


THE POWER OF THE PASSAIC: PATERSON'S BIRTH AND REBIRTH ALONG THE RIVER

AN AGING CITY LOOKS
TO ITS PAST TO CHART
ITS FUTURE.

Alexander Hamilton reasoned in his 1791 Report on Manufactures that domestic industry was critical to the economy, and saw the Passaic River and the 77-foot-high Great Falls as the defining water infrastructure that would power Paterson's industrial growth.



THE CITY OF Paterson has witnessed its fortunes rise and fall with the Passaic River. It was the Passaic River's Great Falls that Alexander Hamilton recognized as a means to fuel American industry. Hamilton envisioned a series of raceways that would one day capture water from above the falls and bring it rushing down to power the mills. The industry that arose from Hamilton's vision harnessed the power from this channeled water to produce firearms, locomotives and especially silk, earning Paterson the nickname "The Silk City."

But decades of industrial pollution took its toll on the river. Poet William Carlos Williams once referred to the Passaic River as the "vilest swillhole in Christendom."¹⁵ Referring to the dyes used in the silk manufacturing process, one anecdote describes how until the 1970s, the day of the week could be determined by the color of the Passaic. A 1972 report described the state of the river's upper basin at the time: "For a significant portion of each year, fish are unable to survive ... Much of the river is ill-smelling and unfit for recreational use or even close contact."¹⁶ While the river's quality has improved from its 1970s nadir, combined sewers in Paterson continue to dump waste into the Passaic and periodic flooding displaces residents from their homes. In addition, aging plumbing fixtures pose threats to drinking water quality.

Despite losing 8 percent of its population since 1990, Paterson remains New Jersey's third-largest city, with a population of 145,219. It is also one of its poorest. But the same river that has served as a catchment

for the city's pollution problems has the potential to restore its prosperity. In 2009, President Barack Obama signed legislation designating the Great Falls and its surrounding area as a national park. Paterson faces many of the same issues found in New Jersey's oldest urban cores, but its diverse body of residents, officials, and community groups are poised to champion a renaissance in the Silk City.

The stories that follow illustrate how water infrastructure serves to improve or impair the quality of life in Paterson:

Harnessing the Power of the Great Falls – Take Two:

A look at how America's newest national park is spurring education and community revitalization.

The Minerals You Don't Want in Your Child's Water:

Community groups understand the dangers posed by lead exposure, but struggle to find solutions.

Greening the Streets to Give Rainwater Someplace to Go: Passaic County's newly adopted transportation plan includes the installation of green infrastructure to reduce flooding.

If the revitalization around the historic mills in Lowell, Mass.,¹⁷ is any indicator, a long-term commitment to cooperation and investment can address Paterson's water woes. The groundwork is now in place for this process to begin.

HARNESSING THE POWER OF THE GREAT FALLS – TAKE TWO

HOW AMERICA'S NEWEST NATIONAL PARK IS SPURRING EDUCATION AND COMMUNITY REVITALIZATION.

“IT IS ABOUT taking pride in your nearby community,” stresses Paterson Middle School 7 Principal Nicholas Vancheri as he describes the connections that his students and their teachers are making with the recently-dedicated Paterson Great Falls National Historical Park. He has a ready partner in Supervisory Park Ranger Ilyse Goldman, who explains, “We do not want to just serve as the go-to destination for the standard fourth-grade field trip on local history.” Instead, Ilyse and her National Park Service (NPS) colleagues are working with their adopted 2016 graduating class to understand the Great Falls in detail through a kaleidoscope of approaches: testing the quality of river water, working with a poet to express thoughts about their neighborhood, boating on the Passaic, delving into the physics behind the raceways, relating the importance of the earth sciences to the city’s development, exploring park-related careers, and connecting the text in history books with local sites. The kids and the National Park Service will share a celebration in 2016, when middle school graduation will coincide with the NPS centennial.

This effort is just the beginning for a national park that will be an outdoor classroom and, on a broader level, a place for all Americans to explore their history. The park was officially dedicated on Nov. 7, 2011. In the summer of 2014 the NPS expects to release a General Management Plan for review and comment. Then, as funding becomes available, the park plan will be implemented over the course of the next 10 to 20 years. The Hamilton Partnership for Paterson, a nonprofit parks advocacy organization, points to one state-funded vision for these improvements prepared by the landscape architecture firm James Corner Field Operations. Their plan identifies

a series of “outdoor living rooms” for people to recreate, explore history, and connect with water near the falls, the river, and the historic raceways.

The Hamilton Partnership has found many ways to enhance the park’s educational, social, and economic benefits for the city and the nation. “Mill Mile,” a self-guided audio tour app featuring the voices of New York Giants wide receiver and Paterson native Victor Cruz, Tony Award-winning director Lin Manuel-Miranda, NBC Nightly News anchor Brian Williams and Pulitzer-Prize winning author Junot Díaz, brings the falls and its gritty industrial neighborhood to life.¹⁸ Hamilton Partnership’s founder Leonard Zax explains his passion for the park: “Many citizens will find much greater meaning within Paterson’s great history and cultural diversity. It was in Paterson that Alexander Hamilton began an economy that required not slavery but freedom, that rewarded not social status but hard work, and that promised not discrimination against some but opportunity for all.” He adds that by helping citizens appreciate their past, the park can “help them define new paths for the future.”

The greater Paterson community is rediscovering Alexander Hamilton’s original vision of how the Great Falls can function as an economic dynamo for the region. It seems that all the pieces are in place: compelling history, a dramatic water feature, great ethnic restaurants, and the city’s proximity to New York City. Local real estate developer George McLoof, who stopped working in suburbs years ago because of what he saw as the perverse incentives that serve only to encourage suburban sprawl, believes that if the pieces are placed right, “the park should be a tremendous plus” for Paterson.



“Ranger Ilyse” Goldman has collaborated with students and faculty in the Paterson community to bring classroom instruction to life. According to Principal Nicholas Vancheri, “students love her cool hat.”

Photo credit: George Garbeck, graphics coordinator, communications department, Paterson Public Schools.



Rendering from a 2008 state-funded plan for the Great Falls that was developed by James Corner Field Operations to show how a park could be developed to connect people with the Passaic River, the Great Falls and its history. Field Operations is probably best known for its design of New York City’s High Line, a linear park built atop an abandoned elevated train line.

Image credit: Hamilton Partnership for Paterson.

Students venture onto the Passaic, with the help of Park Service staff and members of the Bronx-based organization Rocking the Boat.

Photo credit: National Park Service.

However, challenges certainly exist. George mentions the lack of a hotel for overnight visitors. Park Superintendent Darren Boch worries that sustained dry weather and excessive upstream water withdrawals can make the Great Falls resemble a “great trickle.” But Robert F. Guarasci, chief executive officer of the New Jersey Community Development Corporation and chairman of the Paterson Great Falls National Historical Park Federal Advisory Commission, is optimistic. “It won’t be easy, but the establishment of our nation’s newest National Park in Paterson is truly a once-in-a-generation opportunity to engage citizens and help with the revitalization of this great city,” he says. “Like Lowell,

Massachusetts, before us, we have our work cut out for us, but I believe it can be done and many people are ready to work to make it happen here in Paterson.”

Historians are quick to note that Hamilton’s vision to harness the power of the river for industry went through fits and starts before succeeding. Clearly time, philanthropy, smart investments and ultimately partnerships – including everyone from school children to federal officials – will be needed to realize the national park’s potential. But visitors need not wait to begin exploring the Great Falls Historic District. The outlines of a great destination are in place.

THE MINERALS YOU DON'T WANT IN YOUR CHILD'S WATER

COMMUNITY GROUPS UNDERSTAND THE DANGERS POSED BY LEAD EXPOSURE, BUT STRUGGLE TO FIND A SOLUTION.

“**Y**OU KNOW THOSE fliers you get with your water bill and throw away?” asks Robert F. Guarasci, chief executive officer of the New Jersey Community Development Corporation (NJCDC). “We’ve been reading them very carefully after we noticed that they warned residents may have lead in their water.” The NJCDC works to create opportunities to transform lives in the Paterson Great Falls neighborhood, with a major focus on youth. Since lead can have deleterious effects on neurological growth and development, especially in young children, Robert and his staff are very concerned that lead exposure will only increase the competitive disadvantage of Paterson’s youth compared to their suburban peers.

In the flier that was mailed out in December 2012, the Passaic Valley Water Commission (PVWC) advised residents to run their water for 30 seconds to two minutes before using it if it had not been used in several hours, and to consider the use of bottled or filtered water. The commission also suggested identifying and replacing lead fixtures and service lines. In its Consumer Confidence Report for the six months from July 1 to Dec. 31, 2012, the PVWC described the health risks associated with lead: “Infants and children who drink water containing lead in excess of the action level could experience delays in their physical or mental development. Children could show slight deficits in attention span and learning abilities. Adults who drink this water over many years could develop kidney problems or high blood pressure.”¹⁹

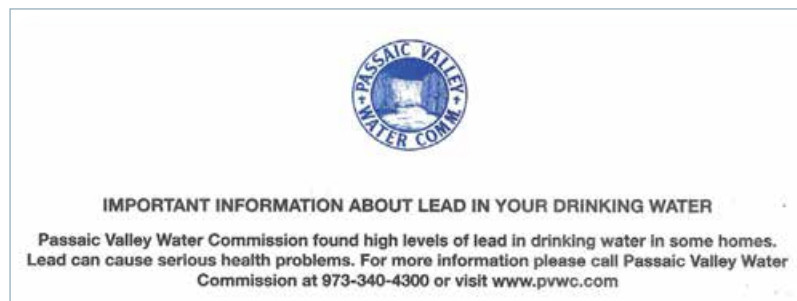
There are no easy answers to this problem. The severity of the issue varies from building to building, and there’s much uncertainty about exactly which pipes are leaching. According to Rutgers Associate Research Professor Daniel Van Abs, “In most cases, lead does not come from the treatment plant or distribution system itself, but rather from customer service pipes and plumbing. The water supplier can treat water in a way that reduces lead levels. But the only permanent fix is changing the lines.”

The PVWC report described the steps it was taking to address the problem,²⁰ which include both a public awareness and education program and a process of providing “satellite corrosion control treatment systems” and “corrosion control treatment” for the entire service area to reduce leaching of lead wherever it may occur. PVWC notes in its report that some of these actions will not begin until a reservoir improvement project mandated by the U.S. Environmental Protection Agency (EPA) is completed.²¹ Providing the corrosion control treatment to the water now will simply cause algae blooms in the open reservoirs, and not benefit customers through lead reductions. In the meantime, several community groups are working to raise awareness to the issue. NJCDC believes that more should be done today to replace lead service pipes in order to eliminate the problem. Paterson’s local chapter of Habitat for Humanity has recently partnered with Rutgers Cooperative Extension of Passaic County, Bridge Hope Community Development Corporation and the Paterson Department of Health and Human Services to submit a grant application to the EPA



Lead notices were posted above water fountains in some of Paterson's public schools in 2013, warning students not to drink from them.

Image credit: Paterson Public Schools.



Excerpt from the December 2012 PVWC flier that warned homeowners that high levels of lead had been found in the drinking water in some houses.

Almost 90 percent of housing in Paterson was built prior to 1980, when lead was still commonly found in paint, pipe solder and other products. Image credit: NJTPA.

to fund workshops on lead education and to purchase 100 home water filters for residents. The release from PVWC of lead levels for 2013 is anticipated sometime in 2014.

Before the dangers of lead exposure were known, lead was used in everything from paints, pesticides, pipes and fuel additives to ammunition and cosmetics. Ingestion of paint chips or paint dust is the most prevalent form of lead poisoning in children, but lead can also be found in soil, imported goods, and lead-based solder used to weld copper water-supply lines inside buildings, among other

places. Lead paint was banned from use in residential properties and public buildings in 1978. Plastic pipes are now frequently used for internal water-supply lines and the use of lead-based solder in water supply systems has been discontinued, so buildings constructed in recent decades are generally lead-free. Lead is not an issue in communities where the financial capacity to pay for remediation is available. Unfortunately, Paterson faces a perfect-storm combination of aging water infrastructure, old housing stock and a disadvantaged population.



GREENING THE STREETS TO GIVE RAINWATER SOMEPLACE TO GO

PASSAIC COUNTY'S NEWLY ADOPTED TRANSPORTATION PLAN INCLUDES THE INSTALLATION OF GREEN INFRASTRUCTURE TO REDUCE FLOODING.

“IT’S HARD,” SAYS Paterson resident Darlene Myers, referring to the repetitive flood events that devastated Paterson’s riverfront neighborhoods,²² the most severe of which came from Hurricane Irene in 2011. Her house suffered extensive basement damage. “I love my house. I would do anything to get it back to normal as possible.” With the assistance of Paterson Habitat for Humanity’s Home Preservation Program and other area nonprofits, Darlene recently was able to install a sump pump to keep her basement dry. To mitigate future problems, she has moved her furnace and water heater out of the basement, but she has yet to replace the basement’s flooring and insulation.

Darlene is just one of many residents who, three years after Hurricane Irene, are still seeking a return to normalcy. The City of Paterson has identified over 140 properties that were flooded as a result of Hurricane Irene and Tropical Storm Lee.²³ It is in the process of purchasing 11 properties and plans to use state and federal funding to acquire another 22. Buildings on these flood-prone properties will be demolished so the sites can be returned to a natural state that can flood safely.

Over 140 properties in Paterson suffered heavy flooding from Hurricane Irene and Tropical Storm Lee in 2011.

Photo credit: Jerry Flach, Paterson Habitat for Humanity.

Darlene recognizes that controlling major flood events are beyond the city’s ability. Flooding is a natural function of rivers, but severe flooding along the Passaic River in Paterson is exacerbated by impervious development, such as roads and buildings, in upstream communities. However, localized flooding from routine rainstorms can be addressed locally. When it rains, stormwater runs off Paterson’s impervious surfaces into its sewers, which are antiquated networks

that mix stormwater with sewage. Like all combined sewer systems, Paterson’s was deliberately designed to allow the rainwater/sewage combination to overflow directly into water bodies during heavy rain events once the volume of water exceeds a certain threshold. In the case of Paterson, 23 combined sewer outfalls empty directly into the Passaic River once the sewer reaches capacity, causing pollution and a public health hazard. When the underground system is clogged or in disrepair, excess sewage backs up through manholes, storm drains, basements and even household drainage fixtures.

Wholesale repair or replacement of Paterson’s sewer lines is cost-prohibitive, so local officials have been focusing on capturing stormwater before it runs into the combined sewer system. The Passaic County Planning Department is targeting the hard surfaces it controls – county roads – for creation of “green streets.” Green streets build on the concept of “complete streets” (designed to serve all users, including drivers, walkers and cyclists) and add planted areas and other water-absorbing features.

The county has created a new design for a five-block strip of Haledon Avenue that would transform the wide macadam corridor into a safer, leafy green street. The design puts Haledon Avenue on a “road diet” that would make it narrower by replacing some pavement

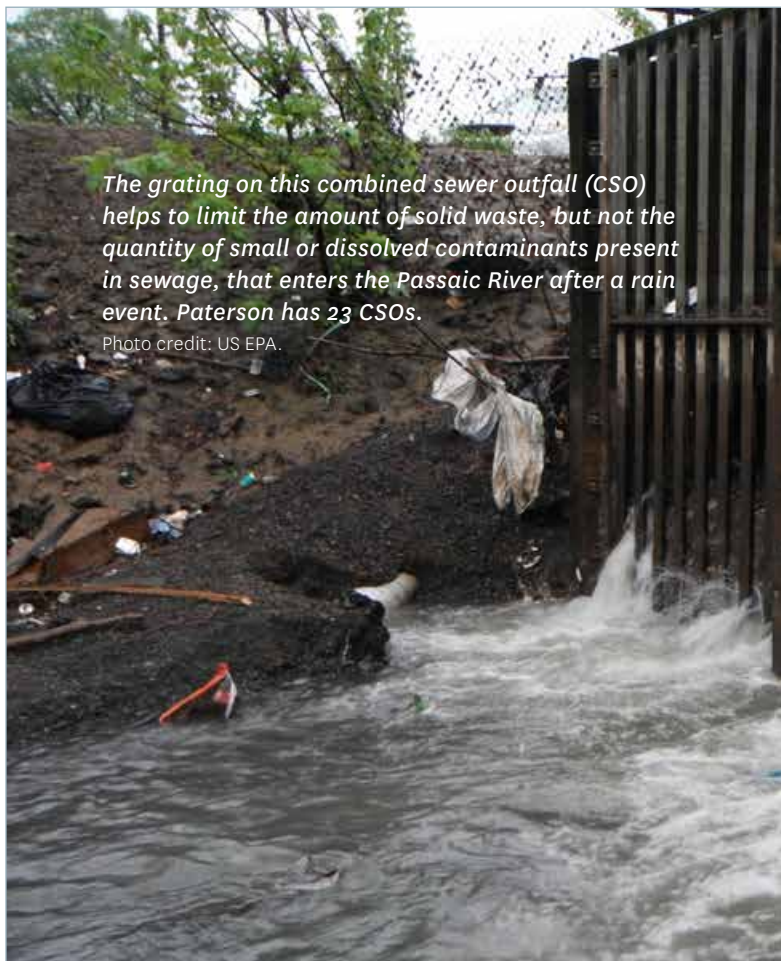
with landscaped strips. Street trees would add shade; and new sidewalks, bike lanes and crosswalks – some constructed from pervious materials – would make it safer. When combined with rain barrels attached to neighboring homes, the new design is projected to capture 40 percent of the area’s stormwater runoff.

The only thing missing at this point is money for implementation. The Haledon Avenue project is part of a comprehensive strategy outlined in *Moving Passaic County*, the Transportation Element of the county’s 2012 Master Plan²⁴. The plan outlines an iterative process to build complete green streets, beginning with public education and then moving through identification of pilot projects, inclusion of green streets in the planning and development process, and development of detailed guidance from pilot projects. The county is presently awaiting word on a grant application to the EPA to carry out the Haledon Avenue pilot project.

Meanwhile, Darlene’s neighborhood is searching for a silver lining to its water problems. Paterson Habitat for Humanity is assisting Darlene and her neighbors in developing a resident-driven neighborhood revitalization plan that will connect flood resiliency to community and economic development. The desired outcomes will help the community take steps to transform the Passaic River from a community liability into an integral asset.

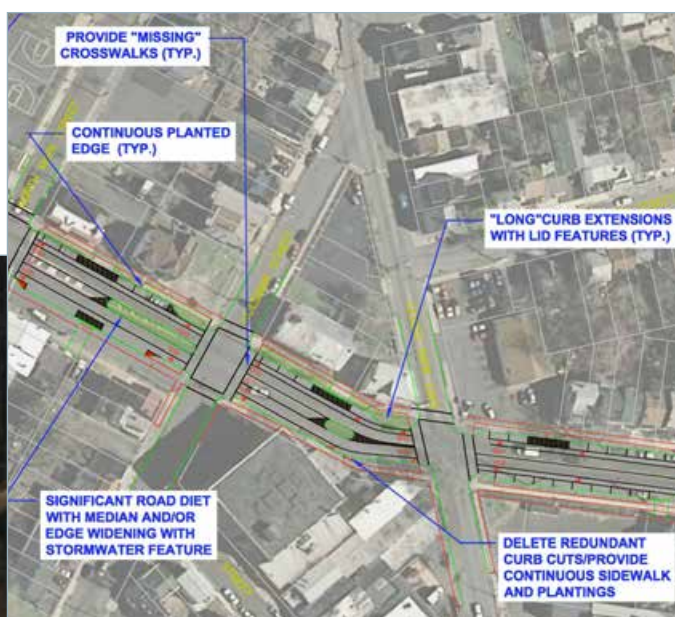
The proposed improvements to Haledon Avenue in Paterson include planted medians, street trees, and pervious pavement for bicycle lanes, which will capture rainwater before it can contribute to flooding and sewage backups.

Image credit: Passaic County Planning Department.



The grating on this combined sewer outfall (CSO) helps to limit the amount of solid waste, but not the quantity of small or dissolved contaminants present in sewage, that enters the Passaic River after a rain event. Paterson has 23 CSOs.

Photo credit: US EPA.



- PROVIDE "MISSING" CROSSWALKS (TYP.)
- CONTINUOUS PLANTED EDGE (TYP.)
- "LONG" CURB EXTENSIONS WITH LID FEATURES (TYP.)
- SIGNIFICANT ROAD DIET WITH MEDIAN AND/OR EDGE WIDENING WITH STORMWATER FEATURE
- DELETE REDUNDANT CURB CUTS/PROVIDE CONTINUOUS SIDEWALK AND PLANTINGS

Notes

CAMDEN

- 1 Whitman, Walt. *Leaves of Grass*. 1900.
- 2 Camden SMART. "Camden SMART 2014 Trailer." YouTube video, 2:09. Posted by "Camden Smart," January 29, 2014. <https://www.youtube.com/watch?v=rULgne7stg4>
- 3 DeNardo, Mike. "Admiral Wilson Boulevard Floods Despite Costly Drainage Project." KYW Newsradio 1060, April 19, 2011. Accessed April 9, 2014. <http://philadelphia.cbslocal.com/2011/04/19/admiral-wilson-boulevard-floods-despite-costly-drainage-project/>
- 4 Delaware Valley Regional Planning Commission. *US 30 Corridor Study: Camden County, New Jersey*. Delaware Valley Regional Planning Commission, July 2002. Accessed April 9, 2014. <http://www.dvrpc.org/reports/02028.pdf>
- 5 The terms infiltration and inflow refer to the unintended entry of water into a sanitary sewer line through defects in the line, and can come from rainwater that is absorbed into the soil either from above or from the water table below.

HOBOKEN

- 6 Walk Score ranks neighborhoods and municipalities on a scale of 0-100 depending upon as-the-crow-flies proximity to everyday amenities such as restaurants, grocery stores, schools and parks. Hoboken's Walk Score is 95, which puts it at the top of Walk Score's list for small cities (population 50,000-100,000). The average Walk Score of New Jersey's 61 largest municipalities is 59.
- 7 OMA, Royal HaskoningDHV, Balmori Associates and HR&A Advisors. "Resist, Delay, Store, Discharge: A Comprehensive Strategy for Hoboken." Plan presented at the Hoboken City Council Meeting as part of the Rebuild By Design initiative, March 5, 2014.
- 8 Rebuild by Design. "Resist, Delay, Store, Discharge: a comprehensive strategy for Hoboken." Accessed April 16, 2014. <http://www.rebuildbydesign.org/project/comprehensive-strategy/>
- 9 Together North Jersey. "Hoboken Green Infrastructure Strategic Plan." Accessed April 16, 2014. http://togethernorthjersey.com/wp-content/uploads/2014/04/20140404_Hoboken-Report_sm.pdf
- 10 City of Hoboken. "Southwest Park Design Concepts." Accessed April 16, 2014. <http://www.hobokennj.org/content/wp-content/uploads/2013/10/SW-Park-4-Design->
- 11 LEED (Leadership in Energy and Environmental Design) Certification is the U.S. Green Building Council's audit-based system that awards points to green buildings based on the number of sustainable actions taken. Certifications start with Basic and move up through Silver, Gold and Platinum.
- 12 The Hostess Building is not without its share of environment-sustaining features: It boasts a 20,000-sq.-ft. green roof, the first of its kind in Hoboken. [Concepts.pdf](#)

JERSEY CITY

- 13 Hackensack Riverkeeper. "The Truth About CSOs." YouTube video, 7:26. Posted by "Hackensack Riverkeeper," November 26, 2013. <https://www.youtube.com/watch?v=wBY3idYRkbw>
- 14 ioby. "About ioby." Accessed April 8, 2014. <http://www.ioby.org/about>.

PASSAIC

- 15 Williams, William Carlos. *In the American Grain*. 1925. Reprint, New York: New Directions, 2009.
- 16 Beale, David T., Karin Platt, Robert B. Nicholas, John P. Leidy, and John Kolesar, Director. *Pollution Control on the Passaic River*. Princeton, New Jersey: Center for the Analysis of Public Issues, 1972.
- 17 National Park Service. "Lowell National Historic Park (1978-2008): 30 Years of Preservation and Innovation for Future Generations." Accessed April 11, 2014. http://www.nps.gov/lowe/parkmgmt/upload/NPS_30th%20-%20small.pdf. Similar to Paterson, Lowell was developed in the early 19th century as a planned industrial community for the production of textiles. Following a decline similar to Paterson's, parts of Lowell were declared a National Historic Park in 1978, becoming the nation's first urban national park. However, success did not happen overnight; the restoration and revitalization of Lowell has continued to the present. Thirty years later, in 2008, 3,850,000 square feet or 77 percent of the historic mills have been rehabilitated, attracting nearly 700,000 visitors annually
- 18 Hamilton Partnership for Paterson. "Mill Mile –Paterson Great Falls National Park." YouTube video, 1:35. Posted by "HamiltonPartnership," April 23, 2013. https://www.youtube.com/watch?v=owlZ_L1R-bE
- 19 Passaic Valley Water Commission. "2012 Water Quality Report." Accessed April 8, 2014. http://www.pvwc.com/water%20quality/PVWC_1605002_2013CCR_2012WQReport.pdf
- 20 The PVWC Consumer Confidence Report reads: "Lead: Passaic Valley Water Commission PWS ID NJ1605002 exceeded the lead action level during the July 1 - December 31, 2012, monitoring period. Customers were notified about this in the lead brochure that was mailed out in December 2012. Additional information is provided elsewhere in this report regarding steps you can take to reduce your exposure to lead in drinking water and how to obtain additional copies of this report and a copy of the lead brochure."
- 21 The PVWC Consumer Confidence Report details action being taken: "PVWC is moving forward with design and construction of satellite corrosion control treatment systems to reduce the potential of lead dissolving into the water. These treatment systems are being phased in as part of the reservoir improvement project where each phase will provide treatment to specific areas of the distribution system. Once the reservoir improvement project

is completed and the uncovered finished water reservoirs are replaced by covered storage tanks, the entire service area will receive corrosion control treatment. In addition, PVWC continues implementing a multi-faceted lead public awareness and education program.”

22 According to the USGS Stream Gauge in Little Falls, N.J. (immediately upstream of Paterson), of the 25 largest recorded floods in the past century, 11 occurred in the past 25 years, with nine being considered major floods (at least two feet over flood stage), and two being considered moderate floods (at least one foot over flood stage).

23 Malinconico, Joe. “Paterson ready to approve 11 buyouts on city’s north side.” Paterson Press, May 27, 2013. Accessed April 9, 2014. <http://www.northjersey.com/news/paterson-ready-to-approve-11-flood-buyouts-on-city-s-north-side-1.565713>

24 Passaic County Department of Planning and Economic Development, with assistance from Parsons Brinckerhoff. “Moving Passaic County: Transportation Element of the Passaic County Master Plan.” Accessed April 16, 2014. <http://www.passaiccountynj.org/DocumentCenter/View/126>

ABOUT NEW JERSEY FUTURE



Founded in 1987, New Jersey Future is an independent not-for-profit organization, working for better development and quality growth in the Garden State. New Jersey Future focuses on promoting smart growth and advancing implementation of the State Development and Redevelopment Plan by conducting research and analysis on key issues, building consensus for broad solutions, hosting events to educate and inform, and implementing plans on the local level to build stronger, more resilient communities.

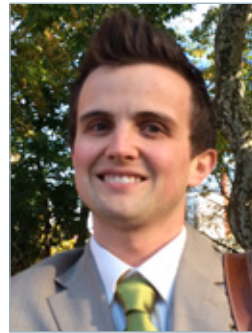
ABOUT THE AUTHORS



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Chris Sturm directs New Jersey Future's policy development and advocacy across a host of issues including state and regional planning, sustainable infrastructure, and incentives for compact, equitable development.

She spearheaded the adoption of legislation authorizing better cluster development tools, and is frequently quoted in the media. Chris serves as a trustee for the Council on Affordable Housing and the Environment, and is a member of the Clean Water Council of New Jersey and the New Jersey Climate Adaptation Alliance. Her career experience includes serving as the assistant director of the Capital City Redevelopment Corporation, as well as working for the MSM Regional Council (now PlanSmart NJ), the Eagleton Institute, and the Office of State Planning. She holds a master's degree in public affairs from the Woodrow Wilson School at Princeton University, where she concentrated in urban and regional planning.



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Nick focuses on policy and planning initiatives ranging from research to on-the-ground implementation, focusing on issues including water and natural resources, sustainable infrastructure and ways to develop compact, livable communities.

Prior to joining New Jersey Future, he served as the community and natural resource planner for Pike County, Pennsylvania, where he monitored implementation of the county open space plan, provided planning assistance to local municipalities, coordinated the county's shale gas task force and communicated with print and televised media on planning projects. Recently Nick was selected to participate as a member of the Environmental Leadership Program's Eastern Regional Fellowship Class of 2014.