022
	3.2.3	Build	Nov 2020	July 2022
	3.2.4	Engineers inspect	July 2022	July 2022
	3.2.5	Compare completed infrastructure w contract to see what needs to be completed before final payment	July 2022	July 2022
4	4.2.1	Film 5 one minute videos	Nov 2020	July 2022
	4.2.2	Upload videos to YouTube, website	Nov 2020	July 2022
	4.2.3	Monitor number of hits/views	Nov 2020	July 2022
	4.2.4	Monitor/report website/YouTube activity quarterly	Jan 2021	Aug 2022
	4.2.5	Ribbon cutting ceremony/Press release	July 2022	Aug 2022
	4.2.6	Post survey to website/collect responses	July 2022	Aug 2022
	4.2.7	Report on survey results	Aug 2022	Aug 2022
5	5.1	Quarterly Reports	Jan 2020	Sep 2022
	5.2	Annual Reports	Sep 2020	Sep 2022
	5.3	Annual Project Review Meetings	As needed	As needed
	5.4	Final Report	Aug 2022	Sep 2022

List of Appendices:

- Appendix A Estimated Project Budget
- Appendix B Project Budget Justification Worksheet
- Appendix C Little Creek-Palarm Creek Sub-Watershed
- Appendix D Treatment Train for Project
- Appendix E Model of the Project

**Appendix A
 Estimated Project Budget**

Personnel

	Salary	m/yrs	Cost	Federal	Non Federal
			\$	\$	\$
Total, Personnel			\$0	\$0	\$0
Fringe Benefits XX%			\$0	\$0	\$0
Total Personnel including Fringe			\$0	\$0	\$0

Travel

In State			\$0	\$0	\$0
Out of State			\$0	\$0	\$0
Total Travel			\$0	\$0	\$0

Equipment

			\$0	\$0	\$0
Total Equipment			\$0	\$0	\$0

Supplies

			\$	\$	\$
Total Supplies			\$0	\$0	\$0

Contractual

Audits			\$6,000	\$0	\$6,000
4 Informational Signs @ \$1125 each			\$4,500	\$0	\$4,500
Design/Engineering			\$169,621	\$0	\$169,621
Total Contractual			\$180,121	\$0	\$180,121

Construction

List					
Total Construction			\$1,300,427	\$599,995	\$700,432

Other

Total Other			\$0	\$0	\$0
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Total Direct Charges			\$1,480,548	\$599,995	\$880,553
Indirect			\$0	\$0	\$0

Grand Total			\$1,480,548	\$599,995	\$880,553
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**Appendix B
 PROJECT BUDGET JUSTIFICATION WORKSHEET**

BUDGET CATEGORIES INFORMATION (FROM SF424A, SECTION B TOTALS) Enter Total Program Costs, i.e., Federal and Non-Federal Funds Combined				
OBJECT CLASS CATEGORIES:				
a. Personnel: (Program Staffing) Position Title	Number in Position	Annual Salary	Work Years	Personnel Costs
		\$0		\$0
Personnel Category Totals				\$0
b. Fringe Benefits: Total				\$0
c. Travel: Include estimates of In-State and Out of State travel				
In State / Out of State				\$0
TRAVEL: TOTAL				\$0
d. Equipment: (1) List each item costing \$5,000 or more or less than \$5,000 to be purchased:				
				\$0
COMBINED EQUIPMENT TOTAL				\$0
e. Supplies: List by groups, as appropriate				
				\$0
SUPPLIES TOTAL				\$0
f. Contractual: List each contract separately, type of service to be procured, procurement method (i.e. formal advertising, competitive negotiations or non-competitive negotiations) and the estimated cost.				
Audit, formal advertising				\$6,000
Signage, request for bids, normal purchasing				\$4,500
Design/engineering, request for qualifications, formal advertising				\$169,621
COMBINED CONTRACTUAL TOTAL				\$180,121
g. Construction:				
				\$1,300,427
TOTAL CONSTRUCTION				\$1,480,548
h. Other: Explain by major categories any items not included in above.				
				\$0
OTHER TOTAL				\$0
i. TOTAL DIRECT CHARGES: (Sum of Items a. through h.)				\$1,480,548
j. INDIRECT COSTS: (Attach a copy of your latest indirect cost agreement)				\$
k. TOTAL PROPOSED PROGRAM COSTS (Sum of Items I and j.)				\$1,480,548
SHARE: FEDERAL 41%				\$599,995
GRANTEE 59%				\$880,553

Project Personnel Justification Summary:
 N/A

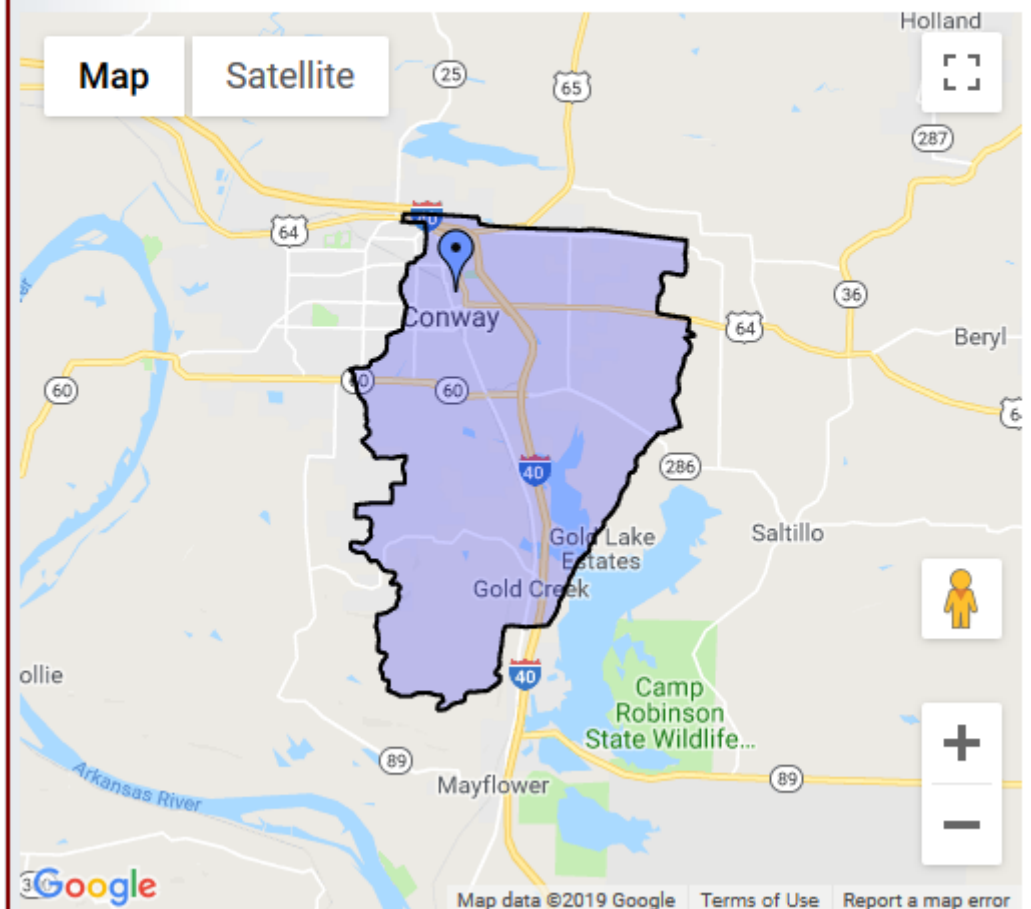
Appendix C Little Creek-Palarm Creek Sub-Watershed

Found at: http://watersheds.cast.uark.edu/find_your_watershed.html

Enter your address (or city) to find your watershed

Markham Street Conway, AR

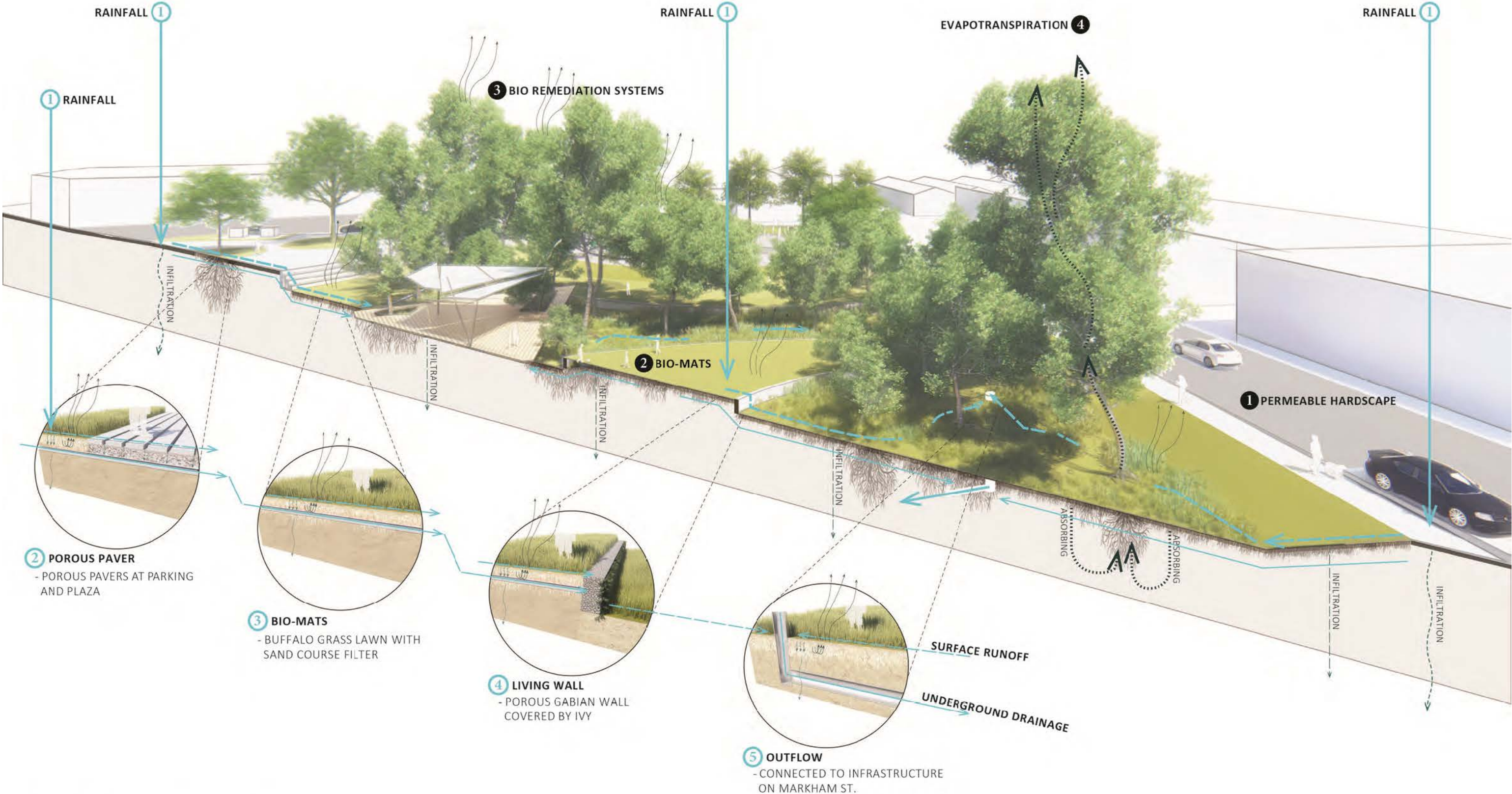
If the result below is incorrect, drag the marker (📍) to the correct location or try again.



Map data ©2019 Google [Terms of Use](#) [Report a map error](#)

Current marker location: 35.095353,-92.439881

**Appendix D
Treatment Trains for Project**

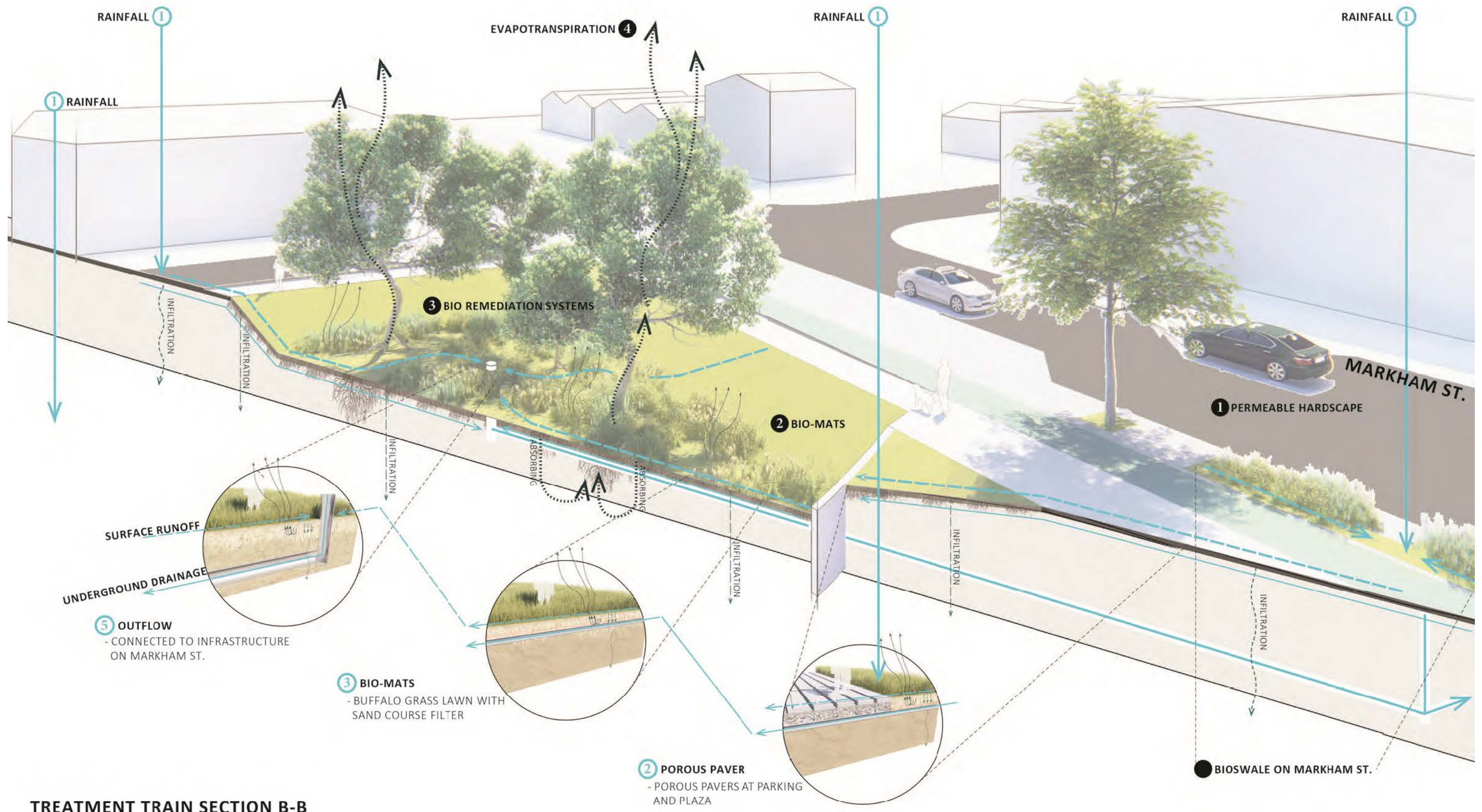


TREATMENT TRAIN SECTION A-A





Appendix D Treatment Trains for Project



TREATMENT TRAIN SECTION B-B



Appendix E Model of the Project

