



*The Choice
is Ours...*



*Let's choose
clean water*

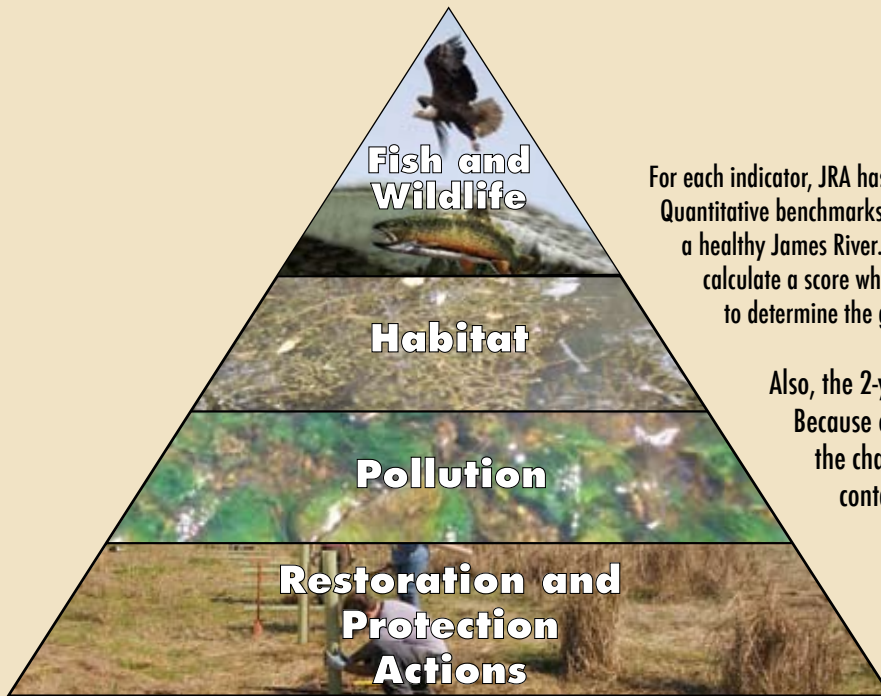
**STATE OF THE
JAMES RIVER**

2009

Background

Since the founding of America on its banks 400 years ago, the James River has played a central and defining role in the development of Virginia. No other natural feature of the New World had more influence on the early colony, and no other natural feature has provided more for Virginia. After 400 years of nurturing us, America's Founding River needs nurturing itself.

This State of the James River report provides a report card on the effort to bring this shared natural resource back to full health. The report examines the status and trends of indicators in four categories that build on one another. At the top are the fish and wildlife populations that are important to the health of the river and to everyone who enjoys and cares about the river. These wildlife populations depend on habitat to provide their critical needs for life. The greatest factor affecting the quality of habitat in the James River is the amount of pollution that enters our streams and creeks and ultimately flows into the James River. Finally, the report assesses progress on the restoration and protection actions needed to reduce damaging pollution and return the James River to a healthy, diverse ecosystem.



For each indicator, JRA has identified and compiled a key measure of health. Quantitative benchmarks have been set for what we need to achieve to have a healthy James River. Current progress is compared to this benchmark to calculate a score which is averaged across the indicators in each category to determine the grade for that category.

Also, the 2-year change has been listed for each indicator. Because of refinements in the methodology of the report, the changes do not necessarily correspond to the scores contained in the *2007 State of the James River* report.



Summary

REPORT CARD			
	2009 Report	2-Year Change	Grade
Wildlife	57%	-3%	C+
Habitat	59%	+5%	C+
Pollution	63%	-3%	B-
Restoration and Protection Actions	55%	+4%	C
Overall	59%	+1%	C+

This year's report card for river health gives the James River an overall score of 59 percent and a grade of a C+ on the grading scale most commonly used to measure the health of the Chesapeake Bay and its rivers. While the score has increased one percent in the past two years, troubling signs indicate the need to strengthen river restoration efforts. Without an increased commitment, we risk backsliding and reversing the modest progress we have made.

Within the overall score is a mix of stories—successes and challenges, celebrations and tragedies. While bald eagles continue an impressive expansion, fish populations throughout the river basin face ominous threats. Brook trout populations remain unhealthy in most of its range, mysterious fish kills are impacting smallmouth bass, shad are at historic lows and striped bass stocks in the river have fallen and are susceptible to bacterial infections.

On the positive side, three of the critical habitats included in the report have improved in recent years. For instance, underwater grasses continued to expand and now cover 40 percent of where they have been documented in the past. Some of this is due to reduced pollution levels entering the river in recent years that have helped improve water quality and habitat conditions.

However, some of the reduced pollution levels are simply due to lower rainfall in recent years resulting in less polluted runoff. When the true effectiveness of pollution control efforts is measured, removing the influence of annual weather variations, progress in reducing harmful pollutants has stagnated and in some cases reversed. Most notably and perhaps most alarmingly, the long-term, adjusted average of pollution discharges to the James River has leveled off from significant improvements achieved early in the river cleanup effort.

Despite advances in wastewater treatment sufficient to meet the 2010 goals and millions of dollars of public and private investment toward reducing pollution, we have not seen the progress that we should expect. More consistent state and federal funding for agricultural programs has helped farmers implement more pollution-reducing practices, but funding levels are still far from what is needed. Additionally, this paradox—the slowing of actual pollution controls despite increased investment in wastewater and agricultural programs—shows that other sources of pollution, such as new and existing development, must be addressed in a more forceful manner.

Even so, strong actions on specific issues have helped to bring America's Founding River back to some semblance of health. We must continue to take strong actions to keep the James River's health moving in the right direction; unless we do so, we risk losing the progress that we have made to date. The choice is ours. Let's choose clean water and a healthy James River for the future.

GRADING SCALE

A	80% - 100%
B	60% - 79%
C	40% - 59%
D	20% - 39%
F	less than 20%

REPORT CARD

Bald Eagle	100%
Rockfish	82%
Oysters	8%
Smallmouth Bass	100%
American Shad	6%
Brook Trout	45%
Average	57%

C+

Wildlife



Bald Eagle



Oysters



American Shad



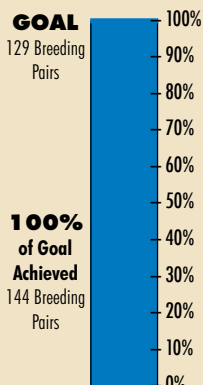
**Rockfish/
Striped Bass**



Smallmouth Bass

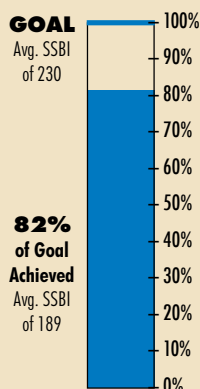
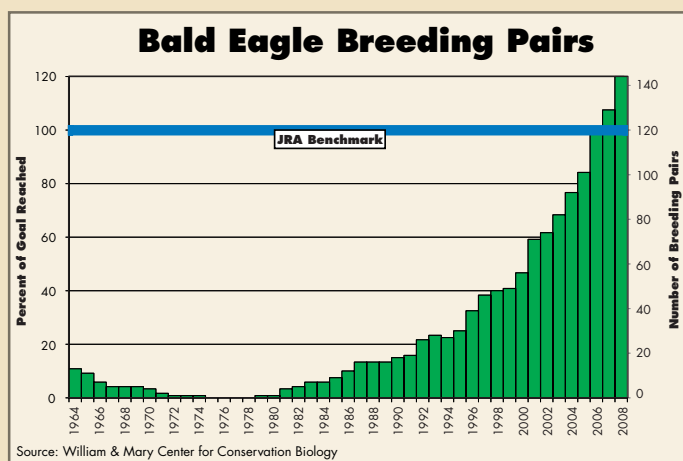


Brook Trout



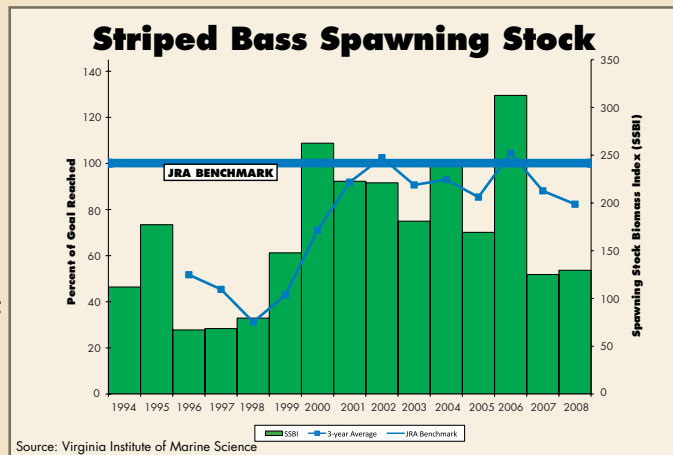
Bald Eagle - 100% (0% 2-Year Change)

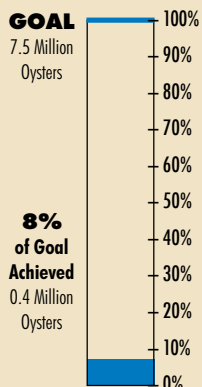
Today the bald eagle is a common sight along many parts of the James River along with osprey, blue heron, and other river birds. With the ban of the pesticide DDT and passage of the Endangered Species Act in the 1970's, the bald eagle population has flourished. The number of breeding pairs rose to 144 to stay at 100% of the JRA benchmark set at the number present in 2007 when the bald eagle was removed from the Threatened and Endangered Species List. The bald eagle can continue to flourish with proper protection of critical forest habitat along the river and a healthy river to provide food. With good care, our nation's symbol should continue to be a welcome site on America's Founding River for years to come.



Rockfish/Striped Bass - 82% (-18% 2-Year Change)

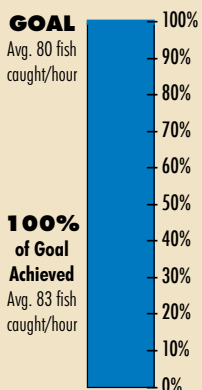
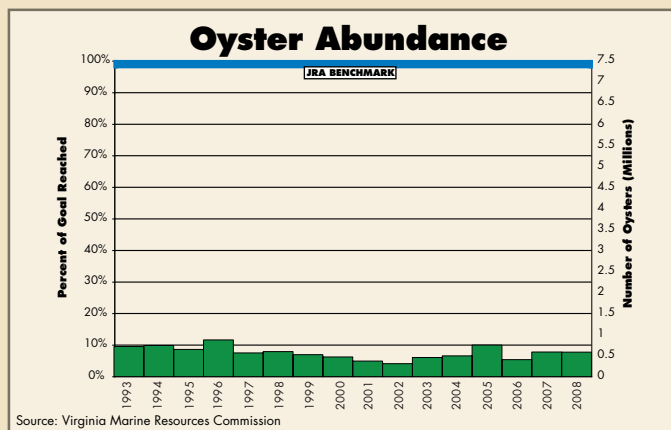
Striped bass are now showing troubling signs after being at very healthy numbers over the past 15 years since a fishing moratorium brought their populations back from the brink of collapse. For the past two years, a long-term monitoring study showed that the striped bass spawning stock in the James River decreased significantly. Additionally, a high proportion of striped bass in the region have shown signs of bacterial infections that can lead to decreased growth rates or death. "Stripers" or "rockfish" are a very important fish species for both recreational and commercial fishing, but without a healthy, balanced ecosystem the population's health may continue to diminish. The three-year average of the James River spawning stock is now at 82% of JRA's benchmark.





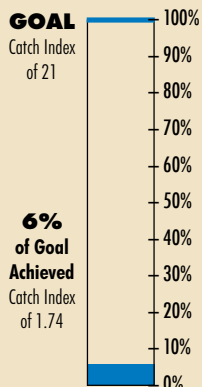
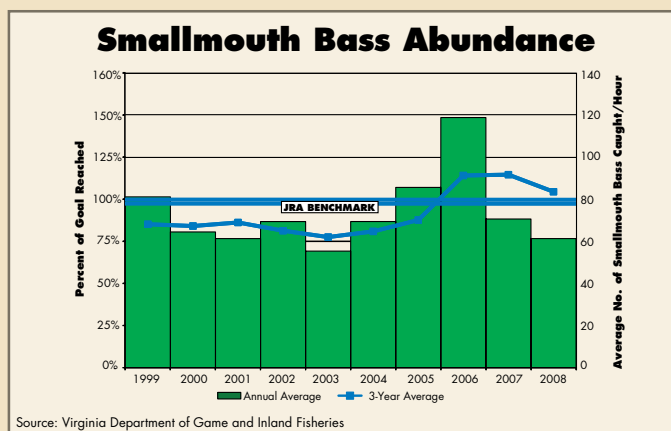
Oysters - 8% (+3% 2-Year Change)

Despite slight increases in the oyster population in the James River, oysters continue to struggle at near historic lows. Continued efforts with oyster restoration have been thwarted by high incidents of oyster diseases and persistent problems with water quality. The lack of oysters and other filter feeders has a substantial impact on water quality, yet the filter feeders struggle to survive themselves with poor water quality. Oysters stand at only 8% of the James River's share of the goal set forth in the Chesapeake Bay 2000 agreement for a ten-fold increase from 1994 levels.



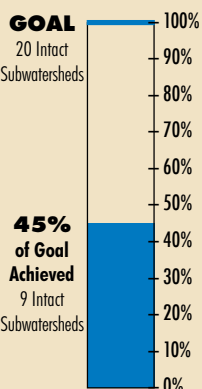
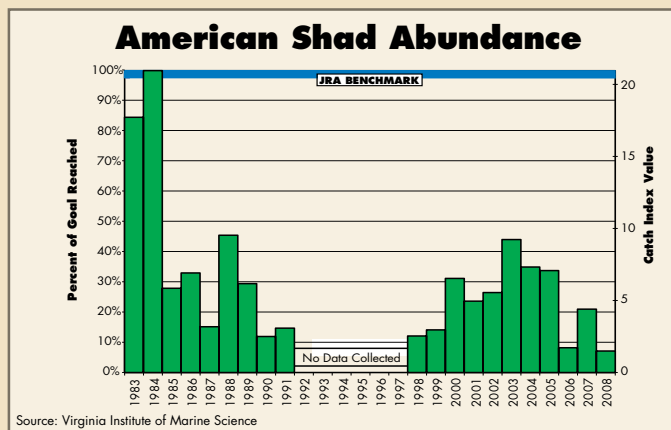
Smallmouth Bass - 100% (0% 2-Year Change)

Although smallmouth bass continue to be abundant in the James River and its tributaries, the impact of springtime fish kills in the upper James River region is of great concern. The cause is yet to be determined, but research indicates that a combination of factors are compromising the health of the fish. The numbers of smallmouth over the past three years still exceed JRA's benchmark, but the numbers have declined over the past two years. Smallmouth are a prized recreational fish in the upper and middle sections of the James River.



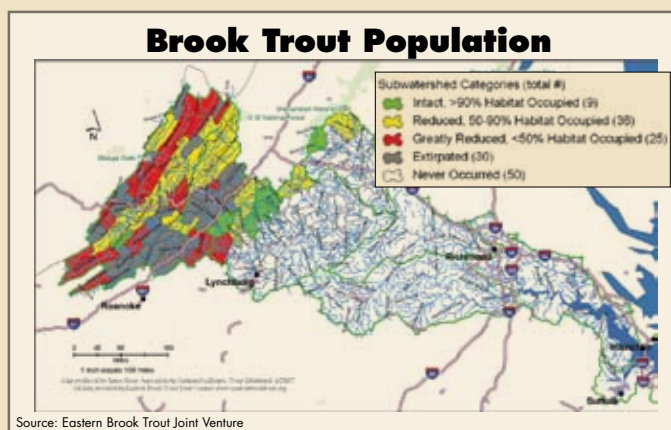
American Shad - 6% (-4% 2-Year Change)

American Shad populations are down in nearly every river up and down the Atlantic Coast. Despite stocking efforts and opening historic spawning habitat in the James River, populations have declined over the past five years. Currently, shad are at a near all-time low with only 6% of the numbers seen just 25 years ago. The cause of the recent decline in the James and other rivers is not yet known. Greater efforts on research and healthy waters must be made to bring back what was once one of the most abundant and important species of fish in the river.



Brook Trout - 45% (0% 2-Year Change)

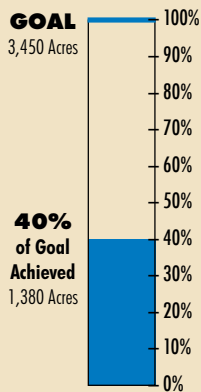
Because of its sensitivity to changes in water quality and competition with other species, the native brook trout populations have been reduced to a fraction of the range where they were once found. Currently they are healthy in only 9 stream systems out of the 100 where they historically thrived. They are now completely gone from 30 of the stream systems. To achieve the JRA benchmark and the goals set by the Eastern Brook Trout Joint Venture, viable populations must be restored to 20 stream systems. This will require protecting forested watersheds, replanting streamside forests, and reducing polluted runoff from agriculture and development.



REPORT CARD

Underwater Grasses	40%
Riparian Forests	80%
Stream Quality	61%
Tidal Water Quality	56%
Average	C+ 59%

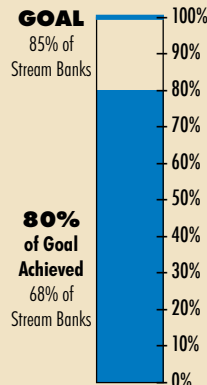
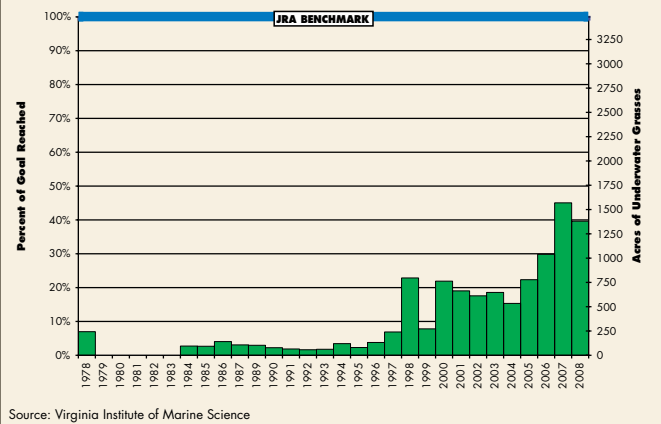
Habitat



Underwater Grasses - 40% (+10% 2-Year Change)

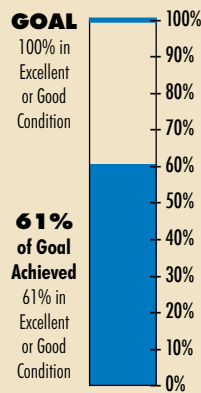
The resurgence of underwater grasses in parts of the James River is a positive sign for river health. These grasses provide habitat for juvenile fish, crabs and waterfowl. They also help trap sediment pollution and help clear the water which in turn can enable more grasses to get the sunlight they need to live. Underwater grass acreage has reached its highest levels in 30 years and now covers 40% of the goal set for the James River by the state. However, while underwater grasses are thriving in many of the tidal tributaries to the James, as well as above the falls, there are still no underwater grass beds anywhere on the main stem of the James River from Richmond to the James River Bridge in Newport News due to poor water clarity.

Underwater Grass Abundance

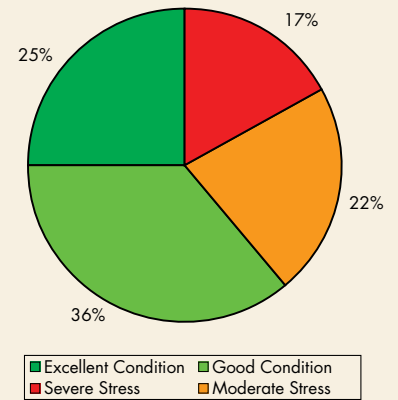


Riparian Forests - 80% (+7% 2-Year Change)

Riparian forests along streams, creeks and the river play a vital role in the aquatic ecosystem, as well as in stream bank stabilization and filtering pollution from the runoff before it can enter the water. The JRA benchmark is for 85% of stream banks in the James River basin to be forested, and the current status of riparian forests meets 80% of that goal. However, with continued development in many parts of the watershed, these critical habitats are at risk and every opportunity to restore and protect forests along streams and creeks must be pursued.

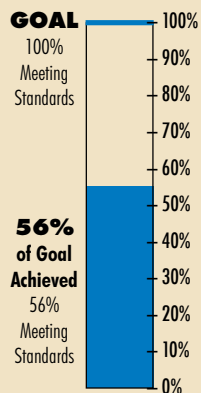


James River Watershed Stream Condition Index



Stream Condition - 61% (-1% 2-Year Change)

The health of the James River is largely a reflection of the health of the 15,000 miles of streams that flow into it. Additionally, local streams and creeks are a valuable resource for the communities they flow through. Currently, 61% of the James River's streams are categorized as being in good or excellent condition. Although this level of stream health is higher than others in the state, many streams are still under moderate to severe stress and substantial restoration efforts, as well as land use management and water management, will be essential to return them to good health.

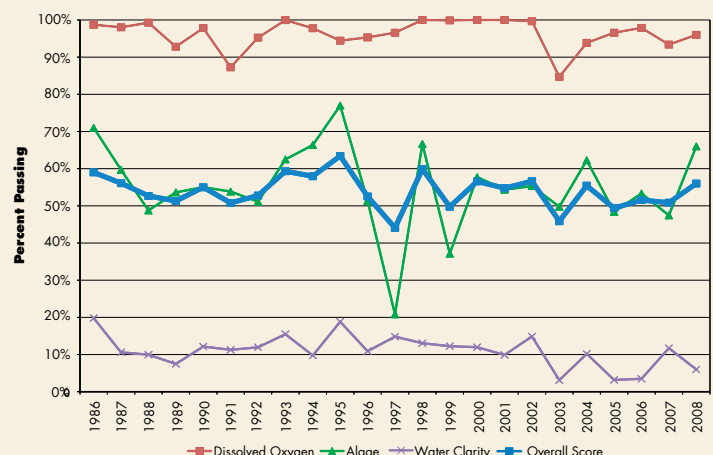


Tidal Water Quality - 56% (+4% 2-Year Change)

Oxygen levels, algae levels and water clarity are key indicators of water quality in the tidal James River. Currently, the James River on average meets the state water quality standards for each just 56% of the time. Dissolved oxygen levels, which are essential for fish and aquatic animals to live, are generally healthy in the James River. However, the tidal James River continues to have problems with excessive algae growth and water clarity remains very poor, meeting the state standard only 6% of the time. Algae growth and poor water clarity are caused by too much pollution, particularly nitrogen, phosphorus and sediment.



James River Tidal Water Quality



REPORT CARD

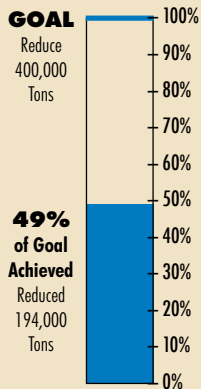
Sediment	49%
Phosphorus	94%
Nitrogen	47%
Average	63%

B-

Pollution

The greatest factor affecting the overall health of the James River and its fish, wildlife and important habitats is pollution. There are many kinds of pollution damaging the James River, such as bacteria, toxins and heavy metals, but the most pervasive forms are sediment, phosphorus and nitrogen. These three forms of pollution cause varied and widespread problems for the river ecosystem and human health.

The U.S. Environmental Protection Agency and Virginia have established specific limits for the amount of sediment, phosphorus and nitrogen pollution that can enter the James River on an average basis and still have a healthy river. JRA tracks the amount of pollution entering the river each year based on monitoring data. JRA measures progress toward the established pollution limits using a 10-year rolling average that removes the influence of annual weather variations and therefore better reflects actual pollution controls.



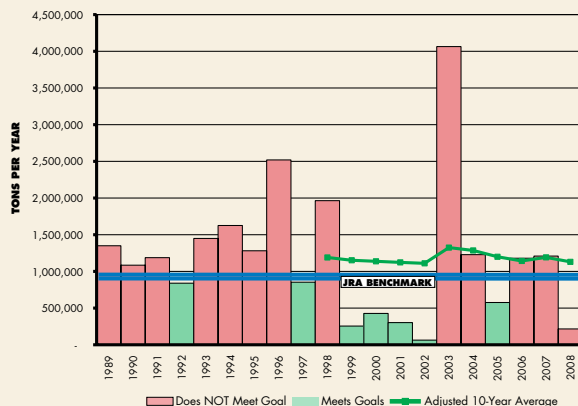
Sediment Pollution Reduction - 49% (3% 2-Year Change)

Sediment pollution continues to have widespread impacts throughout the James River system. These impacts include silting in critical stream and river habitat, as well as clouding the water and blocking sunlight from underwater grasses. Major sources include barren construction sites and plowed farm fields. Large amounts of sediment pollution are also caused by developed areas where impervious surfaces, such as parking lots, roads and rooftops, increase the volume and velocity of stormwater runoff overwhelming local streams and creeks and causing stream bank erosion.

Sediment pollution in the James River has been relatively low in recent years. In 2008, sediment pollution was below the total limit established by the US EPA and the state, but James River flows that year were nearly half of historical levels due to low rainfall. Taking into account annual variations in rainfall, the long term average for sediment pollution has improved slightly over the past two years to 49% of the pollution reductions needed to meet the goals for the James River.



Sediment Pollution

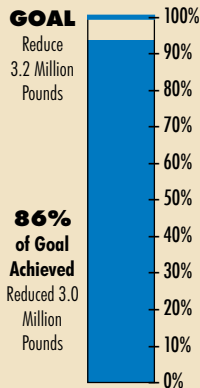


Source: USGS and EPA Chesapeake Bay Program



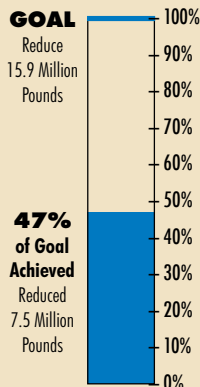
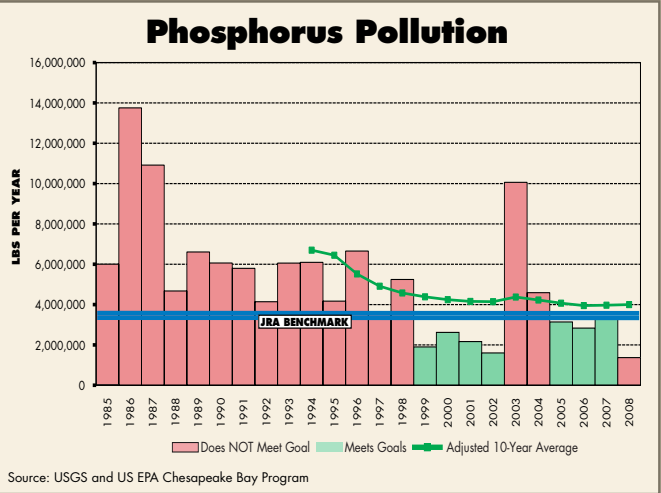
Nitrogen and Phosphorus Pollution

Nitrogen and phosphorus are nutrients that help plants grow, but the James River is being overfed. Excessive nitrogen and phosphorus pollution from sewage, manure, fertilizer and air pollution fuel algae growth that blocks sunlight from vital underwater grasses and displaces healthy plankton that are critical food for fish and other aquatic life. Some types of algae can also become toxic to aquatic life and even to humans. As algae die and decompose they can create “dead zones” where little oxygen is available to support aquatic life.



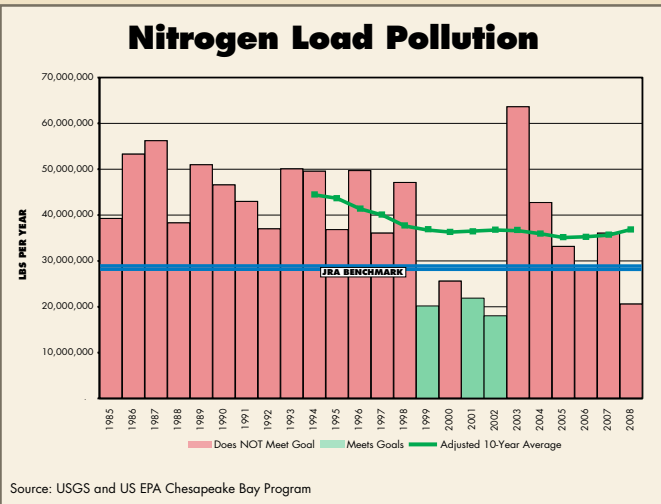
Phosphorus Pollution Reductions - 94% (-2% 2-Year Change)

In eight of the past ten years, phosphorus pollution levels in the James River have been below the phosphorus limit, with 2008 being the lowest on record. As a result, the long-term, adjusted average shows that 94% of the needed pollution reductions have been achieved. Much of this pollution reduction was accomplished through upgraded wastewater treatment and the phosphate detergent ban in the 1980's and 1990's. Phosphorus reductions have slowed in recent years showing the need for additional effort in order to meet the goal.



Nitrogen Pollution Reduction - 47% (-10% 2-Year Change)

Nitrogen pollution entering the James River has remained above the limit in all but four years. The long-term, adjusted average shows that 47% of the reductions have been achieved and like phosphorus pollution controls, little progress has been made in recent years despite substantial investments in additional wastewater treatment upgrades. This indicates the need to ensure that new sources of pollution, such as new development, do not undermine progress made in other areas.



REPORT CARD

Wastewater Treatment	100%
Agriculture	44%
Development	20%
Natural Area Conservation	57%
Average	55%

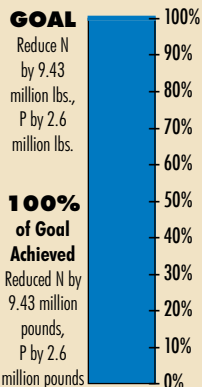
C

River Protection and Restoration Actions

While there are many actions that individuals, businesses and governments may take to reduce pollution, below are the top priority protection and restoration actions needed to restore the James River to full health.



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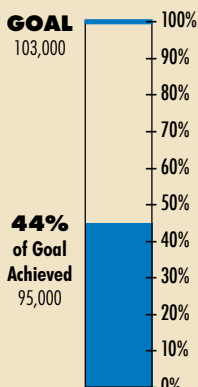


Wastewater Treatment Pollution Reduction - 100% (10% 2-Year Change)

In 2008, wastewater treatment from sewage plants and industrial facilities met the goals for reductions for both nitrogen and phosphorus for the first time. The overall reductions are up from 90% two years ago. This accomplishment was achieved through strong regulatory requirements, major investments by the state, local governments and private industry and Virginia's nutrient trading program.



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AGRICULTURE - 44% (3% 2-Year Change)

Because of its extensive land area and the nature of the operations, agriculture is both a major source of pollution, as well as a major part of the solution to a healthier James River. Below is the current status of the priority conservation practices that farmers can implement to reduce polluted runoff based on information available from the state. JRA tracks progress toward the goals for each practice set by the state in their plans to achieve the established pollution limits for the James River.



Recent increases in the implementation of agricultural practices has been helped by the appropriation of \$20 million each year for the past three years by the Governor and Virginia General Assembly.

Conservation Tillage - 93% (4% 2-Year Change)

On over 95,000 acres, conservation tillage and particularly continuous no-till helped improve soil quality, prevent erosion and reduce the loss of nitrogen and phosphorus fertilizers into the water.

Winter Cover Crops - 11% (-1% 2-Year Change)

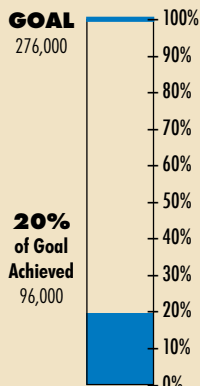
In 2008, farmers enrolled 10,700 acres in the winter cover crop program to help prevent erosion and hold excess fertilizer on fields during the winter. The decline may be due to farmers electing to harvest their winter crop rather than manage it for conservation purposes.

Farm Nutrient Management - 35% (6% 2-Year Change)

Nutrient management plans were implemented on nearly 96,000 acres of farmland in the James River basin to minimize fertilizer applications of nitrogen and phosphorus and therefore reduce pollution.

Stream Protection - 38% (4% 2-Year Change)

Farmers fenced cattle out of 132,000 acres of pasture along streams in order to prevent stream bank erosion, filter pollution and in some cases improve the health of their herd.



DEVELOPMENT - 20% (0% 2-Year Change)

Because of the drastic disturbances that development imposes on the land, great care must be taken both during and after construction to protect water quality. JRA tracks three key actions that can reduce the impact of development on the James River: stormwater management, urban nutrient management and local low impact development policies. Virginia is in the process of revising many of its stormwater programs and has an opportunity to improve the implementation of pollution controls on new and existing development.

Low Impact Development Policies - 45% (3% 2-Year Change)

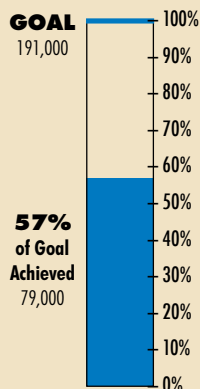
With actions by some individual localities, local development policies have improved slightly in encouraging low impact development practices.

Stormwater Management Practices - 13% (5% 2-Year Change)

Over 15,000 acres of urban stormwater management practices have been documented in the James River basin, although more undocumented practices likely exist. This is 13% of the goal.

Urban Nutrient Management - 3% (-8% 2-Year Change)

Only 3% of the targeted 554,000 acres have a nutrient management plan to guide proper fertilizer application rates and timing.



NATURAL AREA CONSERVATION - 57% (4% 2-Year Change)

Natural areas, particularly those along the river and its tributaries, are critical for providing habitat for wildlife and filtering pollution, in addition to scenic and recreational opportunities.

Riparian Buffer Restoration - 14% (1% 2-Year Change)

Riparian buffers are one of the most cost-effective approaches to reduce polluted runoff and provide important wildlife habitat at the same time. To date, 14% of the 93,000 acres of riparian buffers needed to meet the James River's pollution limits has been implemented. Although progress is being made, it has slowed in recent years.

Land Conservation - 100% (7% 2-Year Change)

Over 20% of the James River basin has been protected from development through public land ownership or conservation easements, including an additional 100,000 acres in recent years. This meets the James River's portion of the 20% land conservation goal set for Virginia and the Chesapeake Bay watershed in the Chesapeake Bay 2000 agreement. However, more land conservation is needed to meet local goals.





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About James River Association

The James River Association (JRA) is a non-profit organization solely dedicated to the protection and restoration of the James River. The mission of JRA is to provide a voice for the river and take action to promote conservation and responsible stewardship of its natural resources. Founded in 1976, JRA works through its four core programs—River Advocacy, Riverkeeper® program, Education and Outreach and Watershed Restoration—to ensure a healthy James River ecosystem for current and future generations. Please visit our website at www.jamesriverassociation.org for more information about JRA, the State of the James River report and how you can help protect America's Founding River.

Acknowledgements

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The James River Watershed

