Tools to Aid Prioritization

There are numerous tools and/or data sources which States and Tribes may find useful in setting watershed and TMDL priorities. Those briefly described in this document are a <u>partial</u> list, focusing on the ones likely to be most useful in setting priorities that reflect some of the most common themes and methodologies under consideration. The first two, Recovery Potential Screening and *WATERSCAPE*, were specifically designed to facilitate TMDL-related prioritization while considering a relevant array of ecological, stressor, and social driving factors. The other tools highlighted tend to either focus on a single topic of interest, such as impervious cover (ICLUS) or nutrients (NPDAT), or are a repository for numerous types of geospatial data on a specific theme (EnviroAtlas). Contact information on each is included.

Recovery Potential Screening (RPS) is a technical method for comparing and determining priorities among large numbers of watersheds. When used with existing data, it provides a rapid assessment and comparison at a general screening level. RPS measures several ecological, stressor, and social context indicators that are associated with the likelihood that a restoration effort may succeed. The user selects the indicators based on what is most appropriate to the waters being assessed and the needs or priorities of the user's program. Calculating separate ecological, stressor, and social indices enables the user to consider each of these three classes of factors, individually or in combination. The ecological index score reflects overall condition and the capacity of the watershed to regain functionality, based on metrics related to natural watershed processes and structure. The stressor score reflects the pressures on watershed condition from several primary sources of pollutants and water quality impairments. The social context score includes many factors, such as community involvement, incentives, economics, governance, regulation, and planning status, that do not constitute watershed condition but often strongly influence the level of effort and complexity of making improvements. A Recovery Potential Integrated (RPI) score is calculated by combining these three indices. The RPS Tool is a customized Excel spreadsheet that requires only moderate Excel usage skills and does all index calculations, generates data tables, rank-ordering, customizable bubble plots and maps of the results.

RPS was first developed jointly by the EPA TMDL program and EPA's research office in 2004 and has now been applied in 15 states, 11 of which have statewide RPS databases. Originally conceived as a way to consider restorability differences and help organize state prioritized schedules for 303(d)-listed waters, the highly flexible RPS tool has now been used in a variety of ways by states through their TMDL, 319, and other programs. Currently EPA's RPS project is working with 5 states on nutrient prioritization (KY, MA, NM, TN, and UT) and complementing its state-specific support approach with the development of nationally consistent watershed indicators and tools online for all states through the Watershed Index Online (WSIO, see upcoming summary). In addition to providing state-specific assistance for the past several years, the RPS website (www.epa.gov/recoverypotential) provides a reference source for restoration programs that offers step-by-step instructions in recovery potential screening, online tools, and a library of recovery potential indicators. For more information please contact Doug Norton, EPA Office of Water at norton.douglas@epa.gov.

WATERSCAPE - WATERShed **C**haracterization **A**nd **P**rioritization for **E**nvironmental Results
Developed by Esri for EPA's Office of Water, *WATERSCAPE,* is a GIS-based tool that identifies and ranks candidate priority HUC12 watersheds in a given State or Tribe by combining two types of scoring for each of numerous properties of interest (e.g. values such as drinking water sources or stressors such as pathogen impairments):
   1) A relative "intrinsic" score reflecting the extent to which a property is present in a given watershed vs. each other watershed; and
   2) A "weighting" factor that reflects the extent to which that property is important to the user.
WATERSCAPE is available at no cost to State/Tribal users beyond their existing Esri ArcGIS license. It comes pre-loaded with intrinsic HUC12 scores for over two dozen key property layers on topics such as
   1) Designated uses – individual parent categories;
   2) Impaired waters - by key parent pollutant categories including nutrients, sediment, pathogens and temperature impairments as well as all impairment causes together;
   3) Drinking water protection – metrics for surface intakes as well as ground water wells;
   4) Socio-economic – an environmental justice metric plus a composite indicator of economic stress;
   5) Impervious cover stress - current and projected future 2040 stress; and
   6) Nutrient yields – USGS SPARROW products for agriculture N and P incremental HUC12 yields.
Additional properties are under development and the user can add their own. State-specific HUC12 study areas are also provided with the tool; customized study areas can be added by the user.
For more information, contact R. Dwight Atkinson, Ph.D., US EPA Office of Water at atkinson.dwight@epa.gov.

Watershed Index Online (WSIO) is being developed jointly by EPA Region 4 and EPA Headquarters Watershed Branch's Recovery Potential Screening (RPS) Project to substantially increase watershed prioritizing capacity, tools and data available to states and others. WSIO is consolidating and making widely available a library of many of the most popular watershed indicators along with easily accessed tools for using them. This site will offer national-scale watershed indicator data and tools at a single online location dedicated to helping users evaluate, compare, and prioritize among watersheds. The primary components of WSIO include:

Watershed Attributes Library: This will contain HUC12-specific values for many ecological, stressor, and social indicators calculated consistently and nationwide. Over 300 Ecological, Stressor, and Social Indicators based on previous RPS projects and state TMDL workshops have been compiled on all the lower 48's HUC12s.

Analytical Tools: The WSIO interface is an online adaptation of the Recovery Potential Screening (RPS) Tool, which enables users to define a project area, select indicators and weight them, perform a variety of different RPS screening scenarios and save results as rank-ordered priority lists, thematic maps, and bubble plots. State-specific custom RPS Tools will be available for each state by summer while online tool development continues.

Pre-compiled Screening Assessments: A small number of high-interest screening assessments will be developed to apply RPS and generate example products for users without the time to customize their own analyses. The May 2014 States Workshop will present insights into candidate high-interest prioritizing topics.

Programmatic Links: WSIO's initial design is to support watershed analysis, comparison and prioritization relative to Clean Water Act programs. We plan to offer a portal of links to the appropriate programmatic websites that utilize other watershed indicators and tools.

For more information contact Gary Davis, EPA Region 4 at davis.garys@epa.gov or Doug Norton, EPA Office of Water at norton.douglas@epa.gov

EnviroAtlas
The EnviroAtlas is a collection of interactive tools and resources developed by EPA's Office of Research and Development that allows users to explore many of the benefits people receive from nature. These benefits are often referred to as ecosystem services. EnviroAtlas includes an interactive map, a relational browser on ecosystem services and public health, geospatial data, GIS toolboxes, and educational materials. Much of the data in EnviroAtlas illustrates ecosystem services, the populations who benefit from these services, and the factors that may stress or influence an ecosystem's ability to provide these benefits. Information on ecosystems, their benefits, and influences, are organized into seven benefit categories: clean air; clean and plentiful water; natural hazard mitigation; climate stabilization; recreation, culture, and aesthetics; food, fuel, and materials; and biodiversity conservation. The information provided in EnviroAtlas can be used to educate, inform policy and planning decisions, and to support future research in environmental management, planning, public health, and sustainability. For more information, see http://enviroatlas.epa.gov/enviroatlas/atlas.html

National Fish Habitat Partnership Habitat Condition Index (HCI)
The National Fish Habitat Partnership uses Federal, state, and privately-raised funds as the foundation for building regional partnerships that implement actions voluntarily to protect, restore and enhance our nation's fish habitat areas. One of their products is the Habitat Condition Index (HCI). The HCI depicts the condition of stream and coastal habitats across the country while offering a variety of base maps and providing one-click access to more detailed information on landscape disturbances and habitat scores for individual stream catchments.
For more information on the National Fish Habitat Partnership and access to the data available for download, see: http://ecosystems.usgs.gov/fishhabitat/nfhap_download.jsp.

Discharge Monitoring Report (DMR) Pollutant Loading Tool
The Discharge Monitoring Report (DMR) Pollutant Loading Tool is designed to help you determine **who is discharging, what pollutants they are discharging and how much, and where they are discharging**. The tool calculates pollutant loadings from permit and DMR data from EPA's Permit Compliance System (PCS) and Integrated Compliance Information System for the National Pollutant Discharge Elimination System (ICIS-NPDES). Data is available for the years 2007 through 2011. Pollutant loadings are presented as pounds per year and as toxic-weighted pounds per year to account for variations in toxicity among pollutants. The tool ranks dischargers, industries, and watersheds based on pollutant mass and toxicity, and presents "top ten" lists to help you determine which discharges are important, which facilities and industries are producing these discharges, and which watersheds are impacted. The tool also includes wastewater pollutant discharge data from EPA's Toxics Release Inventory (TRI). Data is available for the years 2007 through 2011. Users can search TRI data to find the facilities with the largest pollutant discharges to surface waters or sewage treatment plants (a.k.a. Publicly-Owned Treatment Works – "POTWs").
For more information, see http://cfpub.epa.gov/dmr/.

Nitrogen and Phosphorus Pollution Data Access Tool (NPDAT)
The NPDAT consists of an introductory Website, geospatial viewer, data downloads, and datasets available publicly elsewhere. The Data Access Tool aggregates data at a single location. With these data "pre-assembled," states and others can readily use this data, gather additional, less-accessible data and develop effective nitrogen and phosphorus source reduction strategies. The NPDAT can help support states in analyzing nitrogen and phosphorus pollution by providing key data in a readily-accessible and easy-to-use format on:
    1) The extent and magnitude of nitrogen and phosphorus pollution,
    2) Water quality problems related to this pollution, and
    3) Potential pollution sources.
Data available on the NPDAT include:
• **Nitrogen and Phosphorus Loading information** from U.S. Geological Survey SPARROW model (SPAtially Referenced Regressions On Watershed attributes)
• **Water Quality Data and Information** (e.g., Water quality monitoring sites with nitrogen and phosphorus data and National Aquatic Resource Surveys (NARS) Phosphorus/ Nitrogen Values data layers)
• **Setting Watershed Load Reduction Goals / Source Control Priorities** (e.g., Facilities that are likely to discharge nitrogen and phosphorus to water, waters with N/P TMDLs, and drinking water sources.)
For more information, see http://www2.epa.gov/nutrient-policy-data/nitrogen-and-phosphorus-pollution-data-access-tool.

Integrated Climate and Land Use Scenarios (ICLUS)
Climate change and land-use change are global drivers of environmental change. Impact assessments frequently show that interactions between climate and land-use changes can create serious challenges for aquatic ecosystems, water quality, and air quality. In many cases, it is impossible to determine the impact of climate change without consideration of land use and land cover dynamics. Developed by EPA's Global Change Research Program, the Integrated Climate and Land Use Scenarios (ICLUS) Project consists in part of a Geographic Information System (GIS) tool that can be used to generate scenarios of **housing-density changes and calculate impervious surface cover** for the conterminous United States. This product **distributes the population projections** and creates land use data described in the 2009 EPA report "Land-Use Scenarios: National-Scale Housing-Density Scenarios Consistent with Climate Change Storylines". The ICLUS tools for ArcGIS will allow users to:
  • Customize housing density patterns by altering household size and travel time assumptions;
  • Subset county-level population projections by age, ethnicity and gender; and
  • **Generate a map of estimated impervious surface** based on a housing density map.
For more information, see http://www.epa.gov/ncea/global/iclus/.

Grants Reporting and Tracking System (GRTS) – for the CWA Section 319(h) Program
The Grants Reporting and Tracking System (GRTS) is the primary tool for management and oversight of the EPA's Nonpoint Source (NPS) Pollution Control Program (http://water.epa.gov/polwaste/nps/index.cfm). GRTS pulls grant information from EPA's centralized grants and financial databases and allows grant recipients to enter detailed information on the individual projects or activities funded under each grant.
Under Clean Water Act Section 319(h), EPA awards grants for implementation of state NPS management programs. State grant recipients are required to report annually in GRTS their progress in meeting milestones, including reductions of NPS pollutant loadings and on improvements to water quality achieved by implementing NPS pollution control practices.
GRTS enables EPA and States to demonstrate the accomplishments achieved with the use of 319(h) grant funds. The data entered into GRTS is used by the Agency to respond to inquiries received from Congressional committees, the White House, and various constituent groups.

For a mapping application showing Non-point Source Projects by watershed, see
http://iaspub.epa.gov/apex/grts/f?p=110:95:0::NO:::.

Healthy Watersheds Program
EPA's Healthy Watersheds Program (HWP) goals are to maintain our Nation's existing healthy watersheds and raise the visibility and importance of protecting high quality waters and the services they support. Working with state and other partners, HWP seeks to build capacity to identify healthy watersheds and future vulnerability to climate change and human population growth using science-based, data driven methods that recognize watersheds as dynamic, interconnected systems defined by landscape condition, hydrology, geomorphology, habitat, water quality, and biology. EPA works with states to identify healthy watersheds through integrated assessments that use the best available geospatial and field-collected data to develop statewide screening level maps of relative watershed health and vulnerability. The assessment is based on landscape regression modeling at the NHD+ catchment scale. Assessment results are intended to help inform state clean water and natural resource programs in their efforts to protect healthy watersheds so that the public can continue to enjoy the many benefits and services they provide. A copy of the *California Integrated Assessment of Watershed Health*, a collaboration between HWP and California Healthy Streams Partnership, can be found at
http://www.mywaterquality.ca.gov/monitoring_council/healthy_streams/docs/ca_hw_report_111213.pdf.
To learn more about HWP, please contact Program Director, Laura Gabanski, at Gabanski.Laura@epa.gov and visit the HWP website at http://water.epa.gov/polwaste/nps/watershed/index.cfm.

National Estuary Program (NEP)
The NEP was established under Section 320 of the 1987 Clean Water Act (CWA) Amendments as a U.S. Environmental Protection Agency (EPA) place-based program to protect and restore the water quality and ecological integrity of estuaries of national significance known as the National Estuary Programs (NEPs). Section 320 of the CWA calls for each NEP to develop and implement a Comprehensive Conservation and Management Plan (CCMP). The CCMP is a long-term plan that contains specific targeted actions designed to address water quality, habitat, and living resources challenges in its estuarine watershed.
Each NEP has a Management Conference (MC) made up of diverse stakeholders including citizens, local, state, and Federal agencies, as well as non-profit and private sector entities. Using a consensus-building approach and collaborative decision-making process, each MC works to implement the CCMP. The MC ensures that the CCMP is uniquely tailored to the local environmental conditions, is based on local input, and supports local priorities. Currently there are 28 estuaries located along the Atlantic, Gulf, and Pacific coasts and in Puerto Rico that have been designated as estuaries of national significance. Each NEP focuses its work within a particular place or boundary known as the Study Area which includes the estuary and surrounding watershed. For a map of each NEP Study Area and links to each of the 28 participating estuaries, see http://water.epa.gov/type/oceb/nep/.

Cleanups in My Community (CIMC)

Use Cleanups in My Community to map and list areas where hazardous waste is being or has been cleaned up throughout the United States.

What cleanups are included:

- Superfund National Priority List (NPL) sites, RCRA Corrective Actions (CA) and Brownfields properties
- Federal facilities under EPA's cleanup programs
- Removals from EPA's epaosc.net site
- Note: Filtering based on Institutional and Engineering Controls, and Environmental indicators is provided where the data are available

What cleanups are not included:

- State cleanups
- Non-NPL Superfund sites
- Non-Corrective Action RCRA sites
- Renewable energy potential at sites
- Cleanups of leaking underground storage tanks
- National Response Center spills

Other boundaries and points of interest that can be mapped with CIMC:

- Tribal lands
- Congressional districts
- Brownfields grant areas (with the ability to drill down to further information)
- Water monitoring stations (with the ability to drill down to further water quality information)

For more information, see **http://ofmpub.epa.gov/apex/cimc/f?p=cimc:63:0:::::**