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Using Watershed Assessments to Inform Planning for Rural Watersheds

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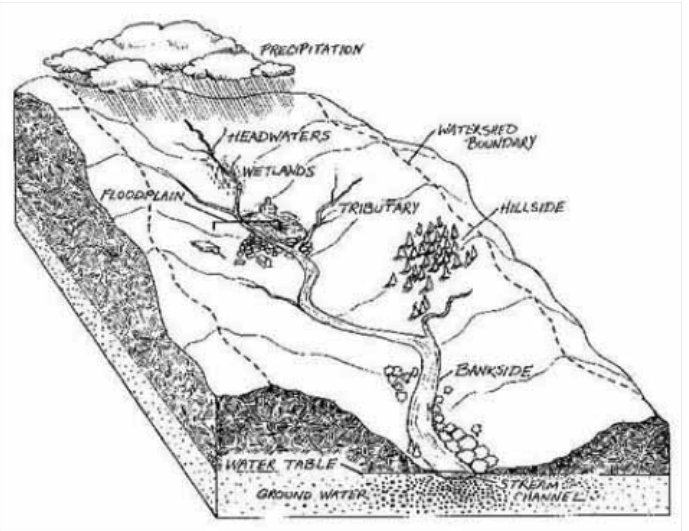
Introduction

This guide focuses on a process for developing a baseline watershed assessment, and is based on both the Water Resource Research Center's (WRRC) broader watershed management and planning experience, and lessons learned through working with the Gila Watershed Partnership in eastern Arizona on a baseline assessment for the Gila River watershed. A baseline watershed assessment is an accounting of the existing conditions in a watershed. In this guide we provide recommendations for engaging with stakeholders to assess natural resource conditions, as well as basic information to collect to create a baseline assessment. Stakeholder engagement is critical to the success of watershed planning efforts. By incorporating input from your stakeholders in the baseline assessment you will ensure that your watershed planning efforts contain the information necessary for decision making and build partnerships that will be essential for implementing a watershed plan. The exact data collected to construct the baseline assessment will vary based on the interests of stakeholders, the amount and type of information available for the watershed, and the focus of the overall watershed planning effort.

Watershed planning is not a simple, quick process. This guide addresses just the first steps of building a watershed assessment– understanding the current conditions and issues facing your watershed. Beyond the watershed assessment phase is the hard work of utilizing the information from the assessment, along with the results of additional stakeholder feedback, to develop an actual watershed plan. There are many difficult issues that could be addressed in a watershed plan that are beyond the scope of a watershed assessment. For example, a watershed plan should consider community priorities for how and where water is used and how current water uses impact the watershed. Discussions about shared management of water resources across political boundaries and stakeholders are complex. For this reason, it is not unreasonable for a watershed assessment and planning process to span more than two years. This guide provides an outline of how to complete the watershed assessment portion of your watershed planning effort, but does not provide a detailed step-by-step process. Rather, this document is intended as a resource to help guide you in your efforts by providing suggestions based on real-world watershed planning experience. The steps we outline in this report will require research, planning, patience, and commitment to complete.



Conceptual watershed cross-section.
Image courtesy of US Environmental Protection Agency

What is Watershed Planning?

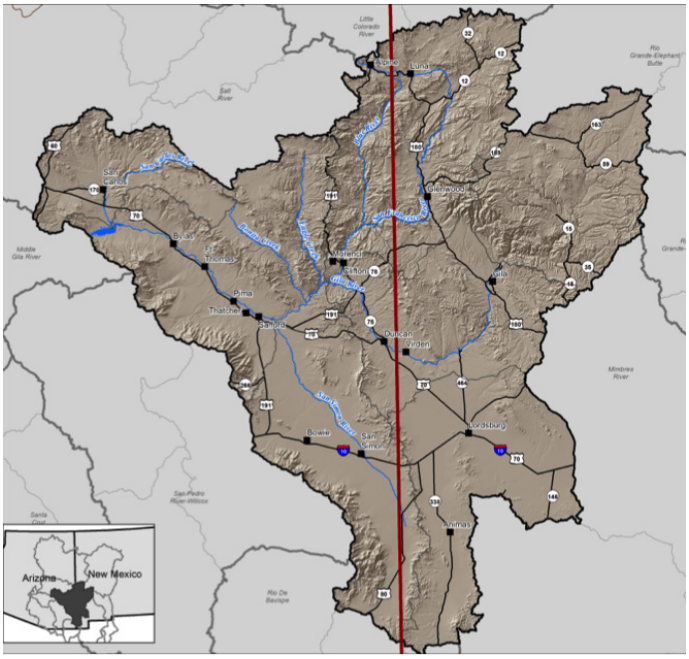
What is a Watershed?

Simply defined, a watershed is the total land area above a certain point on a stream or river that drains past that point[1]. A watershed is also called a catchment or basin. These terms generally have the same definition. Catchment refers to the land area that "catches" and drains storm water and other runoff to an outlet where the elevation is the lowest. Basin has the same connotation and conjures a visual image of a sink or bathtub, which can be helpful in explaining the watershed concept.

Watersheds come in many sizes. A large watershed can contain many smaller ones. The size of a watershed depends on two primary factors: the size of the stream draining the watershed and the topography of the region. Generally, the outlet of a watershed is where a stream or river empties into a larger stream or river; for the largest watersheds, this emptying point is the ocean. The Colorado River Watershed (or Colorado River Basin as it is often referred to) is defined as all of the land drained by the Colorado River and all of its tributaries down to the Colorado River's end point where it meets the Gulf of Baja California. Similarly, the Gila River Watershed, a watershed within the Colorado River Basin, is defined as all the land drained by the Gila River and all of its tributaries down to the point where the Gila River joins the Colorado River on the Arizona-California border. You can also identify very small watersheds, for example a small desert wash that runs for only a mile or two before it connects with another wash has its own watershed.

Topography is important in distinguishing watersheds too. Hills and mountains usually divide one watershed from its neighboring watershed. As a result, in mountainous areas like Arizona's White Mountains, there are many watersheds with very small land areas. In contrast, flatter places like the Great Plains tend to have larger watersheds, even though they may be for very small streams.

The United States Geological Survey (USGS) has developed a standardized system for dividing and subdividing watersheds from very large, regional watersheds down to very small, local watersheds. This system allows for clarity and consistency in the definition of watersheds and a common basis for collection and analysis of hydrologic data. Each watershed defined by the USGS system is given a Hydrologic Unit Code (HUC) that identifies the size and location of the watershed. A two digit watershed is very large, e.g. HUC 15 is the lower Colorado River Basin. Additional numbers are added to further subdivide a watershed. For example, HUC 1504 is the Upper Gila River Watershed above the Coolidge Dam, and HUC 15040006 is the San Simon River Sub-watershed. These examples are nested watersheds, so the San Simon River Sub-watershed is a part of the land area of the Upper Gila River Watershed, and the Upper Gila River Watershed is in turn part of the land area of the lower Colorado River Basin. Notice the related HUC codes use numbers that reflect their nested geography.



Upper Gila River Watershed – HUC 6 with smaller HUC 8 watersheds outlined in light grey. Inset map shows the HUC 6 watershed, in grey, and surrounding watersheds.

Why Watershed Planning?

Watershed planning offers the opportunity to consider a wide range of resources and issues in a comprehensive way. It provides an excellent opportunity for you to integrate issues of water supply and human demand with the needs of natural areas, such as rare riparian habitats. Furthermore, it enables your community to look comprehensively at human and environmental resources throughout a hydrological system. Traditional land use planning does not take this comprehensive approach.

One limitation of traditional approaches to land use and natural resources planning is these approaches are often constrained to political boundaries and address a limited set of issues. For example, land use planning typically will address growth, economic development, land use, and natural resources within a given town, city, or county. A land use plan often will not consider issues beyond the political boundaries of the planning area, even though management of these peripheral lands can impact the town or county. Planning at the watershed scale allows for you to consider impacts across the system, without neglecting impacts that occur on the other side of a political boundary, such as a county line.

The use of land affects the supply of and demand for water resources, riparian resources, and habitats. Climate change will also have long-term impacts on natural and water resources.

[1] Brooks, K. N., Ffolliot, P. F., Gregersen, H. M., & DeBano, L. F. (2003). *Hydrology and the Management of Watersheds. Ames:* Iowa State Press.

However, land use plans generally do not take these elements into consideration. When the focus broadens from political boundaries alone to an entire watershed, water resources and an expanded list of issues can be considered more comprehensively. Using a watershed planning approach will enable you to coordinate across political boundaries, which may result in better land use and water management.

Just as the size of watersheds varies, so too does the scale and scope of watershed planning efforts. In your watershed planning effort you should select the appropriate scale of watershed to meet your interests and concerns. Generally, selection of a smaller watershed will allow for more in-depth analysis, while selection of a larger watershed allows for general characterization of resources and trends.

Many watershed planning guides, for example the Environmental Protection Agency's (EPA) comprehensive *Handbook for Developing Watershed Plans to Restore and Protect our Waters*[2], focus on watershed planning as a means of identifying and addressing water quality issues in streams, rivers, and lakes. This focus is the result of requirements outlined in the Clean Water Act Section 303d. In Arizona, attention to water quantity is also an important consideration for watershed planning.

The EPA[3] recommends a six step watershed planning process:

1. Build partnerships
2. Characterize your watershed
3. Finalize goals and identify solutions
4. Design an implementation program
5. Implement a watershed plan
6. Measure progress and make adjustments

Resources Required

An essential first step before beginning any baseline watershed assessment or planning work is to identify community stakeholders to build support and partnerships for a watershed planning effort. Watershed planning cannot take place in isolation; a plan generated in an office by government officials or university researchers will not have credibility with various community stakeholders and will be difficult to implement. Stakeholder involvement and a sense of ownership in the process are needed to ensure that the final plan adequately responds to community interests and concerns.

As indicated above, watersheds do not conform to political boundaries – towns, cities, counties, or even states. Coordinating planning efforts across jurisdictions promotes greater inclusivity, regional cooperation, and increases the likelihood of successfully achieving management goals. A watershed planning effort provides context for different political jurisdictions and non-governmental stakeholders to work together and may help you overcome past conflict or animosity.

To successfully complete your watershed assessment, and eventually your watershed plan, you will need either volunteer labor or grant funding to support staff time and access to Geographic Information System (GIS) software. While volunteers can successfully lead the development of a watershed assessment, the assessment process is long and requires hundreds of hours of work with stakeholders, research into the history and resources of the watershed, and GIS analysis to accurately map baseline conditions of the watershed. It takes tremendous dedication to complete all the required work as a volunteer. Rather, we recommend working with partner organizations in your community to identify funding and professional support for the project. In some cases, there are governmental or non-governmental organizations in a community that can commit the time of a staff member to the project with or without supplemental funding. In others, it is necessary to work with community partners to obtain grant funds to support your watershed assessment and planning efforts.

Geographic Information System (GIS) technology is the primary tool for analyzing the data you will gather during the course of your watershed assessment and planning efforts. The software package used by most GIS professionals is ArcMap made by ESRI, Inc. There are a number of different options for acquiring a copy of ArcMap. First, many cities, towns, and counties already own ArcMap for their planning and natural resources work. It may be possible to establish a partnership with a public agency to gain access to their GIS software.

ESRI also has programs for discounted and donated software to aid eligible non-profit organizations. Alternatively, there are many less expensive and sometimes open-source GIS programs available. For example, Google Earth has been identified as a more user-friendly software option by some local organizations, although this program does not currently offer as many tools as ArcMap.

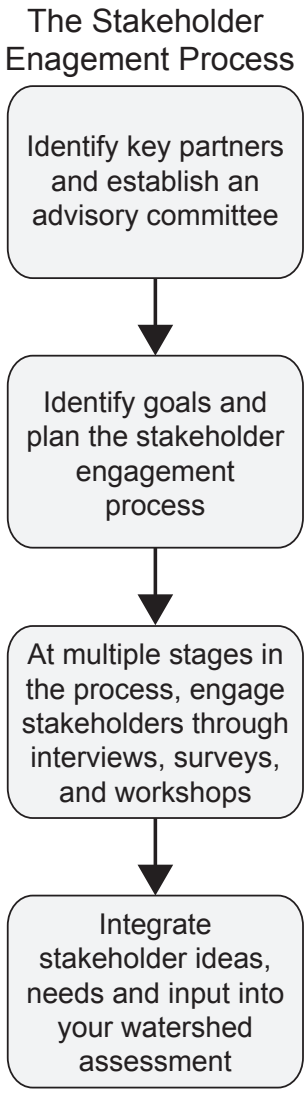
Developing a Baseline Watershed Assessment

What is a Baseline Assessment?

A baseline watershed assessment is simply an accounting of the existing conditions in a watershed. The goal is to document the current status of: natural resources, water resources, human development, land ownership, sources of pollution, and other relevant factors that affect the current and future health of the watershed. A baseline assessment may also include trend data such as yearly precipitation over time, population change,

[2] Environmental Protection Agency. (2008, March). *Handbook for Developing Watershed Plans to Restore and Protect Our Waters*. Washington, D.C.: Environmnental Protection Agency. Retrieved from United States Environmental Protection Agency: http://water.epa.gov/polwaste/nps/handbook_index.cfm

[3] Tetra Tech, Inc. (2013). *A Quick Guide to Developing Watershed Plans.* Washington, DC: Environmental Protection Agency.



and change in land use. The exact data collected to construct the baseline assessment will vary based on the interests of stakeholders, the amount and type of information available for the watershed, and the focus of the overall watershed planning effort. When developing a baseline watershed assessment for your watershed, it is helpful to think of the assessment as an atlas of the watershed. The goal of a baseline assessment is to gain a clear understanding of watershed conditions as they exist at the time the assessment is developed. It is a snapshot in time that provides a common basis for stakeholders to engage in a conversation about the watershed.

Stakeholder Engagement

Stakeholder engagement is the cornerstone of a successful watershed planning effort. You can launch your watershed planning efforts on a solid footing by including a wide range of stakeholders in the baseline watershed assessment process. While much of the process of developing a baseline assessment (data collection and analysis) does not occur in public meetings, stakeholders have an important role to play in helping define the key resource concerns of the community. In turn, these identified resource issues provide a guide for the data to collect and maps to produce.

The baseline assessment process is well suited to engaging stakeholders with a technical background. Land use planners; local, state, and federal agency staff; watershed organization members; and conservation organization staff all have knowledge of natural resources and land use issues in their area of expertise. Often, they will know where to find data related to specific issues raised in the course of the stakeholder process.

Step 1: Identify Key Partners

In many cases, stakeholder engagement is most effective when community leaders are directly involved and have a clear sense of ownership in the process. This signals to other stakeholders that the effort is legitimate and is honestly seeking stakeholder involvement. Community leaders are considered key partners, and it is important to engage them at the very inception of your watershed assessment and planning process, often even before funding for the project is secured and the overall project goals and process are developed. Including key partners from the very beginning in project design and funding proposals communicates that stakeholder engagement is valued.

When conducting initial outreach to key partners, consider the following:

- The diverse audiences you need to engage to ensure a comprehensive watershed assessment and planning effort, e.g. agriculture, urban, agency, and non-governmental stakeholders;
- Leaders within these key stakeholder groups;
- Individuals that can effectively represent more than one stakeholder group; and
- Individuals in your community with stakeholder engagement experience.

While it is important to include key partners in the project development process, it is also necessary to keep the initial stakeholder group relatively small. The purpose of this group is to establish support for the overall concept of the watershed assessment and planning process, assist project leaders in developing funding proposals as necessary, and contribute to the design of the watershed assessment process.

Step 2: Plan the Stakeholder Engagement Process

Before initiating broad stakeholder engagement, project leaders and key partners should carefully plan the process and the overall goals of stakeholder engagement. There are a number of different approaches to gathering feedback from stakeholders, including surveys, interviews, and workshops. The approach selected will depend on the particular characteristics of the community where the assessment is being conducted. Surveys are efficient at collecting data from a large number of people, especially when using online survey tools. Interviews are a good way to collect detailed information from

individuals or small groups, but can also require a significant investment of time depending on the number of interviews conducted. Workshops are a highly efficient way to collect information and opinions from a large group of people in a short period of time. If using a workshop approach, using an experienced facilitator will help to ensure you achieve your desired results.

It is also important to think about how the process of developing the baseline assessment will proceed after the initial stakeholder engagement phase. How will you continue to engage stakeholders throughout the process? When will you present progress and results to stakeholders and seek additional feedback? Every project will be unique in the way it answers these questions. In some cases, the initial stakeholder engagement process will be adequate. Additional engagement may not be necessary until the final results of the baseline assessment are available. However, most projects will find it advantageous to check in with stakeholders periodically during the compilation of the watershed assessment to ensure the project is on track and that stakeholder interests have not changed. If there is an existing community organization, such as a watershed group that meets on a regular basis, this is an excellent forum to present ongoing work and results.

The purpose of the stakeholder engagement process is to define the scope and goals of the watershed assessment project and, once the project begins, to receive feedback on progress, results, and acceptance of the final outcomes. In addition, stakeholders are a good source of information about the watershed. Many stakeholders, especially agency personnel and watershed organization members, may know where to acquire difficult to locate data relevant to the assessment that is difficult to find. Examples include information on the social, cultural, legal, political, and natural history of the watershed.

When thinking about the specific goals for your stakeholder process, consider the following questions:

- What are stakeholders in your watershed concerned about?
- What are the major challenges facing your watershed, e.g. population growth, land use change, drought, endangered species, etc.?
- Which stakeholders do you need to engage to ensure a diversity of issues is addressed and that the process has credibility in the community?
- What are your goals for the watershed planning process and what information is needed to achieve these goals?

The following are excellent resources for understanding the advantages and disadvantages of various process designs:

- Creighton, J.L., 2005, The Public Participation Handbook: Making Better Decisions Through Citizen Involvement, San Francisco: Joey-Bass
- Slocum, N. Participatory Methods Toolkit: A Practitioner's Manual, 2nd Ed, in collaboration with ViWTA and King Baudoin Foundation, Brussels (http://archive.unu.edu/hq/library/Collection/PDF_files/CRIS/PMT.pdf)

Before you begin your stakeholder engagement effort, you should ensure that everyone on your leadership team clearly understands the process and agrees with the approach. Consistency in approach and communication between project leadership and different stakeholder groups is important to avoid confusion and ensure an uncomplicated process. It is also important that all stakeholder groups are given the same explanation of the process and opportunity to suggest changes; inconsistencies may make some groups feel marginalized or that their opinion is not as highly valued as others.

Step 3: Stakeholder Engagement

Once you have determined your process, you are ready to begin engaging stakeholders. The first step of implementing any stakeholder process is to clearly define the purpose, goals, and limitations of the project with participants. It is important that everyone is in agreement about the purpose and scope of the project. This helps manage expectations and avoid conflict or disappointment after the process has begun. You should explain very clearly what a baseline watershed assessment is and what it is not – a snapshot of current conditions in the watershed, not a plan or a decision-making document.

Another best practice for stakeholder engagement is to check-in early with stakeholders about the process and the people you are including. By asking stakeholders at the first meeting or in an initial interview if there is anyone missing that should be involved, you make clear that you are genuinely interested in including all points of view. This is easiest if you are using a workgroup or workshop-based approach; it can also be accomplished through interviews or other individual engagement approaches. Providing stakeholders with the opportunity to comment on the process design and influence changes will help increase understanding of and buy-in for the watershed assessment.

Regardless of the process you design, it will likely need adjusting as you go. Stakeholder engagement is dynamic and challenging. Flexibility to respond to challenges and new opportunities throughout the process is important. But, be careful not to lose sight of the end goal of the process – the watershed assessment.

Basic Data Needs

The baseline assessment is meant to inform later watershed planning, so it is not necessary to collect data that will not aid that effort. However, we have found there is a basic set of readily available data that should be included in any baseline assessment to provide a fundamental understanding of watershed conditions.

A wide range of geographic data is readily available on the Internet from reputable sources. A list of outlets for this type of data is included in Box 1.

Most geographic data is available in file formats designed for use with Geographic Information System (GIS) software. Use of GIS programs requires some expertise, depending on the complexity of analysis desired. More information about data analysis is included in the Analysis section of this report.

Box 1. GIS Data Sources

US Bureau of Land Management (BLM) and US Forest Service (USFS)

The BLM and USFS have a range of natural resources data available for the lands they manage including special management areas like wilderness and burn areas for large wildfires.

US Fish and Wildlife Service (USFWS)

The USFWS has a range of natural resource data available for national wildlife refuges and detailed data for many threatened and endangered species.

US Geological Survey (USGS)

The USGS is the geologic research arm of the U.S. Department of Interior. USGS datasets include information on watershed boundaries, stream gages, and topography.

US Census Bureau

The Census Bureau is an excellent source for population and socio-economic data at the community, county, and state levels.

National Atlas

The National Atlas is a web based clearinghouse for national datasets ranging from agriculture to transportation to geology.

Arizona State Land Department

The State Land Department maintains the Arizona Land Resource Information System (ALRIS) that contains over 50 datasets ranging from land ownership to legislative district boundaries.

Arizona Game and Fish Department (AGFD)

AGFD It has a wide range of habitat and wildlife data available including existing and modeled riparian habitat and perennial and intermittent stream reaches.

Arizona Department of Environmental Quality (ADEQ)

ADEQ has many data sets related to water quality including information on impaired rivers and streams and hazardous waste sites.

Arizona Department of Water Resources (ADWR)

ADWR houses data sets related to water quantity including surface water claims and groundwater well locations. An overview of water resources in each groundwater basin in the state can be found in the Arizona Water Atlas on the ADWR webpage.

County and local governments

Data on zoning, land use, and local water use is often available from the associated county and/or city.

University of Arizona and other universities

The University of Arizona is an excellent source for data on natural resources, land use, and water resources. Other public universities and colleges are also good sources for GIS data.

Geographic data available in GIS formats is known as *geospatial data*. Geospatial data is a special type of data that allows for the accurate placement of information on a map. Put another way, geospatial data enables you to create a digital representation of the data and incorporate it into a map on your computer screen. This is because geospatial data is georeferenced, meaning each piece of geospatial data is tied to a specific location on the Earth's surface. Geographic Information Systems are a powerful tool for visualizing a wide variety of data types and conducting both simple and complex analyses to discover trends and relationships that would not be obvious otherwise.

Begin by thinking about the basic types of information you would expect to find in a natural resources atlas of your watershed. Consider natural and water resources like land cover, flood plains, designated habitat for endangered species; and the human presence in the watershed such as development patterns, roads, and population growth. We recommend including the following datasets in any baseline watershed assessment:

- Physical geography
    - Depth to groundwater (and historical depth to groundwater)
    - Ecoregions or vegetative communities as defined by the Environmental Protection Agency or The Nature Conservancy
    - Geology, soils, and soil erodibility
    - Land cover (and historical land cover)
    - Location of wells and well yields
    - Perennial, intermittent, and ephemeral streams
    - Springs and riparian areas
    - Towns, roads, landmarks, railroads
    - Mean fire return intervals and risk to wildlife
    - Perimeters of wildfire areas and burn severity
    - Surface water rights, and points of diversion
- Political geography
    - Critical habitat for endangered species
    - Irrigation district boundaries
    - Instream flow rights and waters with special designations, e.g. Wild and Scenic Rivers (Federal designation) or outstanding waters (Arizona Department of Environmental Quality designation)
    - Land ownership
    - Land use
    - Population (and historical population)
    - Water adequacy determinations
    - Water demand (and historical water demand)

- Water quality, including impaired lakes and streams, and areas where water quality parameters, such as arsenic and total dissolved solids (TDS), exceed the federal and state standards

As you collect geospatial datasets, it is important to perform some quality control. Spelling errors, even simple translocation of letters (e.g., Rio Puerco vs. Rio Peurco) can reduce the success of queries and other data analyses, because each unique spelling is treated as a different piece of data. Sometimes, conflicting datasets with similar subject matter may be available; research which option(s) are most appropriate for your use before you begin.

Metadata (sometimes called data about data) are information about the source, date of creation, and methodology used to compile datasets, including changes you make to the data (e.g. additions, deletions, analyses). Metadata can also include information about attribute tables, including a key to decode any abbreviations or codes used. Unfortunately, metadata are often neglected and many GIS datasets have incomplete or completely absent information about the data within them. Taking the time to edit and add metadata is worthwhile, as it can be used to validate whether a dataset is reliable and current. Some datasets are accompanied by a separate document containing field codes. Adding this information to the metadata permanently couples the information and makes it available for any future use of the data.

We recommend you create a single database to house and access all datasets collected. A geodatabase stores data in a central location and with a common spatial reference. Special rules and relationships between datasets can be established within a geodatabase to aid analysis. The analysis of spatial data is typically limited to a geographic region of interest. When collecting data, we recommend retaining the full extent available, within the bounds of reason. Future projects may lie outside your watershed and including a larger extent now will increase the long-term utility of the data.

Building and Using a Database

Once you have planned and carried out a successful stakeholder process and collected a wide variety of spatial data about your watershed, the next step is to begin building and analyzing maps using GIS software.

The exact maps you create will depend on the data you have collected and the resources, issues, and concerns specific to your watershed. However, there are a few key maps we recommend every community create because of their utility for any watershed assessment or planning process:

- Areas with special management such as national parks, wilderness areas, and critical habitat
- Basic infrastructure, e.g. roads and bridges
- Biotic communities
- Depth to groundwater
- Land ownership
- Land use, e.g. boundaries of municipal, agricultural, and mine areas
- Location of dams, stream gages, and precipitation gages
- Perennial and intermittent streams
- Soil erodibility
- Well yields

In addition, maps showing changing conditions over time should be included:

- Change in depth to groundwater over time
- Land use and land cover change over fixed intervals as data allows, e.g. every 10 years from 1970 to present
- Population change over fixed intervals as data allows, e.g. every 10 years from 1970 to present
- Quantity and distribution of groundwater wells drilled over time
- Water demand change over time

Using Models

A model, in the GIS context, is a simulation that runs within your software system. Most models use empirical data from past studies, statistics, and mathematical algorithms to replicate the impact of an action or change that occurs within a watershed. The predictive power of models varies depending on the amount of data used, the accuracy of that data, and the suitability of the model for the character of your watershed. Models go beyond the static maps recommended in the Analysis section above by providing information about the potential impacts of decisions on the watershed. Therefore, models are a powerful planning tool. They allow you to evaluate potential effects of management decisions before changes are implemented on the ground. At the same time, models are complex and often require large datasets and nearly always demand intermediate to advanced GIS skills.

One model that can be useful in watershed planning is the Automated Geospatial Watershed Assessment (AGWA) Model. The AGWA model was developed at the University of Arizona with the USDA-Agricultural Research Service and EPA. It has been used in a number of watersheds in the desert southwest and is able to calculate sediment yield and runoff when given data for topography, soil, land cover, and precipitation. We have found the AGWA Model is relatively easy to use and that it provides useful information on watershed change overtime.

Putting it all together

How you choose to share the outputs of your data analysis efforts with the public is also important. There are many formats available – online, posters, a book or report, or atlas-style to name a few. We recommend creating an atlas for your watershed. Atlases present data and maps in a clear, simple, and familiar way. They are easy to assemble and can be provided to stakeholders in both print and electronic formats. A typical format for an atlas will include:

1. An introduction of the purpose of the project and recommended uses;
2. A basic narrative description of the watershed, its location, and important historical events to provide some context for what the atlas will describe;
3. A series of maps, each accompanied by a narrative explanation interpreting important map features, and explaining the significance of the data for the management of the watershed and how it should affect watershed planning efforts; and
4. A summary description and key maps resulting from the use of any models developed for the watershed.

Updating your Assessment

A watershed assessment is a snapshot of watershed conditions as they exist at the time it is published. New data sources and updated datasets become available frequently, making your assessment "out-of-date" virtually from the day it is published. Generally, this is not a problem if you plan to immediately take the next step and initiate a watershed planning process. While watershed planning is involved and can take a long time to complete, sometimes years, it is not necessary to continually update your assessment throughout the process. Your assessment will continue to serve its purpose as a snapshot of watershed conditions and basis for common knowledge for stakeholders, regardless of whether you take the time to update it as new data becomes available. Trying to keep up with new data may be just a distraction from the watershed planning process itself and cause the planning effort to take longer than necessary.

If your watershed assessment is an endpoint, meaning you do not intend to take the next step and develop a full watershed plan, consider periodic updates of your assessment. It is generally not necessary to update your assessment more than every few years. Keeping your assessment current will maintain it as a resource for your community, should you decide to initiate a watershed planning effort in the future.

From Assessments to Planning

A baseline watershed assessment is not a watershed plan. Rather, it is a starting point for a planning effort. A watershed assessment provides a foundation for common understanding of the current status of your watershed, enabling all stakeholders to participate in pursuing a watershed plan. In addition, a watershed assessment helps to highlight and quantify major issues and challenges facing your watershed. For example, a watershed assessment may provide a clear picture of urban growth, changes in water use patterns, or trends in precipitation and drought. Without this information, your watershed plan may neglect to address some of the most important issues facing your community. We recommend the development of a watershed assessment before the initiation of any watershed planning process.

The primary difference between a watershed assessment and a watershed plan is, generally, a watershed assessment looks back while a watershed plan looks forward. A watershed assessment is a characterization or inventory of the watershed as it is now and how it has changed over time based on actual data. A watershed plan uses the information from the watershed assessment to develop an understanding of the future and to steer the watershed in a particular direction.

Your watershed assessment will play a critical role in your watershed planning effort. The assessment provides important information about the current status of the watershed. Regardless of the approach you take to watershed planning, be it a short term plan designed only to address current issues or a long term plan that uses scenarios to evaluate potential future conditions, understanding where you are now is essential. You will use your watershed assessment to inform stakeholders of current conditions and ensure there is a common understanding of the watershed at the outset of the watershed planning process. It will inform the selection of key issues and uncertainties to be addressed as a part of your planning efforts. As you progress through the planning process, the assessment can provide an important reality check: is the direction your plan is taking realistic relative to current conditions? Does the plan align with the issues identified in the assessment process or have your planning efforts drifted? A baseline assessment provides more than just an accounting of current conditions—it is a guide for your watershed planning efforts.

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