

A photograph of a polluted shoreline. The foreground is dominated by a large pile of brown, dried leaves and twigs. Scattered throughout this debris are several pieces of plastic waste, including a large, clear plastic water bottle lying on its side, a smaller clear plastic bottle, and a white plastic cup. In the background, a calm body of water stretches across the frame. Beyond the water, there is a grassy embankment with a metal guardrail. In the distance, a road with a green highway sign and some trees are visible under a grey, overcast sky.

Pollution in the SF Bay

By Colin Santos



- Trash and pollution are negatively impacting plants, animals, humans, and the environment at or near the bay.



Stormwater Flow

- Rain and irrigation runoff flow across impervious surfaces like rooftops, paved roads, and oversaturated lawns
- Picks up and carries pollutants
- Storm drains at the curb carry toxic trash and other pollution directly into local creeks and the bay
- Often without treatment or filtration
- Makes waterways unsafe for recreational contact and fishing





Contamination from Chemicals

- Pesticides, fertilizers, high PCBs and mercury concentrations, other chemicals flow into the bay from upstream
- Harmful to bay's plant and animal populations
- Cause algae to grow at faster rate, animal populations to die
- Impairs animals' natural abilities, destroys natural habitats
- Fish unsafe to eat
- Algal blooms can be dangerous to humans; can cause rashes/respiratory illnesses

Highway/Road Pollution

- Highways and state roads are major sources of trash flows to the bay
- Poisons fish and wildlife
- Endangers public health
- Trash from freeways and state roads pour through storm drains into creeks, flows right into SF bay
- Plastic bottles, wrappers, Styrofoam, straws, etc.



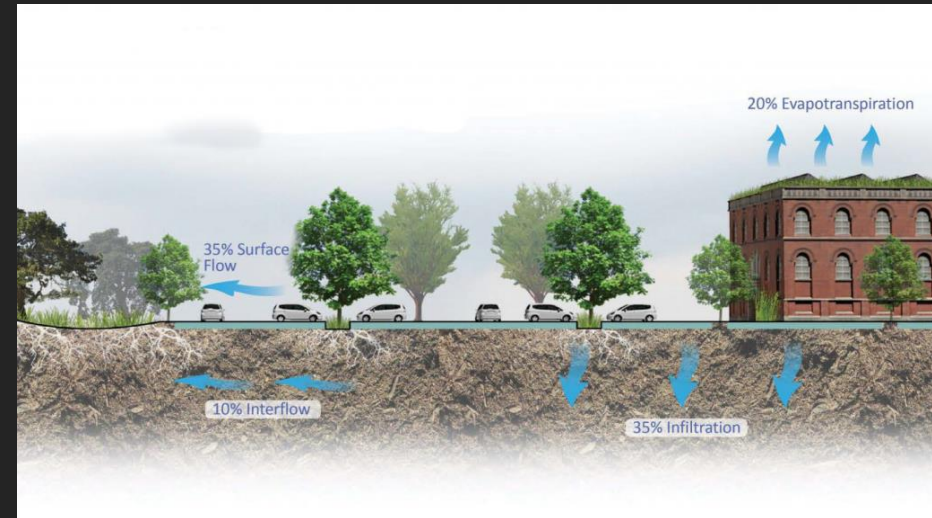


Regulation and Enforcement

- Region-wide regulations adopted in 2009 require Bay Area city governments to control storm water pollution
- Required to reduce pesticide use in parks, city-owned land, roadway median strips, city buildings
- Required to ensure that new development projects include low-impact development features
- Federal Clean Water Act and California Porter-Cologne Water Quality Control Act require large urban areas discharging stormwater into the SF bay or Pacific Ocean to have a permit and be able to control pollutant discharges using the National Pollutant Discharge Elimination System
- However, local and state government agencies like Caltrans aren't enforcing these laws and are violating both federal law and state storm water permits

Management

- Low-impact development features aim to stop storm water pollution before it occurs by designing buildings, roads, and public areas in a way that mimic nature's way of processing water
- Allow rainwater to percolate, filter, and gradually flow into groundwater, creeks, streams, and the bay
- Green infrastructure can help lessen the impacts of heavy storms
- Employs natural filtering processes which reduce water pollutants from entering the bay
- Mitigates flood risk by slowing and reducing stormwater runoff
- Captures and increases stormwater infiltration into the ground





Challenges

- Low-impact developments challenges
 - Tend to involve more ongoing maintenance and landscaping
 - Vegetated filter strips more ideal for small parking lots
 - Increases erosion during large storm events
 - Increases pavement failure
 - Needs to be properly designed
- Spotty enforcement of clean water regulations
- In California, officers travel to various construction sites inspecting for violations – the subject fines generate revenue for continued enforcement

Call to Action: Local and State Governments

- Local and state governments should pass laws that help with better enforcement of existing clean water regulations
- Adequate funding to help reduce impacts of pollution
- California Bill AB-377 aims to eliminate water impairment by 2050 and would strengthen enforcement to ensure all permittees comply with clean water standards

A scenic view of the Golden Gate Bridge in San Francisco, California. The bridge's iconic orange-red towers and suspension cables are prominent in the foreground. In the background, the San Francisco city skyline is visible, including the Transamerica Pyramid. The water of the bay is a deep blue, with several sailboats scattered across it. The sky is a clear, pale blue.

Call to Action: General Public

- The general public should be aware of their environmental impact
- Take steps to reduce the amount of waste that could harm the environment
- Avoid throwing toxic materials and unwanted medication in garbage bins or down the toilet
- Properly dispose and recycle items – waste disposal facilities
- Reuse rainwater for irrigating gardens or watering indoor plants
- Direct rainwater to a garden containing drought-resistant plants
- Don't wash your car in a driveway or on the street – this sends harmful chemicals into storm drains and ends up in the bay
- Limit use of pesticides and fertilizers – these can be washed off your lawn
- Dispose of litter responsibly and limit use of disposable items
- Support funding increases for infrastructure improvements

Works Cited

- “Preventing Pollution.” *Save The Bay*, 31 May 2019, <https://savesfbay.org/what-we-do/preventing-pollution>.
- “Controlling Urban Storm Water Pollution.” *San Francisco Baykeeper*, 30 Apr. 2021, <https://baykeeper.org/our-work/controlling-urban-storm-water-pollution>.
- “Sustainable Stormwater Management.” *Flows to Bay*, <https://www.flowstobay.org/about/why-we-do-it/sustainable-stormwater-management/>.
- “Stormwater Pollution Prevention.” *Flows to Bay*, <https://www.flowstobay.org/about/what-we-do/stormwater-pollution-prevention/>.
- “Green Infrastructure.” *Flows to Bay*, <https://www.flowstobay.org/preventing-stormwater-pollution/in-my-community/green-infrastructure/>.
- Lewis, David. “Opinion: State Must Stop Caltrans Pollution of San Francisco Bay.” *The Mercury News*, The Mercury News, 13 Nov. 2018, <https://www.mercurynews.com/2018/11/13/opinion-crack-down-on-caltrans-trash-pollution/>.
- “Op-Ed: California Needs to Repeat History by Passing New Clean Water Laws.” *Los Angeles Times*, Los Angeles Times, 20 Mar. 2021, <https://www.latimes.com/opinion/story/2021-03-20/california-nation-clean-water-laws>.
- *The Pros and Cons of Low-Impact Development*, <https://enviro.blr.com/environmental-news/water/stormwater-general/The-pros-and-cons-of-low-impact-development>.
- “The Challenges of Stormwater Management.” *Water & Wastes Digest*, 8 June 2021, <https://www.wwdmag.com/groundwater/challenges-stormwater-management>.
- EPA, Environmental Protection Agency, <https://www.epa.gov/laws-regulations/summary-clean-water-act>.