

# America's Watershed Initiative Mississippi River Watershed Report Card



PRELIMINARY RESULTS



## Goals measured in the America's Watershed Initiative report card

America's Watershed Initiative worked with a variety of river users and stakeholders to identify six broad goals for the Mississippi River watershed. The goals were shared and refined at the America's Watershed Initiative Summit in 2012, and are the key foundation for the report card. Indicators were identified using feedback from stakeholders at the basin workshops. These indicators are listed below each of the goals.



**Transportation:** Serve as the nation's most valuable river transportation corridor.

- Stoppages
- Tonnage
- Condition
- Maintenance



**Water supply:** Maintain supply of abundant, clean water.

- Designated use
- Health based violations
- Water supply stress index



**Flood control:** Provide reliable flood control and risk reduction.

- People at risk
- Levee inspection
- Community preparedness



**Economy:** Support local, state, and national economies.

- Employment
- Income
- Production



**Ecosystems:** Support and enhance healthy and productive ecosystems.

- Nutrient yield
- Nitrogen
- Phosphorus
- Benthic
- Fish
- Riparian
- Woody wetlands
- Extent of hypoxia



**Recreation:** Provide world-class recreational opportunities.

- Participation
- Licenses
- Access

## Why develop a report card?

The Mississippi River watershed is a globally important resource, providing water resources for people, industries, ecosystems, food and energy production, and transportation of important agricultural and industrial commodities. Management of the watershed, which includes parts of 31 states and two Canadian provinces, is challenging given these potentially conflicting uses and services.

Across the watershed and each of its major basins, a wealth of information is available from science, management, and other sources, which is a tremendous resource. However, interpretation of this information is also challenging: how do we distill key messages and findings from such a broad base of information and make them accessible to decision makers? This is ultimately why we are creating America's Watershed Report Card.

The report card will bring together a variety of relevant, easily understood, and transparent indicators to measure watershed goal status. The report card will synthesize complex information into a clear understanding of management goal achievement in five watershed basins, and the larger Mississippi River watershed.

When finalized in Spring 2015, the America's Watershed Initiative Report Card for the Mississippi River watershed will present overall status for six broad social, environmental, and economic goals. This report card will provide valuable insight to community and business leaders, policy makers, media, and the public. The easily understood information will present the status of the Upper Mississippi, Lower Mississippi, Ohio, Missouri, Arkansas and Red, and the larger Mississippi River basins. It will help us track successes, identify areas that need improvement, and support a more integrated and balanced approach for management in the Mississippi River.



*The backwaters of the Upper Mississippi River, Pool 7 known as Lake Onalaska. Close to the confluence of Wisconsin's Black River and the Mississippi River. Image courtesy of Robert J. Hurt.*



# The AWI report card is a cooperative process

The report card uses information and direction from a diverse group of partners, including managers, stakeholders and participants in each basin with expertise related to the America's Watershed Initiative's six management goals. Over the last year, the report card team traveled throughout the five basins, from Moline, Illinois to Memphis, Tennessee, and from Tulsa, Oklahoma to Rapid City, South Dakota, to listen to the experts who participated in the basin workshops. We are also addressing key issues at the watershed scale, which came up at the basin workshops as well as the watershed-wide workshop in Arlington, Virginia. Through this process, we brought together key leaders in each basin to create a data-driven and easily understood report card that includes the issues and concerns most important to each basin and to the Mississippi River watershed.



*The number of people contributing to the report card continues to grow with each new workshop.*

## A regional workshop approach was used to develop the AWI report card

The report card process recognizes the major basins are different and the importance of some issues will vary between regions. What is important to measure in one area may not be relevant in others. Because of regional differences, we performed assessments for each of the five basins, and then brought this information together as results for the entire watershed. In the future, we hope the information and analysis can be further subdivided to account for differences at smaller scales.

## Regional experts helped identify the indicators

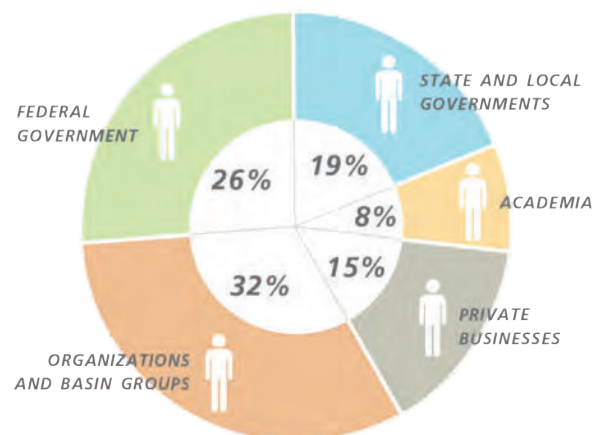
Workshop participants brought expert knowledge on the features, values, issues, and threats that are most important in each basin. Based on these issues, participants identified indicators to measure the six America's Watershed Initiative goals.

## Participation in the report card process is impressive

More than 250 experts and stakeholders participated in a series of 10 workshops and meetings held in each basin. Participants represented over 100 non-profit, private, academic, and local, state, and federal government organizations from 23 states and Washington DC. This process sought feedback from the experts in each basin using a workshop approach, which has created dialogue between a diverse set of organizations that each have a stake in creating a shared vision for management in the Mississippi River basin.



*Workshop participants in the Lower Mississippi Basin workshop in Memphis, Tennessee. Image courtesy of A. Freyermuth.*



*The diversity of sectors and organizations that participated in report card basin workshops.*

**For more information on America's Watershed Initiative Report Card, and the report card development process, visit [www.americaswatershed.org/reportcard](http://www.americaswatershed.org/reportcard)**



# Scores reveal basin similarities and differences

Overall, in preliminary results, the entire Mississippi River watershed earns a grade of C for conditions related to the six goals. A look at the detailed results reveals key similarities and differences among the basins and a need for additional analysis and review. In all basins, municipal water users are generally well served, where other designated uses are impacted. Flood control and risk reduction are a challenge. All basins scored poorly on the number of people at risk from living in the floodplain and on community preparedness for dealing with flooding.

## Missouri River Basin

The Missouri River basin, the longest tributary and largest basin in the watershed, earns a grade of C. Water supply attains the highest grade in preliminary results; however, additional factors must be taken into account, such as groundwater sustainability and emerging new demands for water to provide a full assessment. A poor level of flood preparedness gives the Missouri River basin its lowest grade for the goal of flood control and risk reduction.

## Upper Mississippi Basin

The Upper Mississippi River basin, containing the headwaters of the Mississippi River, earns a grade of C. Recreation attains the highest grade, buoyed by the strength of hunting and fishing license sales. A poor level of community preparedness and increasing numbers of people living in the floodplain gives the Upper Mississippi River basin its lowest grade for the goal of flood control and risk reduction.

## Ohio River & Tennessee River Basins

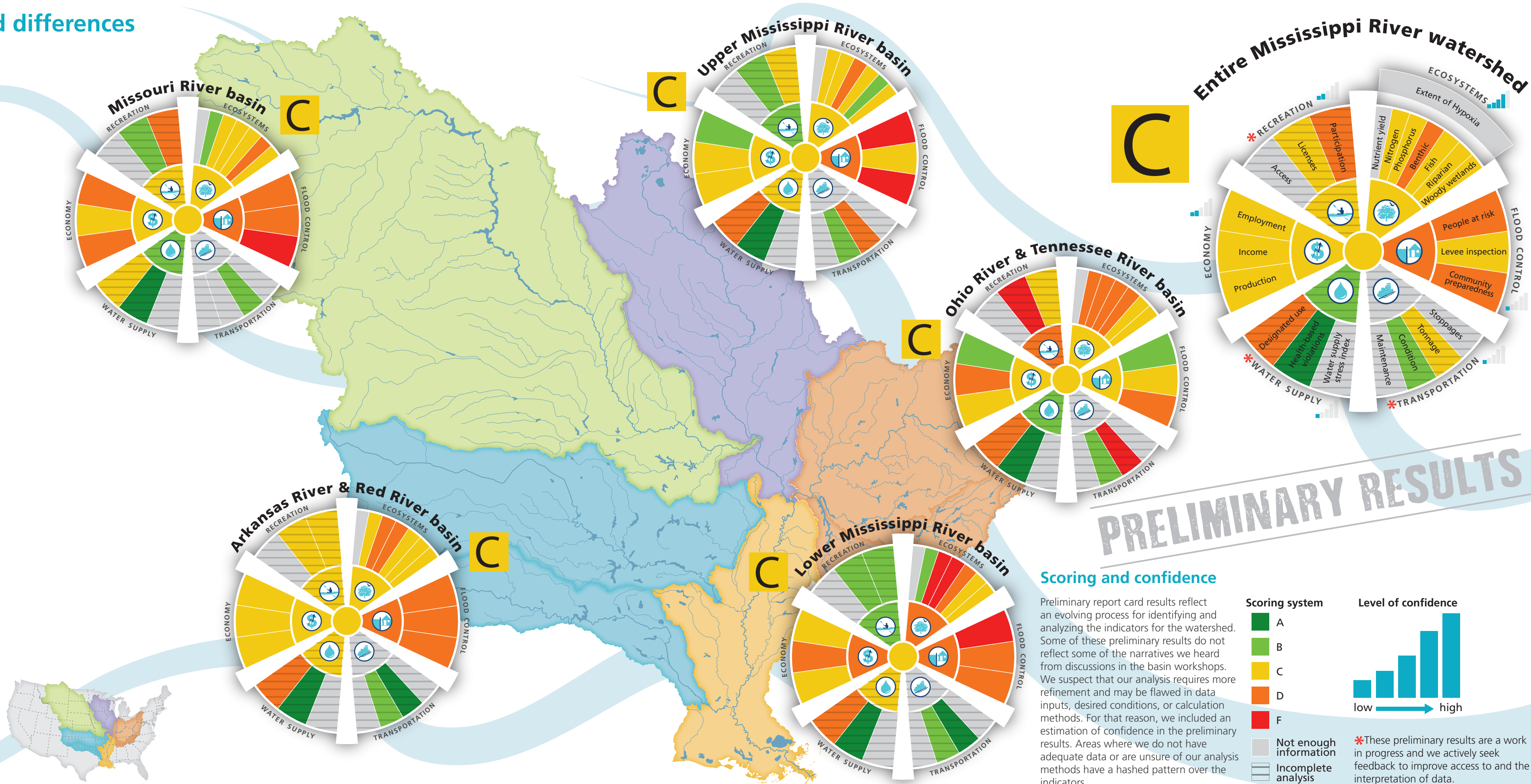
The Ohio River and Tennessee River basins, historically an industrial and transportation corridor of the Mississippi River watershed, earns a grade of C. Water supply attains the highest score in this basin. Water is available generally throughout the basin, and municipal utilities provide a reliable supply of high quality water to over five million people. Declining sales of hunting and fishing licenses give recreation the lowest score in this basin.

## Arkansas River & Red River Basins

The Arkansas River and Red River basins, which represent the driest portions of the Mississippi River watershed, earn a grade of C. The high score for water supply partly reflects the success of coordinated basin-wide management to allocate water according to existing sharing agreements. However, the limited supply of water in these two basins is a constant source of conflict. The basins score poorly on flood control and risk reduction because of a large number of uninspected levees, growing numbers of people at risk from living in the floodplain, and low community preparedness.

## Lower Mississippi River Basin

The Lower Mississippi River basin, the busiest transportation corridor and the basin most threatened by flooding, earns a grade of C. Successful efforts to encourage people to make more use of the natural environment helped recreation score highest. Flood control and risk reduction resulted in the lowest score because the number of people at risk to flooding is growing. The Lower Mississippi River basin also includes the productive but threatened delta region of the river which, due to its unique nature, is not covered well by this initial version of the report card.





# Important challenges emerge at the watershed scale

## Runoff of excess nutrients threatens resources in the watershed and in the Gulf of Mexico

Excess nutrients discharged through the Mississippi River fuel the hypoxic 'dead zone' in the Gulf of Mexico, an area of oxygen-poor water in which fish, shrimp, and oysters cannot survive. Nutrients enter the river in runoff from fields and cities, air pollution, and from wastewater. Excess nutrients cause growth of harmful algae that affect water supplies and reduce recreational opportunities in the watershed. In coastal Louisiana and Texas, nutrient pollution can cause severe economic hardship. The hypoxia indicator is based on the annual extent of the hypoxic zone and nutrient fluxes in the watershed from the upper basins to the lower basin and Gulf of Mexico.

## Growing water scarcity multiplies the impact of new demands

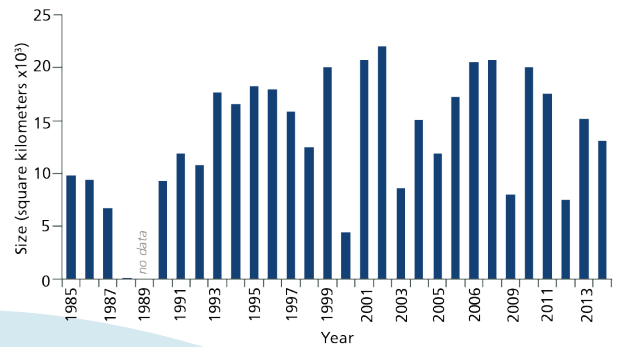
New demands for water are growing in the Mississippi River watershed, while water scarcity is projected to become more widespread both within the watershed and globally. Fast-growing regions of the U.S. outside of the Mississippi River watershed will all require additional water resources, which may put pressure on water resources in the Mississippi River watershed. New users within the watershed will also increase demand for the resource. The future demand for water needs to be considered in the measurement of the six goals.

## Altered climate is changing the Mississippi River

Rainfall patterns, temperature and storms control seasonal river flow and are key factors that directly or indirectly affect the status of all six watershed goals. The scores in this report card reflect current status, but as weather patterns change, these scores will also change. More frequent, intense rainfall will put added stress on flood control, transportation systems and water supplies, and may alter seasonal flows necessary to support healthy ecosystems. More severe and persistent droughts will similarly have major impacts. These changes promise significant economic, environmental and social impacts in all parts of the watershed.

## Failure of aging infrastructure will have regional, national, and global consequences

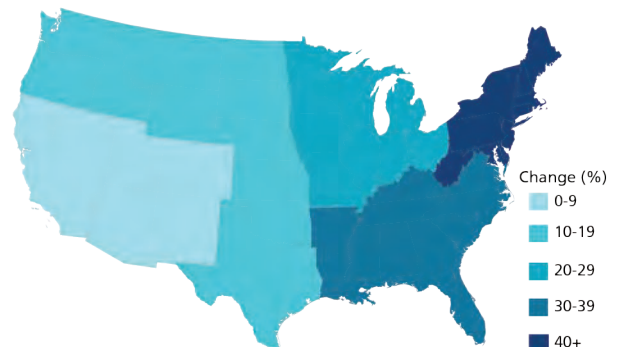
Indicators in the draft report card measure the overall condition of the infrastructure in terms of average condition of individual components, stoppages and tonnage moved. The reliability of the transportation system depends on critical components working together. Failure of one component can have catastrophic consequences to the whole system, yet increased funding needed to maintain aging infrastructure has not materialized. In three out of the five years from 2010–2014, emergency funding was required in addition to the amount spent annually on maintenance dredging, in order to keep water-borne transportation moving through the Lower Mississippi River.



Area of mid-summer bottom-water hypoxia (<2mg/L of dissolved oxygen) 1985–2014. Data source N. Rabalais, R.E. Turner, LSU.



Clean drinking water is essential for residents of the Mississippi River watershed. Image courtesy of NRCS.



Percent increase in amount of precipitation falling in very heavy events (1% of all daily events) from 1958 to 2012 for each region of the continental United States. Adapted from Karl et al. 2009.



Water-borne transportation in the Mississippi watershed is an essential component of the regional and national economy, and the products it exports feed the world. Image courtesy of USACE.

# Give us your feedback

This draft report card has been built through participation and input from hundreds of stakeholders, managers, scientists, researchers, and leaders from each river basin. We have brought together these leaders for a series of workshops, meetings, webinars, and conversations to develop the goals, values, desired conditions, and indicators. This report card reflects their input and their direction.

However, this report card remains incomplete. We recognize that the current suite of indicators and their analysis may not present the entire story, and we need your help. Please participate in the process of improving the report card as we move this project forward.

Following the America's Watershed Summit in Louisville, the report card team will incorporate feedback from the summit on the report card, and will continue to seek additional information that will complete the analysis for the Version 1 report card, which will be released in Spring 2015.



Workshop participants identify resources and threats of the Mississippi River watershed as they relate to the six goals. Image courtesy of A. Freyermuth.

America's Watershed Initiative is a collaboration of organizations, businesses, and agencies that brings a basin-wide perspective to the Mississippi River watershed's greatest challenges. Developing a comprehensive watershed report card is an important component of the Initiative. It will summarize and communicate the status and trends in achieving objectives for six broad management goals. The report card results will encourage people and organizations to engage in issues affecting the watershed.



# Frequently Asked Questions

## 1. How do you account for problems at the large scale of the Mississippi River watershed and its basins, and at specific locations?

The report card reports on data and information aggregated at the very large basin and watershed scales, and it is unavoidable that conditions at specific locations will not match with the basin grade. We hope that future versions of the report card can report on issues at much smaller scales. This will require active participation and assistance from organizations operating at both local and regional scales.

## 2. How were the scores created? What did you compare to?

We used several different ways to develop scores. Ideally, we used scores that were already generated using accepted methods. When not possible, we compare the most recent data to the range of historic values or to the national average. Unfortunately, the time series of available data varies among indicators. We recognize that this is a limitation, particularly where important long-term trends may not be reflected in scores. We hope to improve the consistency of data available in future versions of the report card.

## 3. Why did you choose to measure these things?

The indicators used in the report card were selected by stakeholders in each of the basin workshops. For over a year, we have been asking stakeholders throughout the watershed what we should measure and how we should measure it. We listened to what they told us, and tried to identify specific indicators where we have uniform and accurate data.

## 4. This is a preliminary product—it needs your feedback.

We have made a lot of progress in the last year by asking questions and looking for reliable and accurate data to measure the six goals in the watershed and in all six basins. However, we understand that the report card needs refinement, feedback and in some cases, redirection. We will, with your help, continue to improve the report card by identifying new data sources and refining the analysis.

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