WATERSHED RESOURCES REGISTRY

# A GIS Tool for Broad-Based Collaborative Watershed Planning and Protection in Maryland

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## What is the WRR?

Maryland's Watershed Resources Registry (WRR) is an interactive GIS-based screening tool that was created to improve resource planning and mitigation decision-making using the watershed approach, by integrating regulatory and non-regulatory programs. Historically, program management decisions have been constrained by the "stovepipe" or programmatic nature of the agencies' enabling legislation. This narrow approach, while useful for specific resource protection, impedes broad-based collaborative planning and application of environmental programs. The WRR helps to streamline information collection and preparation for permit processes, achieve program integration (CWA 402, 404 etc.) and watershed goals, prioritize watershed needs, and use limited resources to achieve multiple goals. The WRR provides an integrated and transparent platform for combining, investigating and targeting the efforts of all agencies and programs affecting watershed health. Using available data from various organizations the WRR reveals a comprehensive picture of watershed conditions and identifies opportunities for aquatic and terrestrial creation, restoration, enhancement and preservation. The element that makes the WRR unlike many other mapping and targeting tools is the level of agency collaboration and program integration between:

- ✓ CWA 319, 401,402,404, 303(d)
- ✓ Watershed planning, permit review, mitigation assessments
- ✓ TMDL and WIP applications
- ✓ Stormwater management
- ✓ Resource conservation/ environmental resource planning
- ✓ GreenPrint and Rural Legacy priorities
- ✓ Section 7 (Threatened and Endangered Species)
- ✓ Transportation and land use planning
- ✓ NEPA review

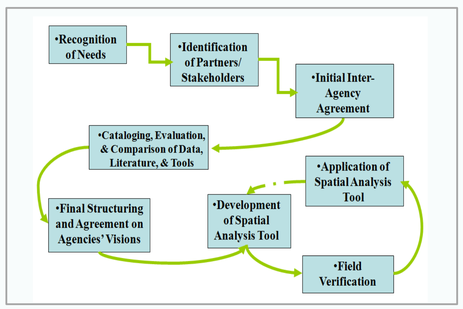
The WRR is available on the web at:
www.watershedresourcesregistry.com

## Background

The WRR began as a pilot Registry that grew out of the Green Highways Partnership and a project proposed by the Maryland State Highway Administration for US 301 in Prince George's and Charles Counties, Maryland. The analysis was expanded to the remaining portions of the state.

Local, state, and federal representatives formed the WRR Technical Advisory Committee (TAC) and sought to develop a framework for integrated watershed management that could be transferred nationally. This framework is depicted in Figure 1.

Figure 1 – Implementation Framework




## Contacts

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## Developing the WRR

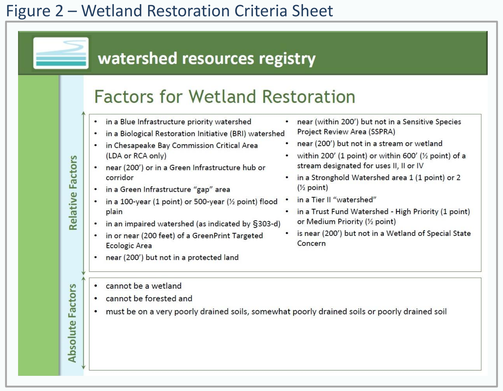
### Methodology

Appropriate criteria for each of the 8 different types of restoration and preservation opportunities (listed below) were iteratively developed using sound science and the best professional judgment of regional experts on the TAC.

•Healthy Stormwater System Preservation
•Stormwater System Restoration
•Riparian Zone Preservation
•Riparian Zone Restoration
•Upland Preservation
•Upland Restoration
•Wetland Preservation
•Wetland Restoration

Criteria sheets were created for each mitigation opportunity and each criterion was either classified as an absolute factor or a relative factor. Figure 2 shows the criteria included in the Wetland Restoration analysis.

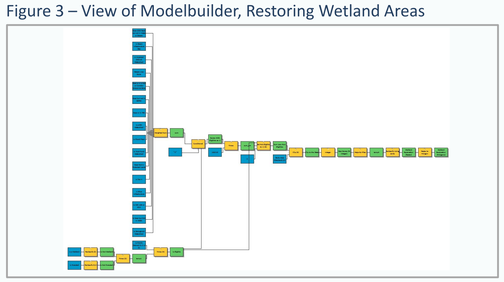
Figure 2 – Wetland Restoration Criteria Sheet




### Suitability Analyses

A GIS-based Suitability Analysis was conducted for each mitigation opportunity type using Environmental Systems Research Institute's (ESRI) ArcGIS version 10.2 and Modelbuilder. Analyses were tested through an independent peer-review. All findings were reported back to members of the TAC in order to make supplemental adjustments.

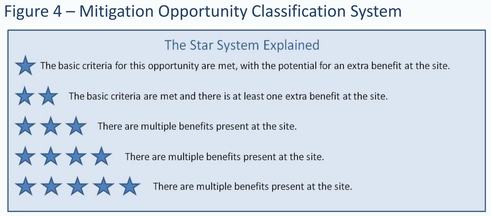
Figure 3 – View of Modelbuilder, Restoring Wetland Areas



Analyses were tested through an independent peer-review and findings were summarized and provided to the TAC members in order to make supplemental adjustments.

Areas across Maryland have been scored on a scale of one to five stars based on their potential benefits for restoration or preservation. This classification system is further detailed in Figure 4.

Figure 4 – Mitigation Opportunity Classification System




## Using the WRR

### WRR Application

Users can either access the interactive mapping tool (Figure 5) or, upon request obtain the data directly from the TAC to identify candidate project locations, assess and compare potential projects, export data, and print site maps for field visits (Figure 6).

Figure 5 – WRR GIS-Based Web Application

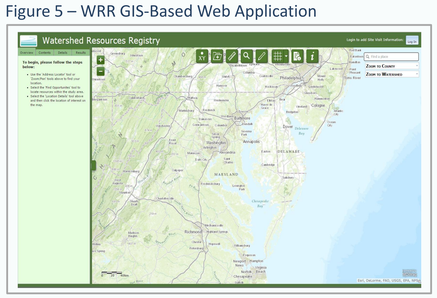
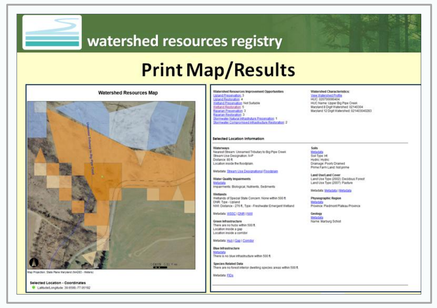


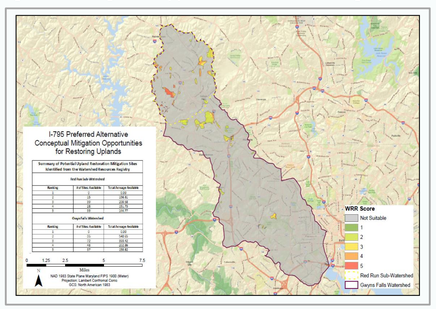

Figure 6 – WRR Application Results




### Application Use

The Maryland State Highway Administration uses the WRR to identify potential mitigation and stewardship opportunities. In addition, the WRR is used for environmental inventories and pre-planning project screening so that alternatives can be developed that avoid or minimize impacts to resources.

Figure 7 – Mitigation Opportunities for Preserving Upland Areas




## Next Steps

- ➢National roll-out: Continue outreach to additional states to determine transferability of WRR processes. Current outreach includes: Delaware, Pennsylvania, DC, and Virginia
- ➢Continue to make data and criteria updates to Maryland analyses so models contain most recent state-specific data
- ➢Training and outreach through webinars, handbooks, and training courses
- ➢Continue to receive user feedback regarding sites and data

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