Recovery Potential Screening
Scenario Fact Sheet Series | Watershed Protection

EPA
July 2022

Background & Purpose

The Recovery Potential Screening (RPS) Tool provides a systematic method to compare a group of watersheds and evaluate priorities for watershed management. Key steps in the RPS process include selecting watersheds to screen and choosing indicators that serve as the basis for comparison and prioritization (Figure 1). Recognizing that these steps can be challenging for beginner RPS Tool users, the US Environmental Protection Agency (EPA) developed the RPS Scenario Fact Sheet Series to support users who have a basic understanding of RPS concepts but are uncertain about how to begin their own screening. Readers that are new to the RPS Scenario Fact Sheet Series can first review the RPS Scenario Fact Sheet Introduction to understand how to apply the concepts presented in this Fact Sheet.

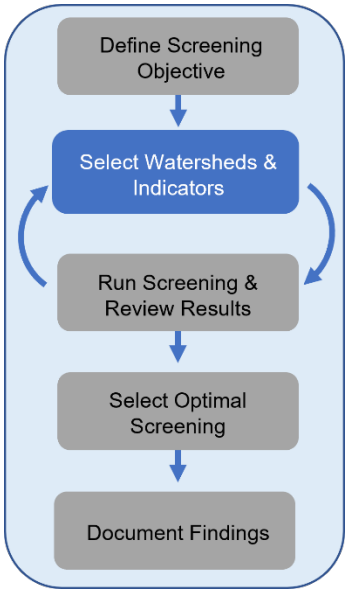

*Figure 1. The RPS process. This Fact Sheet focuses on the **Select Watersheds and Indicators** step.*

This Fact Sheet describes considerations for watershed and indicator selection for a screening that focuses on identifying priorities for watershed protection. The protection and preservation of land draining to waterways is an important aspect of the federal Clean Water Act objective to "restore and maintain the chemical, physical, and biological integrity of the nation's waters." Whereas restoration aims to improve water quality and ecosystems from a degraded state to a target condition, the goal of protection is to maintain the integrity of healthy aquatic ecosystems and their watersheds.[1] Depending on the condition of priority watersheds and risk factors, watershed protection could involve similar management activities as those completed in impaired watersheds or could present opportunities to work with new partners in pursuing large-scale, proactive management strategies like land conservation and land use planning. While the approaches described in this Fact Sheet offer a starting point for conducting a screening with the RPS Tool, users can refine and customize their watershed and indicator selections based on their own specific objectives and initial results (Figure 1).

Select Watersheds

Although a screening can include all HUC12 subwatersheds[2] in a state or river basin,[3] RPS Tool users often target a subset of relevant HUC12s to compare within a screening. The *HUC Subsets* tab of the RPS Tool includes an interactive menu to define a HUC12 subset. For a protection-focused screening, users can create a subset of HUC12s to screen that potentially contain healthy waters. Table 1 lists example indicators that could be used to create the HUC12 subset for a protection-focused screening.

Table 1. Example indicators in the RPS Tool for identifying HUC12s that potentially contain high-quality waters.

Indicator Subcategory	Example Indicators
Impaired Waters	Impaired Waters Count in HUC12 Nutrient Impaired Waters Count in HUC12 Pathogen Impaired Waters Count in HUC12 Sediment Impaired Waters Count in HUC12 Metals Impaired Waters Count in HUC12
Water Quality Assessments & TMDLs	Assessed Waters, % in HUC12
Integrated Watershed Health Index & Sub-Indices	Preliminary Healthy Watersheds Assessment (PHWA) Watershed Health Index, State

[1] USEPA. 2012. Identifying and Protecting Healthy Watersheds: Concepts, Assessments, and Management Approaches. EPA 841-B-11-002.

[2] HUC12s are subwatershed delineations in the National Watershed Boundary Dataset. HUC12s are referenced by their 12-digit Hydrologic Unit Code

[3] The RPS Tool files available on the RPS website are configured for single states, however, RPS Tool files can be customized for river basins or other regions of interest. Email us at HWP-Team@epa.gov for more information on developing a custom RPS Tool.

RPS Tool files for contiguous US states are pre-loaded with indicators such as those listed in Table 1. As a starting point for watershed subsetting, users could select HUC12s with no impaired waters (i.e., Impaired Waters Count equals zero). Note that this criterion will identify HUC12s where surface water quality has been assessed and identified as not impaired *and* HUC12s where water quality standards have not yet been assessed. To further refine the subset to include assessed waters, an additional indicator that reports extent of assessed waters per HUC12 (Assessed Waters, % of Watershed) can be used.

Another indicator that may help guide the selection of HUC12s with healthy waters is the Watershed Health Index from the EPA Preliminary Healthy Watersheds Assessment (PHWA). The Watershed Health Index is an integrated measure of watershed condition that combines several indicators which reflect six key attributes of watershed health: Landscape Condition, Geomorphology, Habitat, Water Quality, Hydrology, and Biological Condition. Higher Watershed Health Index scores correspond to greater potential for a HUC12 to support healthy aquatic ecosystems and provide important ecosystem services to surrounding communities. An Overview of the Preliminary Healthy Watersheds Assessments Project provides additional background and methodology on the PHWA. For watershed subsetting, users could select HUC12s with Watershed Health Index scores above the statewide mean or median, or an alternative threshold score.

The criteria for subsetting HUC12s can be refined to better match a user's specific geographic setting and screening objectives by including additional indicators or adjusting thresholds for HUC12 selection. Examples include increasing the threshold for impaired waters to select HUC12s that may be in overall good condition but still contain a few isolated impaired waters or focusing on impairments for one or more pollutants of interest (nutrients, pathogens, sediment, or metals).

Select Indicators

The indicators selected for a screening serve as the basis for users to compare watersheds and evaluate priorities for restoration and protection. For a protection-focused screening, the **Ecological** indicator selections can reflect attributes that are associated with healthy aquatic ecosystems and functional watershed processes. **Stressor** indicator selections can reflect the potential for increased pollution or other stresses on unimpaired and/or high-quality aquatic ecosystems, and the **Social** indicator selections can reflect social or programmatic factors that are favorable for successful protection. A complete list of indicators available in the RPS Tool and indicator descriptions are provided on the *Indicator Info* tab of the RPS Tool for users to review when selecting indicators.

As a starting point for indicator selection, Table 2 highlights example indicators for a protection-focused screening. The example indicators in Table 2 are intended to assist users in setting up an initial screening in the RPS Tool in order to better understand how the RPS Tool functions and the results that are generated.

Table 2. Example indicators for an initial screening to identify priority HUC12s for protection.

Category	Subcategory	Indicator Name	Description
Ecological	Integrated Watershed Health Index & Sub-Indices	PHWA Watershed Health Index, State	The statewide Watershed Health Index score for the HUC12 from the EPA PHWA.
Stressor	Urban/Developed Cover	% U-Index1 Change in HUC12 (2001-19)	The change in the percentage of the HUC12 with human use land cover from 2001 to 2016.
		% Projected Change in Developed Cover in HUC12	The projected change in the percentage of developed land cover in the HUC12 from 2010 to 2050.
Social	Drinking Water Protection	Drinking Water Surface Intake Count in HUC12	Count of drinking water surface intakes in the HUC12. Only includes public water system (PWS) surface intakes that are located in the HUC12.
		% Drinking Water Source Protection Area in HUC12, Surface	Percent of the HUC12 that is classified as a source water protection area (SPA) for public water system (PWS) drinking water sources. Only includes SPAs for surface water sources of drinking water.

Below is additional discussion of the example indicators for an initial screening listed in Table 2 and their relevance to a protection-focused screening:

- The **Ecological** indicator listed in Table 2 is the Watershed Health Index from the EPA PHWA (described above in the Select Watershed section). Higher Watershed Health Index scores correspond to greater potential for a HUC12 to support healthy aquatic ecosystems and provide important ecosystem services to surrounding communities.
- The **Stressor** indicators listed in Table 2 describe recent land cover changes and projected future land cover changes in a HUC12. These indicators characterize the likelihood for urban expansion or other types of development in the coming years. Human population growth and expansion may contribute to degraded water quality and aquatic ecosystem health due to increases in stormwater and wastewater discharges, loss of wetlands and riparian buffers, channelization or other stream and river modifications, water withdrawals, or other impacts.
- The **Social** indicators listed in Table 2 describe the presence of drinking water sources in a HUC12. The presence of public drinking water supplies can be a powerful motivator for stakeholder support and engagement (e.g., from water utilities, state drinking water programs, and the general public) for actions to protect watershed conditions.

Users may choose an alternative set of ecological, stressor, and social indicators depending on a user's specific geographic setting and screening objective. For example, stressor indicator selections could be refined to target issues more relevant to a user's area, such as wildfire risk or sea level rise, while social indicators could be refined to align with a user's organization's preferences and approach to priority-setting.

After running a screening and reviewing results, users may refine their initial watershed and indicator selections. For example, a user could be interested in evaluating how the screening results change when an indicator is removed or a new indicator is added. Iterative adjustments to watershed or indicator selections are an important part of the RPS process (Figure 1) and the RPS Tool is designed to allow users to easily adjust watershed and indicator selections.

Links to RPS Tools and Additional Information

RPS Tool files are available for download from the EPA RPS website.

The EPA Health Watersheds Program website includes information and reports that may help guide the selection of priority watersheds for protection, including links to several state and local studies of watershed health and vulnerability.