



Stormwater MEP and Nature- Based Solutions: Conflict or Synergy

October 2023



Patrick Bradley

Director, Point Source Programs

Clean Water Act (Sec 402) and MS4s

(p) MUNICIPAL AND INDUSTRIAL STORMWATER DISCHARGES

(3) PERMIT REQUIREMENTS

(A) INDUSTRIAL DISCHARGES—Permits for discharges associated with industrial activity shall meet all applicable provisions of this section and **section 1311** of this title.

(B) MUNICIPAL DISCHARGE—Permits for discharges from municipal storm sewers—

(i) may be issued on a system- or jurisdiction-wide basis;

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Conclusion

- Permits for discharges from municipal storm sewers—
- (iii) shall require controls to reduce the discharge of pollutants to the **maximum extent practicable**
- What is MEP?

Nature-Based Solutions – Executive order

- **Executive Order 14072 of April 22, 2022**
- **Strengthening the Nation’s Forests, Communities, and Local Economies**
 - . . . deploy climate-smart forestry practices and other nature-based solutions to improve the resilience of our lands, waters, wildlife, and communities in the face of increasing disturbances and chronic stress arising from climate impacts.

Nature-Based Resources



Presidential Documents

Executive Order 14072 of April 22, 2022

Strengthening the Nation's Forests, Communities, and Local Economies

By the authority vested in me as President by the Constitution and the laws of the United States of America, it is hereby ordered as follows:

Section 1. Policy. Strengthening America's forests, which are home to cherished expanses of mature and old-growth forests on Federal lands, is critical to the health, prosperity, and resilience of our communities—particularly in light of the threat of catastrophic wildfires. Forests provide clean air and water, sustain the plant and animal life fundamental to combating the global climate and biodiversity crises, and hold special importance to Tribal Nations. We go to these special places to hike, camp, hunt, fish, and engage in recreation that revitalizes our souls and connects us to history and nature. Many local economies thrive because of these outdoor and forest management activities, including in the sustainable forest product sector.

Globally, forests represent some of the most biodiverse parts of our planet and play an irreplaceable role in reaching net-zero greenhouse gas emissions. Terrestrial carbon sinks absorb around 30 percent of the carbon dioxide emitted by human activities each year. Here at home, America's forests absorb more than 10 percent of annual United States economy-wide greenhouse gas emissions. Conserving old-growth and mature forests on Federal lands while supporting and advancing climate-smart forestry and sustainable forest products is critical to protecting these and other ecosystem services provided by these forests.

Despite their importance, the world's forests are quickly disappearing; only a small fraction of the world's mature and old-growth forests remains. Here at home, the primary threats to forests, including mature and old-growth forests, include climate impacts, catastrophic wildfires, insect infestation, and disease. We can and must take action to conserve, restore, reforest, and manage our magnificent forests here at home and, working closely with international partners, throughout the world.

It is the policy of my Administration, in consultation with State, local, Tribal, and territorial governments, organizations, labor unions, and the based, sustainable forest and land management practices, to conserve, restore, and old-growth forests on Federal lands; support indigenous traditional subsistence practices; honor Tribal forestry practices and other nature-based uses of our lands, waters, wildlife, and ecosystems; and address climate change, disturbances and chronic stress as the policy of my Administration, as *America the Beautiful*, to support solutions.

The Infrastructure Investment and Jobs Act provides for significant investments in ecosystem restoration. As we use this funding, we will continue to conserve our mature and old-growth forests, restore the health and vibrancy of our watersheds, and protect against the threat of catastrophic wildfires from

NATURE-BASED SOLUTIONS RESOURCE GUIDE

COMPENDIUM OF FEDERAL EXAMPLES, GUIDANCE, RESOURCE DOCUMENTS, TOOLS, AND TECHNICAL ASSISTANCE

NOVEMBER 2022

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FACT SHEET: Biden-Harris Administration Announces Roadmap for Nature-Based Solutions to Fight Climate Change, Strengthen Communities, and Support Local Economies

NOVEMBER 06, 2022

FACT SHEET: Biden-Harris Administration Announces Roadmap for Nature-Based Solutions to Fight Climate Change, Strengthen Communities, and Support Local Economies

New actions and recommendations announced at COP27 will make nature-based solutions a key option for fighting climate change and boost progress towards U.S. climate goals.

Today at COP27 in Egypt, the Biden-Harris Administration is releasing a new Nature-Based Solutions Roadmap, an outline of strategic recommendations to put America's natural resources to work. This Roadmap marks the first time the U.S. has developed a strategy to scale up nature-based solutions.

As the U.S. is already taking action, the Administration is announcing interagency commitments aligned with the roadmap in excess of \$25 billion in infrastructure and climate funding can support nature-based solutions. A new technical working group to better account for nature-based solutions in federal decision-making and a new technical working group to better account for nature-based solutions in federal decision-making.

Nature-based solutions are actions to protect, sustainably manage, or restore ecosystems as solutions to societal challenges, like fighting climate change, conserving or conservation of natural areas, reforestation, restoration, or sustainable management of farms, fisheries, or forests resilient to threats like flooding and extreme heat, and can sequester carbon dioxide. Nature-based solutions play a critical role in addressing climate change, public health, equity, and the fight against climate change.

Dr. Sabeel Rahman, Senior Advisor to the President for Clean Energy Innovation, and chair of President Biden's National Climate Task Force, will lead the opening of the U.S. Center at United Nations Framework Convention on Climate Change.

<https://www.whitehouse.gov/omb/briefing-room/statements-releases/2022/11/06/fact-sheet-biden-harris-administration-announces-roadmap-for-nature-based-solutions-to-fight-climate-change-strengthen-communities-and-support-local-economies/>

12/7/22, 3:41 PM

A New National Strategy to Reflect Natural Assets on America's Balance Sheet | OMB | The White House

AUGUST 16, 2022

A New National Strategy to Reflect Natural Assets on America's Balance Sheet

By Dr. Sabeel Rahman, Senior Counselor, Office of Information and Regulatory Affairs, Dr. Eli Fenichel, Assistant Director for Natural Resource Economics and Accounting, Office of Science and Technology Policy, and Dr. Jed Kolko, Under Secretary for Economic Affairs, U.S. Department of Commerce

Our planet's water, soil, air, and other natural assets play a critical role in sustaining and powering our economy—from supplying the food we eat, to supporting critical supply chains, to spurring innovation and providing recreational opportunities, and more. The challenges of climate change, pollution, and environmental injustice carry implications for the economy, the environment, and public health that Americans across the nation have been experiencing for decades. Yet, the data we rely on to describe and measure our economy are largely disconnected from the realities of the natural world. This disconnect in data prevents us from reaching our full economic potential while protecting the environment, and ensuring future opportunity for Americans.

That's why today, we are announcing a new draft National Strategy and calling for public input to bridge the disconnect and ensure the natural resources all Americans enjoy and depend on are accounted for in the economic decisions that affect the American people.

On Earth Day 2022, President Biden signed an executive order charging us to develop guidance to better account for nature and its benefits in federal decision-making, leading to the first government-wide natural capital accounts. As Secretary Raimondo announced, these natural capital accounts will measure the economic value that natural resources provide to society and illustrate how a robust economy depends on a healthy natural environment.

The draft National Strategy outlines recommendations for developing "Statistics for Environmental-Economic Decisions" to reflect natural assets on the national balance sheet. Additionally, the strategy highlights a framework for investment opportunities that would work to address the causes of environmental injustices by shedding light on environmental

COMPENDIUM OF FEDERAL NATURE-BASED RESOURCES FOR COASTAL COMMUNITIES, STATES, TRIBES, AND TERRITORIES

APRIL 2022



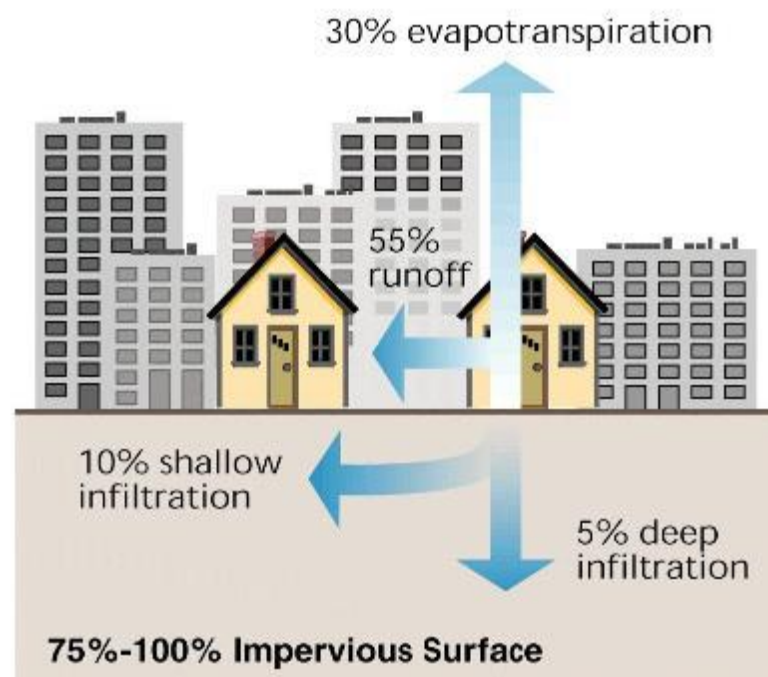
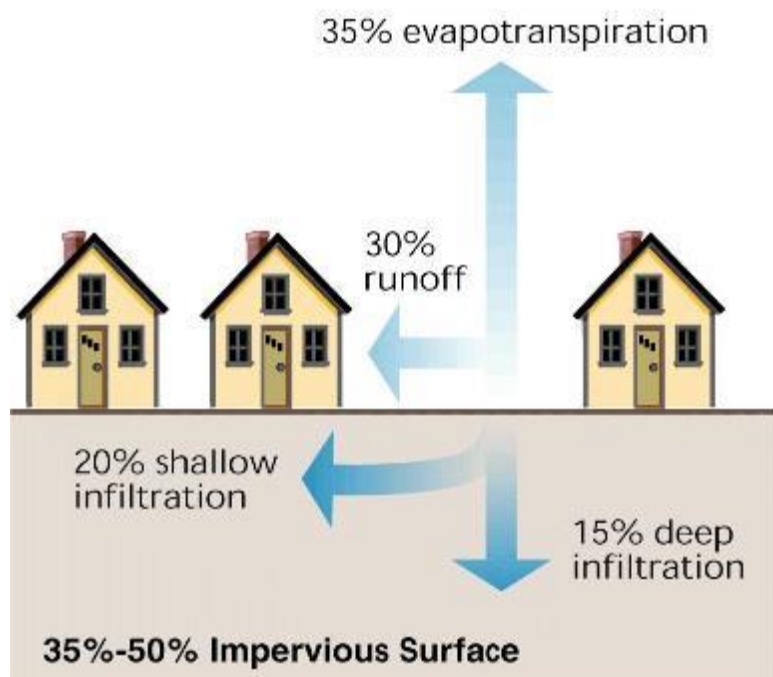
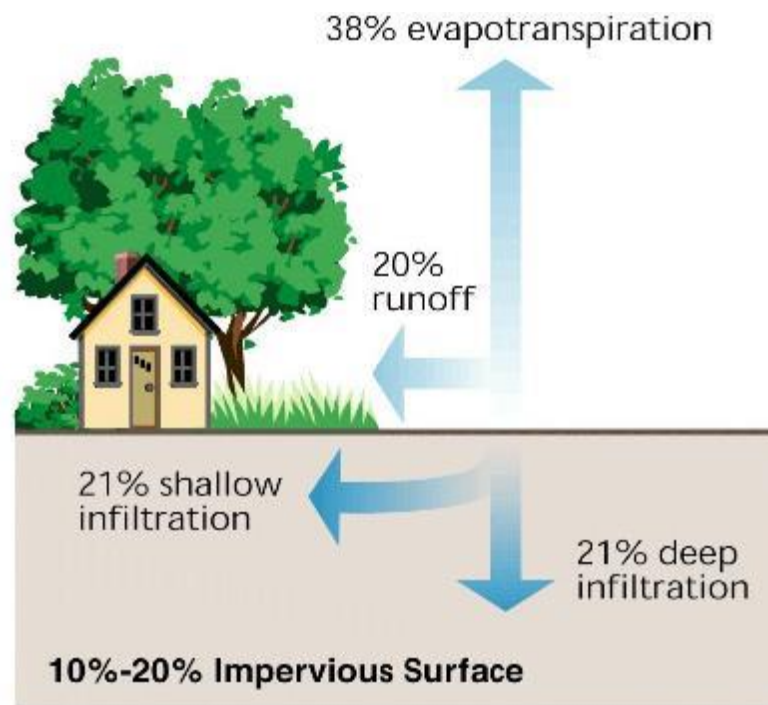
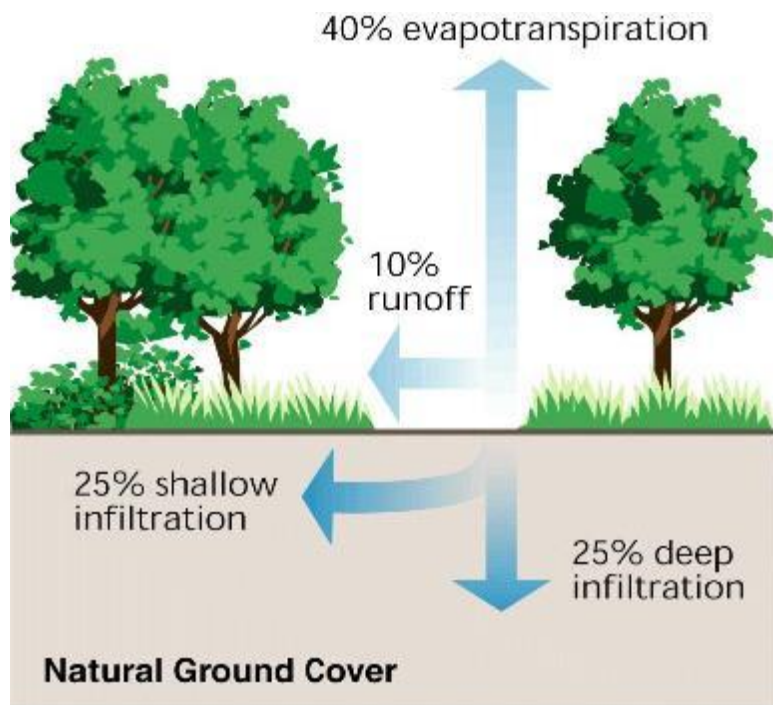
Energy Independence and Security Act of 2007

“Sec. 438. Storm Water Runoff Requirements for Federal Development Projects. The sponsor of any development or redevelopment project involving a Federal facility with a footprint that exceeds 5,000 square feet shall use site planning, design, construction, and maintenance strategies for the property to maintain or restore, to the maximum extent technically feasible, the predevelopment hydrology of the property with regard to the temperature, rate, volume, and duration of flow.”



MANAGING
WET WEATHER WITH
GREEN INFRASTRUCTURE

ACTION STRATEGY
2008



Which is Better for Water Quality on a Watershed Basis?



Housing like
this....



...is, by design, served by
retail and roads like this

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Paradigm Shift: Rain is a Resource, Not a Waste

- Drinking water
- Ground water recharge
- Stream baseflow
- Trees & other plants
- Aesthetic qualities



Approaches to Flow Management

- Good Site Design
- Good Neighborhood and Community Design
- Water Conservation & Reuse

Infiltration ~ Evapotranspiration ~
Reuse



Keeping Water Out of Pipes



Bioretention



Open Swales



Parking Lot Island Infiltration Areas



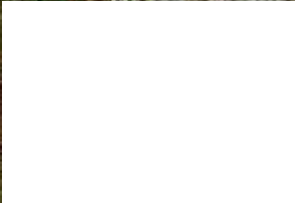
Rain Gardens



Permeable and Porous Pavements



Green Roofs



Rainwater Harvesting & Use



Integrated Planning – EPA Stoner/Giles

Memo -- October 27, 2011

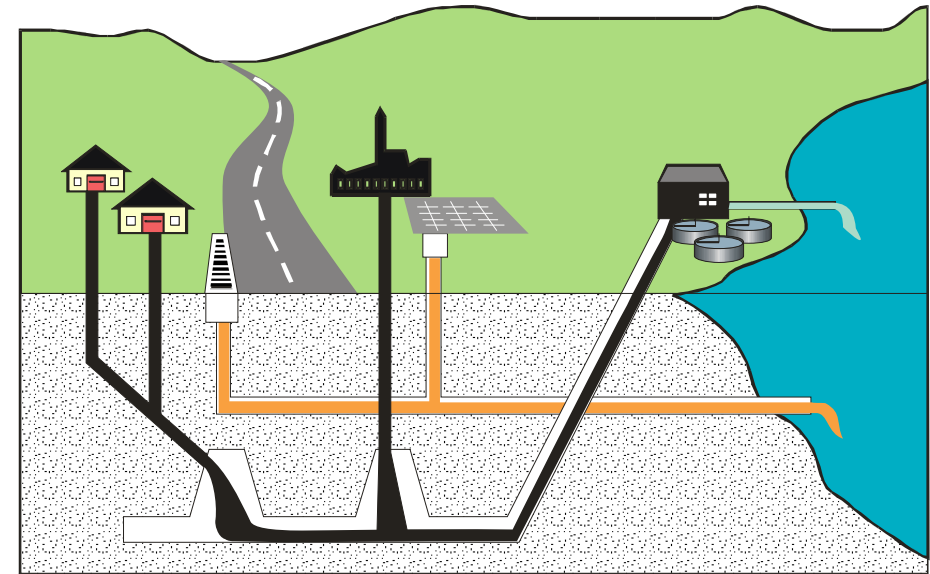
- Encourages Regions to work with States and communities on implementing comprehensive, integrated planning approaches
 - CWA and implementing regulations and guidance provide necessary **flexibility**
 - Existing regulatory standards will be maintained
- EPA's Integrated Planning Framework
 - Will obtain feedback from States, local governments, utilities and environmental groups
 - Looking to identify municipal leaders to serve as models
- Origin of the memo
 - Enforcement schedules



Approach: Integrated Individual Permit

(Watershed-based Permitting Guidance 2003)

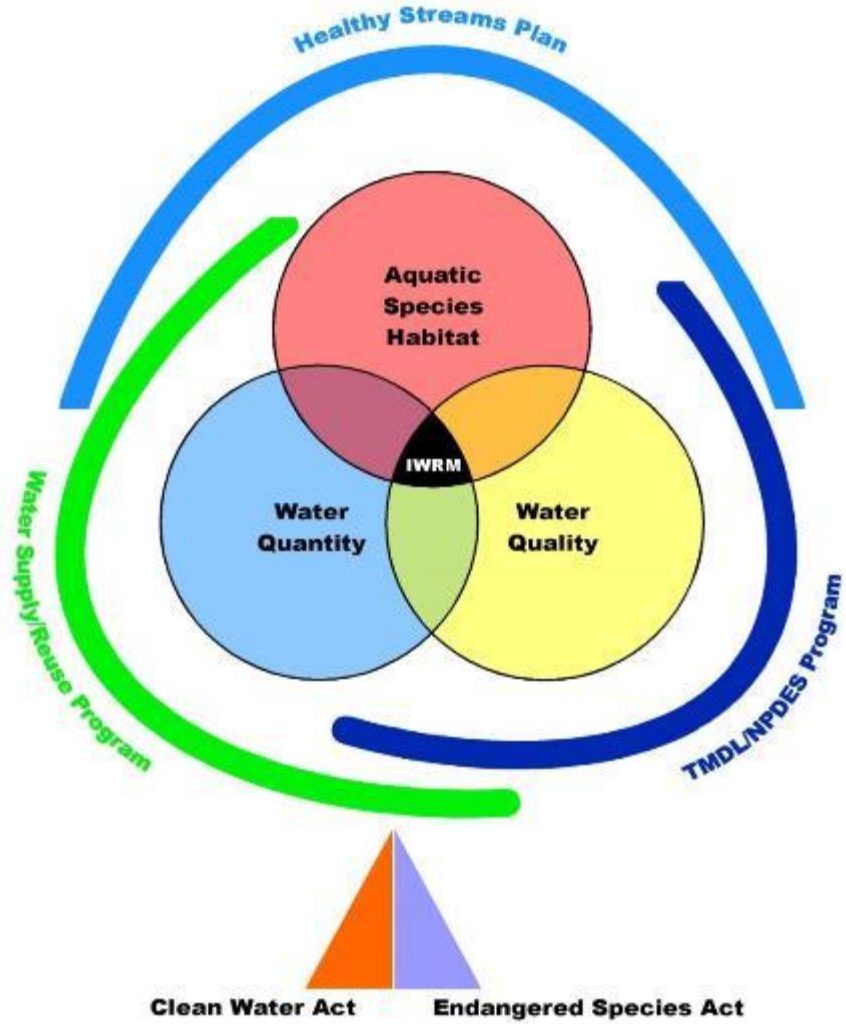
- Bundles all requirements and mechanisms (e.g. permits, orders, decrees) into a single permit
- Municipal example:
 - Secondary treatment standards
 - TMDL WLA/WQBELs
 - CSOs
 - Stormwater
 - Biosolids
 - Pretreatment



Steps	Watershed Management	Integrated Planning	Watershed-based Permitting
1	Stakeholders	Issues to address (WQ, HH, etc)	Select a watershed
2	Characterize Watershed	Characterize Current System	Stakeholders
3	Finalize Goals & ID Solutions	Stakeholders	Analyze watershed data
4	Design Implementation Program	ID, eval & select alternatives	Develop Permit Conditions
5	Implement	Measure	Issue Permit
6	Measure & Adapt	Adapt	Measure



Integrated Water Resources Management



Temperature Trading

- Energy load offset, Shade and Flow
- 35 miles of stream restored
- Cold water habitat by flow releases
- Cold water refugia
- Urban, Agriculture, Forested Land use Action



Using Classic NPDES Permit Approach

- Only at Point Source and Temperature Reduction Options
- Refrigerate discharge
 - *High capital cost, \$35-50 million*
 - *High energy cost, \$1-2 million/yr.*
 - *No ancillary environmental benefits,*
 - *Negative environmental impacts*
- Remove discharge from Tualatin
 - *Greatly reduced summer flows*
 - *Significant WQ impacts*
- Reduce influent wastewater temperature
 - *Ban water heaters in Washington County?*



Tree for All (jointreeforall.org)

- Clean Water Services created Tree for All
- Since 2005, 40+ Tree for All partners have:
 - Restored and managed more than 30,000 acres for watershed health.
 - Saved the public more than \$150 million by deploying lower-cost, multi-function green infrastructure rather than installing and operating chillers.
 - Planted more than 15 million native plants—more than a million per year in recent years.
 - Mobilized more than 90,000 volunteer hours.
 - Learned and applied groundbreaking lessons about stewardship, allowing projects to thrive and connect with each other.
- This amount of planting, well-stewarded, is enough to:
 - Offset more than 25,000 car trips around the equator.
 - Provide habitat for at least 238,000 cutthroat trout.
 - Sequester more than 252,000 metric tons of carbon.



Eco-Corridor: Stream Restoration & Trail Improvements

University of Richmond

- Ecological uplift to 16-acres on campus
 - ~2,000 LF of stream restoration (700 – 1,000 lbs/yr Phosphorous reductions)
 - Floodplain wetland creation
 - Management of invasive species
 - Multi-use recreational trail
 - Stormwater management
 - Outdoor classrooms
 - Community vegetable garden



Employing goats for invasive plant control

- University's Corporate Sustainability Initiative

(Key Performance Indicators)

- Water Quality / Nutrient Reductions
- Biodiversity / Pollinator Habitat
- Student and Community Volunteers
- Curriculum with 11 Faculty
- Student Environmental Action Team



Additional Observations

- Watersheds and Integration
 - Memo seems to look at storm water in isolation
 - Should include adaptive watershed-based approach
 - Program integration

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QUESTIONS?

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