Post Rain Barrel Installation Report - 2025

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Prepared for:

Mobile Bay National Estuary Program (MBNEP)

118 N Royal St Ste 601,
Mobile, AL 36602

Prepared by:

Ephriam Environmental LLC

3439 St. Stephens Road,
Prichard Alabama

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Introduction

Since its launch in 2017, the Rain Barrel Program (RBP) has been a community-centered initiative to address chronic flooding and stormwater management challenges in Prichard, Alabama—particularly within the Three Mile Creek Watershed. Led by the Mobile Bay National Estuary Program (MBNEP), the program installs rainwater harvesting systems using 55-gallon barrels at residential properties to capture stormwater runoff from roofs. This reduces the volume and velocity of stormwater entering local drainage systems, helping to prevent flooding and limit pollutants entering local waterways. This community also experiences higher than average water costs. These systems provide an alternative water source for washing cars, watering the garden, painting, and more. Multiple residents were able to utilize their rain barrels in such a way as to notice reductions in their water bill.

At its core, the RBP empowers residents to take part in protecting their environment and improving their neighborhoods. By equipping households with tools to manage stormwater on their own properties, the program can foster a sense of ownership and resilience within the community. Over the past 8 years, this grassroots approach has helped build awareness around water conservation and environmental health, while also addressing real infrastructure challenges.

In May 2025, MBNEP contracted Ephriam & Associates Environmental Consulting (EAEC) to conduct a comprehensive assessment of the program's progress. This report builds on the original 2020 evaluation and incorporates updated data from rain barrel condition inspections, resident perception surveys, field observations, and photographic documentation.

The report findings reflect both the program's impact and the community's evolving needs. While 77% of rain barrel components remain in good or partially deteriorated condition, 20% require replacement. Notably, 78% of residents are unsure if their barrels are fully functional, and approximately 25% of respondents highlighted a need for stronger engagement and clearer communication. Encouragingly, (90%) of respondents indicated they would continue using their barrels with (52%) wanting to keep if maintenance support were improved and (38%) reporting they do not need improved maintenance to want to keep their rain barrel.

This report aims to guide the RBP toward its next milestone by answering three key questions:

- What is needed to achieve a meaningful reduction in stormwater runoff?
- What is currently being achieved?
- What strategic actions can ensure the program's long-term sustainability and growth?

The following pages provide a detailed analysis of these questions, with a focus on how the community remains at the heart of the program's success—and how each of us can play a role in shaping a more sustainable future.

2020 Program Baseline and 2025 Assessment

The 2020 report established baseline metrics for installations, resident engagement, and stormwater impact. Since then, Phase II installations in the Leeds Street Community have expanded the program footprint.

Metric	2020 Baseline	2025 Assessment
Homes with barrels	(43) Homes with barrels outside of Leeds. (50) Homes with Barrels Installed in Leeds.	41 homes inspected for barrels
Barrels per home	4 barrels per home (200 barrels total in Leeds)	4 barrels at 26 homes in Leeds (104) 2 barrels at 15 homes outside Leeds (30)
Engagement	Moderate	20% of Rain barrels inspected in Leeds 34% of Rain barrels inspected outside Leeds 20% Resident Survey Completed in Leeds 31% of Resident Survey Completion Outside
Maintenance compliance	Not assessed	31 of 84 homes in the targeted RB communities have items that need to be replaced. 21 of the 25 RB systems surveyed had at least one item that needs to be replaced. **(52 systems require maintenance)**

Review of "*Toulmins Spring RB Outreach Program*"	
Shortcomings	Future directions
○ Limited measurable impact to flooding ○ Community engagement challenges ○ University collaboration limitations	○ Expand and sustain the program ○ Enhance community engagement ○ Strengthening academic partnerships ○ Build organizational capacity

Measurable Progress Report

This section evaluates the Rain Barrel Program's impact across five key dimensions outlined in the MBNEP project scope. Each subsection integrates field data, resident feedback, and best practices in green infrastructure.

Scope	Outcome	Undesirable	Future work
Improvement to Water Quality	Minimal current benefits	RB system in disrepair	Routine Maintenance Measures
Access to Resources for Program Continuation	Alabama Power, Housing authority of the city of Prichard (HACP), City of Prichard (COP)	Funding availability	Engage Resource Partners (i.e. HACP, City pf Pritchard and Alabama Power)
Protection of Residents, Flora, and Fauna	Minimal current benefits	RB system in disrepair	Routine Maintenance Measures
Restoring Heritage and Cultural Connection	Minimal current benefits	RB system in disrepair	Routine Maintenance Measures
Planning and Preparing for Resiliency	Minimal current benefits	RB system in disrepair	Routine Maintenance Measures

Improvement to Water Quality

Rain barrels are a frontline tool in reducing point and nonpoint source pollution by intercepting runoff before it reaches drainage systems. In this 2025 report, approximately 77% of rain barrel components were in good or partially deteriorated condition (refer to Figure 1), indicating that most systems are still capable of capturing and storing stormwater with minor maintenance work. However, 16 gutters were found to be clogged with debris, and 47% of plumbing systems were found to have items that need to be replaced. Furthermore, 21 of the surveyed RB systems reported as having an issue that directly impacted the RB system's ability to function as intended.

These deficiencies reduce the barrels' effectiveness in capturing the "first flush" of stormwater—the most pollutant-laden portion. When functioning properly, rain barrels reduce the volume and velocity of runoff, which in turn decreases: sedimentation, nutrient loading, point and non-point source pollution in local ditches, streams, and even Mobile Bay. This is particularly important to the surrounding Three Mile Creek Watershed, where stormwater carries fertilizers, oils, pesticides litter, and other pollutants into local aquatic habitats.

To quantify water quality improvements, future phases should include:

- Installation of rain gauges and flow meters at key sites.
- Periodic water sampling upstream and downstream of barrel zones as well within barrels.
- Use of ditch depth markers to correlate rainfall with runoff volume.
- Proficient Rain Barrel systems.

These metrics along with others will help establish a direct link between rain barrel density, hydrological metrics, pollutant load reduction, and the health of the local community.

Access to Resources for Program Continuation

The long-term viability of the Rain Barrel Program depends on sustained access to civic and governmental partnerships. While initial installations were supported by MBNEP and partners like Alabama Power, ongoing maintenance and expansion require a diversified stakeholder strategy.

Potential resource pathways include:

- **Municipal Support**: The City of Prichard and Prichard Housing Authority can provide logistical support, such as staff time for inspections or community outreach.
- **State and Federal Grants**: Programs like FEMA's Building Resilient Infrastructure and Communities (BRIC) and EPA's Clean Water State Revolving Fund (SRF) are aligned with the program's goals. See Navigating Federal Finding for Green Infrastructure and Nature-Based Solutions for more potential sources.
- **Private Sector Partnerships**: Local businesses and utilities may offer in-kind donations (e.g., barrels, tools) or sponsor community events.
- **Community-Based Funding**: Small-scale fundraising or neighborhood grants can support localized improvements.

A rolling funding matrix should be developed to track application deadlines, eligibility criteria, and award cycles. This will ensure that the program remains agile and responsive to funding opportunities.

Protection of Residents, Flora, and Fauna

The Rain Barrel Program contributes to the health of the watershed by reducing stormwater runoff, which is a major vector for pollutants. Survey data shows that only two residents saw a reduction in flooding while 44% of residents reported that flooding is not an issue, and 44% indicated flooding is a larger issue than the rain barrel program can currently accommodate. This suggests that the program has minimal localized benefits, and broader interventions are needed to fully address the stormwater flooding within the Toulmin Spring watershed rain barrel community.

Key ecological benefits include:

- **Reduced Erosion and Deposition**: By slowing runoff, rain barrels reduce the erosion of soil and the deposition of sediment into streams.
    - Sediment deposition in streams can smother native hydrophytic vegetation.
    - Reduced flow height and velocity means a lower rate of degradation to natural and built storm water infrastructure.
- **Improved Habitat Quality**: Lower pollutant loads support healthier aquatic ecosystems.
    - If it's not good for us, it's not good for the environment. If we wish to improve our health, we should look towards protecting the health of the ecosystem that provides those services to us.
- **Public Health**: Cleaner water reduces exposure to pathogens and contaminants, especially in areas where children play or residents garden.
    - A healthy and well-rounded storm water infrastructure system is more capable of dealing with the storm water pollution that affects our local communities.

To enhance these benefits, the program may look to integrate other designs, such as bioswales and vegetated buffers, which provide additional filtration and habitat value to create a more resilient green infrastructure plan in Prichard.

Restoring Heritage and Cultural Connection

Environmental stewardship is most effective when it resonates within the community. However, the survey results reveal that 60% of residents were unaware of others interested in joining the program, and 73% were unsure if their barrels were fully functional. This disconnect highlights the need to reframe the Rain Barrel Program not just as a technical solution to stormwater management, but as an asset within the community.

Strategies to restore this connection include:

- **Storytelling**: Share resident testimonials and that link water stewardship to local heritage.
- **Youth Engagement**: Partner with schools to incorporate rain barrel education into science and civics curricula.
- **Community Art**: Use barrels as canvases for local artists to depict environmental themes, turning infrastructure into inspiration.
- **Faith-Based Outreach**: Collaborate with churches and community centers to host workshops and distribute educational materials.

By embedding the program in the fabric of the community, MBNEP can foster a sense of ownership and pride that sustains engagement over time. The Green City Clean Waters – Program by the Philadelphia Water Department is a good success story.

Planning and Preparing for Resiliency

Climate resilience is a central goal of the Rain Barrel Program. As extreme weather events become more frequent, the ability to manage stormwater at the household level becomes increasingly important. However, the 2025 inspection revealed that many barrels are not hurricane-ready due to degraded components and a lack of general maintenance.

To enhance resiliency, the program should:

- **Standardize Preventive Maintenance**: Develop a seasonal checklist and distribute it to all participants.
- **Upgrade Infrastructure**: Replace vulnerable components (e.g., plywood foundations) with durable, weather-resistant materials.
- **Monitor Performance**: Use rain gauges and ditch markers to track system effectiveness across storm events.
- **Design for Redundancy**: Encourage the installation of larger systems with multiple barrels covering a larger roof area, or larger cisterns in high-risk areas.

Additionally, the program should be integrated into the City of Mobile's broader resilience planning framework, ensuring alignment with regional goals for flood mitigation, public health, and environmental justice.

Inspection and Resident Survey Analysis

In March 2025, the MBNEP and EAC formed a joint survey team to assess both the condition of rain barrels and the perceptions of participating residents. The following sections summarize key insights from the inspection and resident perception survey.

Rain Barrel Survey Summary – May 2025

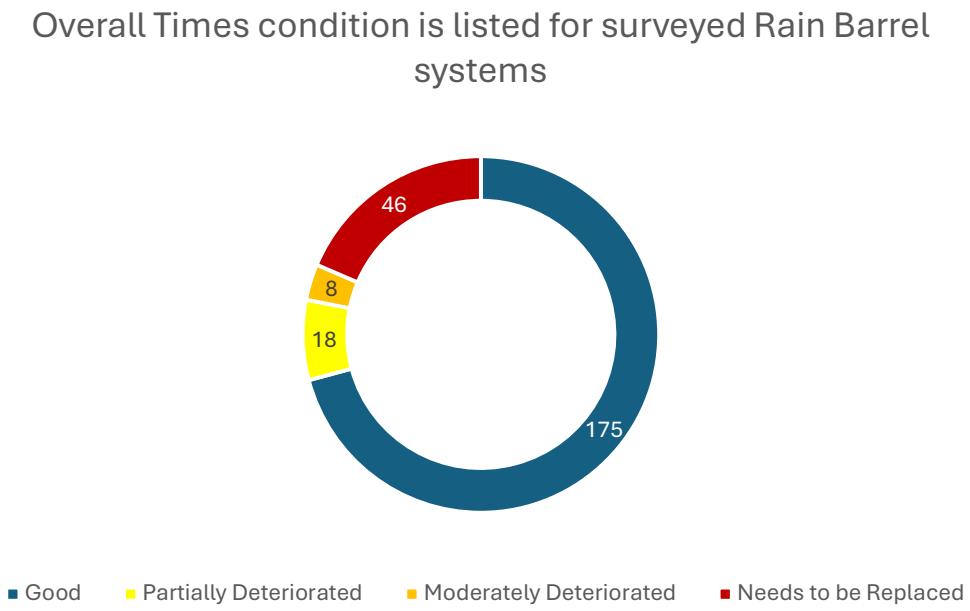

Figure 1. Rain Barrel Components were listed as either good, partially deteriorated, moderately deteriorated, or needs to be replaced.

- Items in good condition showed no to negligible wear; little to no debris or damage.
- Items in partially deteriorated condition, showed minimal wear; visible debris or damage.
- Items that were moderately deteriorated, show wear that indicates the item is nearing the end of its life span and the item is expected to, if not addressed, no longer function as intended; significant debris or damage.
- Items that need to be replaced no longer functioned as intended; item is degraded beyond usable intent.

Photos of Common Rain Barrel Maintenance Issues

Figure 2. Photo represents:
- Gutter full of debris
- Disconnected plumbing
- Lack of Splash guard gutter drain exit

Figure 3. Photo represents:
- Plumbing damage
- Disconnected plumbing

Figure 4. Photo represents:
- Gutter full of debris
- Disconnected Downspout

Figure 5. Photo represents:
- Failing spigot
- Failing plywood Foundation

Survey Participation

- Approximately 25% of addresses responded to the survey.

Rain Barrel Overview

- Most barrels were blue.
- Majority of homes (26) had 4 barrels; 15 had 2 barrels.

Condition Assessment

- Out of 347 items inspected:
    - ~78% were in Good or Partially Deteriorated condition.
    - 46 items required replacement.
- Roof conditions could not be assessed due to height limitations (no ladder access).

Gutters

- Most gutters were in good condition.
- 3 gutters were listed as needing to be replaced with 1 needed replacement due to a dislodged end cap.
- 16 gutters were visibly overflowing with debris; more may be nearing that state.
- Gutter mounts were intact, but some fascia boards may need replacement due to typical weathering of a building's exterior.

Downspouts

- Only 2 homes required downspout replacement due to improper connections.
- Most joints between gutter sections were in good condition (15); (5) issues were due to missing or misaligned joints.

Rain Barrels

- All barrels were structurally sound.
- Common issues:
    - Dry-rotted caps.
    - Debris accumulation (algae, dirt, leaves, bugs, plastic) in several barrels.

Spigots & Plumbing

- Spigots were mostly functional; 4 needed replacements due to dry rot or leaks.
- Plumbing issues were found at ~47% of addresses:
    - Barrels were either unhooked or had cracked/dry-rotted connections.

Foundations

- 10 out of 25 barrel foundations needed replacement.
- Most problematic foundations were made of plywood, which had exceeded its structural lifespan but remained functional due to cinder block support.

Gutter Drain Exits

- All but 5 were in good condition; issues included missing or buried exit pieces.

Recommendations

Restoring the rain barrels to operational conditions is expected to be a straightforward process, likely requiring one to two weeks for completion. Each site should take no more than an hour to address.

Key recommendations include:

1. Cleaning the gutters and barrels.
2. Replacing and reconnecting any necessary components.
3. Establishing a communication platform for the rain barrel community—such as a Facebook group, or newsletters delivered to residents' address—to engage with and reach out to the community and residents participating in the rain barrel program.

Resident Perception Survey – March 2025

In March 2025 the MBNEP and EAC formed a joint survey team with a focus on residents perception as well as rain barrel condition surveys. This section will focus on the results for the resident perception surveys.

Demographics

- **82%** of respondents were over the age of 60.
- Just over half (**56%)** were over the age of 70.

Program Satisfaction

- **79%** of residents rated the Rain Barrel Program a **9 or higher** on a 1–10 satisfaction scale.
- **65%** of respondents reported feeling positively about the program.

Water Usage

- **39%** of residents use collected water **weekly**.
- **30%** use collected water **daily**.
- **73%** of respondents listed **gardening** as the primary use for collected water.

Flooding Concerns

- **56%** of residents reported **no issues** related to flooding.
- **34%** indicated that flooding is a **larger issue** than the rain barrel program can mitigate.

Maintenance Feedback

- **47%** of residents believe the program would be **improved with more maintenance**.
- **47%** would prefer to **keep their rain barrels** if maintenance were increased.
- **14%** stated that **no additional maintenance** was necessary.
- **78%** of homeowners were **unsure** whether their rain barrels were fully functional.
- One respondent noted that **no maintenance instructions** were provided.
- While many residents claimed to follow maintenance measures "some" or "most" of the time, inspections revealed that **maintenance was largely not followed**, as evidenced by biological growth in the systems and general disrepair and upkeep of the system.

Recruitment & Community Awareness

- **65%** of residents joined the program during the **initial canvassing phase**.
- **56%** cited **access to extra water** as their primary reason for joining.
- **60%** were **unaware of others** who might be interested in the program.

Outreach and Engagement Model

Scope	Outcome	Undesirables	Future works
Re-inventory of Installations	• Excel Tracking Sheet	• Low Survey Engagement	• Continually Updated Tracking Sheet
Resident Inspections and Usage Survey	• Rain Barrel Resident Survey	• Low Survey Engagement <%25	• Increased Outreach and Education
Maintenance Measures for Long-Term Use	• Maintenance Plan Development	• Funding • Manpower	• Implementation
Potential Replacement Program	• None	• Careful consideration	• Transition to Broader Green Infrastructure (LID) Solutions

Maintenance Measures for Long-Term Use

Rain barrels are a **smart, eco-friendly investment**, but they require regular upkeep to stay effective and safe. Without **maintenance**, what started as a green solution can turn into a **health hazard or structural headache** – think mosquito breeding grounds, algae blooms, clogged pipes, or even barrel damage from excessive exposure to the sun. A simple maintenance routine will prevent these issues and ensure your barrel delivers clean water reliably for years. The table below shows routine maintenance items at **bi-weekly**, **monthly**, **semi-annual (6-month)**, and **annual** checklists, and provides tips to prevent common problems. By following a maintenance plan, you'll keep your rain barrel in top condition, thus protecting your family and neighbors' health by maximizing the capacity of the rain barrel system for stormwater pollution prevention.

2 weeks	Monthly	6 Months	Once a year
Use the Water Regularly: Do not let water sit unused for too long	Clear Debris from Screens and Filters	Clean Gutters and Downspouts (Upstream Maintenance)	Drain and Deep Clean the Barrel
	Light Cleaning as Needed	Inspect and Clean the Inside of the Barrel	Thorough Inspection and Repairs
	Inspect for Mosquito Entry & Blockage	Check and Refresh Mosquito Protection	Re-Level and Secure the Installation
		Examine All Fittings and Surfaces	Evaluate System Upgrades
		Apply Preventive Measures	

General Barrel Inspection:

Take a minute to walk around the barrel and visually check all parts:

- **Check for Leaks or Drips:** Look at the spigot connection and around the base for any signs of leaks when the barrel is full. Even a small drip can waste water and indicate a failing washer or loose fitting. Tighten the spigot if needed, or plan to replace its washer during annual maintenance if dripping persists.
- **Examine Surfaces for Cracks or Weakness:** Especially in plastic barrels, inspect the sides and bottom for any small cracks, bulges, or UV damage (fading, brittleness). Catching a hairline crack early means you can seal it with before it compromises the system.
  - **Ensure Connections are Secure:** Make sure the downspout or diverter is still firmly attached and aligned to direct water into the barrel. Sometimes wind or vibrations can loosen connections. Also ensure the overflow outlet is clear and aimed away (test by running water through to see that it exits properly).
  - **Barrel Position and Stability:** Check that the barrel is still level and stable on its platform. As it fills and empties repeatedly, the ground or stand can settle or shift. If you notice tilting, plan to re-level it (usually a quick fix of adjusting bricks or shims) to prevent tipping or uneven stress on the barrel walls.

Transition to Broader Green Infrastructure (LID) Solutions

Rather than focusing solely on replacing aging barrels and recruiting new residences, the program could benefit from providing further stormwater management measures that take advantage of what the current rain barrel system has established. Most stakeholders in the program are unaware of the full suite of benefits that the rain barrel system can provide when part of a larger green infrastructure plan focused in the community. While an individual rain barrel has a negligible impact, an increase in barrel density coupled with incorporation into a larger and broader green infrastructure system will not just provide technical reductions in stormwater management but also provide changes that are noticed. Given most respondents use the rain barrels for a garden, a straightforward goal would be to work with those residents to incorporate their enthusiasm for gardening into a native rain garden. A native rain garden would have multiple primary and secondary impacts to the local community as well to the surrounding ecosystem, watershed, The Mobile Bay and from there the Gulf of America. Launching pilot projects, conducting site suitability assessments, and offering residents a menu of green infrastructure options. Even if the pilot projects are at the scale of a single household, there are enough residences in the program that multiple projects could be implemented.

Final Consensus and Recommendations

The Rain Barrel Program does provide a quantifiable impact on the influx of water within the hydrological system as it helps to reduce flooding by reducing the amount of precipitation that immediately reaches the surface, and ultimately through infiltration and base flow or run off, makes its way back into the system. Enough respondents have stated, though, that the flooding issue is larger than the rain barrel program in its current state, at this time, can adequately handle. To address the larger issue at hand and specifically address, or rather, pinpoint the needs of **Prichard's Green Infrastructure**, a detailed topographic survey or review of existing records pertaining to the rain barrel community ditches is recommended. The reason behind this is that this will highlight restrictions within the local drainage system allowing for more noticeable impacts to flooding to be made. Similar projects are taking place locally. Attention should be brought to drainage improvements that have been proposed for the Gulf Village Community.

Ultimately, the long-term success of the rain barrel program is dependent upon several factors. When previous assessments and the core of why the Rain Barrel Program exists is laid out, it must also be mentioned that many challenges require a combined top down and bottom-up approach. Here, in 2025, the MBNEP has sustained an established Rain Barrel Program through a top-down approach. For the program to continue to grow and prosper, what is now needed is top-down support for the bottom up, community driven approach. Many residences in and the surrounding communities of the Toulmins Spring watershed could greatly benefit from greater community engagement among the Rain Barrel Programs' members. Ensuring the rain barrels can perform their intended use is paramount as many residents found them to be useful but given the current design, maintenance has become a continued hindrance to the program.

Key Findings:

- 75% of rain barrel components are in good or partially deteriorated condition.
- 47% of residents would retain barrels but need improved maintenance.
- 34% of residents report that flooding remains a problem.

Recommendations:

1. **Expand Beyond Barrels**: Incorporate rain gardens, bioswales, and green roofs.
2. **Formalize Maintenance and Monitoring**: Establish a seasonal schedule and train local volunteers.
3. **Rebuild Community Engagement**: Launch a Rain Barrel Community Network and host events.
4. **Secure Long-Term Funding**: Pursue grants and explore alternative funding sources such as a stormwater utility fee credit program.
5. **Integrate with Broader Resilience Planning**: Align with the City of Mobile's Resilience Assessment and MBNEP's CCMP.

Milestones

1. Get the existing program back on its feet.
   1 year to:
   a. Discuss and set both short- and long-term goals/milestone for the program
   b. Address maintenance issues
   c. Rebuild existing stakeholder relationships
   d. Increase Existing Stakeholder engagement
   e. Form a community centered on the Rain Barrel Program
   f. Engage with selected agencies, non-profits, community-oriented groups and associations, to secure multiple sources of funding.
      i. EPA
      ii. USA HEALTH
      iii. ADEM
      iv. Sustainability at South
      v. Housing authorities
      vi. ALDOT
      vii. MBNEP
      viii. DISL
      ix. Partners for environmental progress
      x. City of Prichard
      xi. Housing authority of the city of Prichard
      xii. Community Leaders
      xiii. Local Residents
      xiv. Local Churches
      xv. Local Businesses
      xvi. Prichard Water Board/MAWSS/whoever/all, oversees cleaning the areas run off/providing water to the community.
         1. This benefits the above stakeholders by reducing impacts to their infrastructures and increasing the health and well-being of the community.

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