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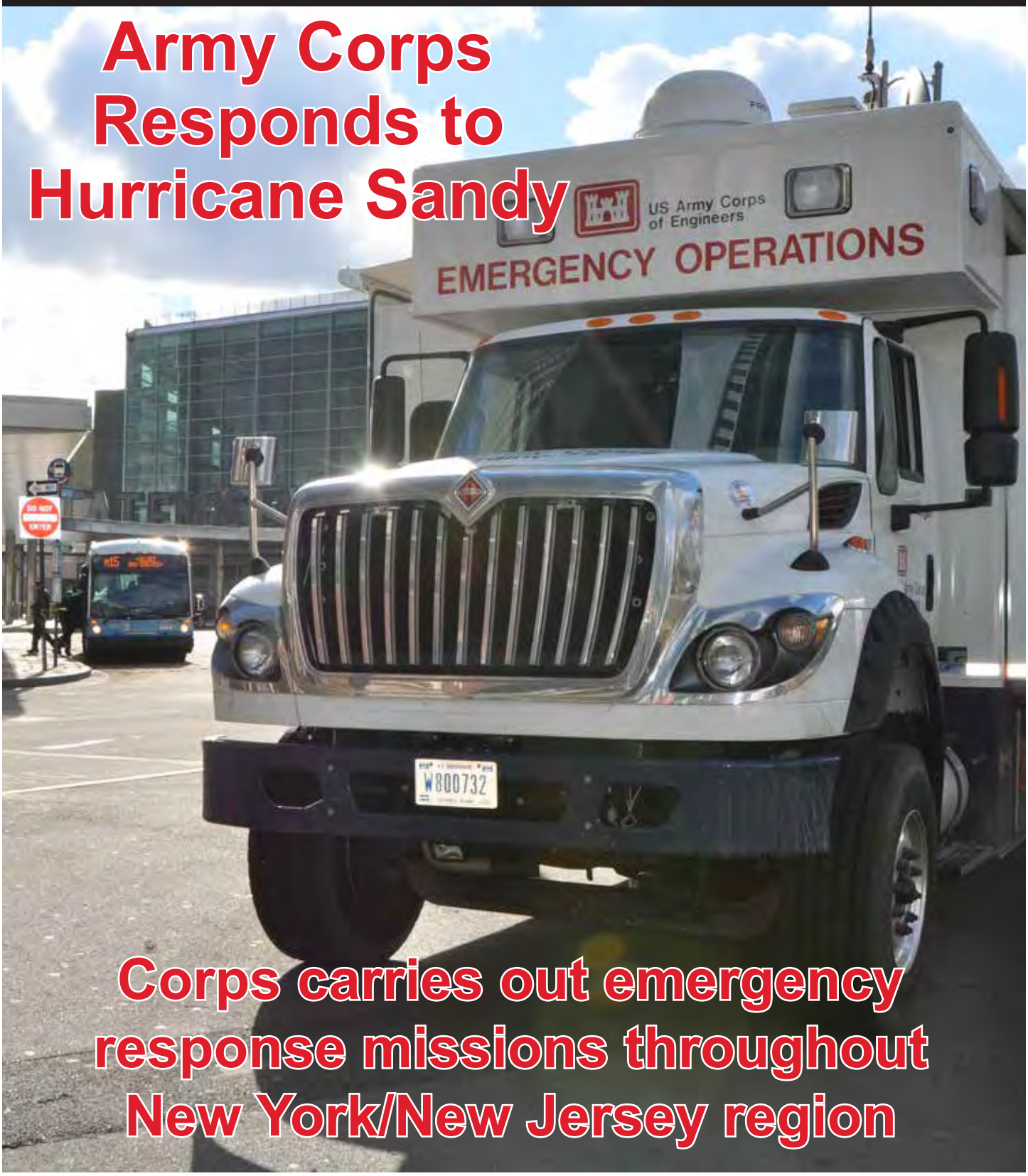
U.S. Army Corps of Engineers, New York District

Army Corps Responds to Hurricane Sandy



Corps carries out emergency response missions throughout New York/New Jersey region

New York District Times
Newsletter of the
U.S. Army Corps
of Engineers
New York District
Special Hurricane
Sandy Edition

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U.S. Army Corps
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New York District

(photo by Chris Gardner, New York District)

A U.S. Army Corps of Engineers Deployable Tactical Operations System Emergency Command and Control Vehicle that was parked in Battery Park near the Staten Island Ferry Terminal in the immediate days following Hurricane Sandy. The ECCV pictured was used as the command center for the Corps mission to unwater hundreds of millions of gallons of saltwater from the transportation infrastructure lower Manhattan in the immediate days after the storm. To learn more about the Corps' overall response to Sandy, including the unwatering effort, check out **"Army Corps personnel from across the nation respond to Sandy in a big way"** on page **4**.

Editor's Note

This edition of the New York District Times is dedicated to all those impacted by Hurricane Sandy. Our thoughts are with those who were severely impacted, many of whom are still recovering. We'd also like to extend a special thanks and a "Hooah!" to the hundreds of Army Corps teammates from all across the country that came to the New York and New Jersey region to be a part of the emergency response efforts. Our region was hit extremely hard by the storm and we greatly appreciate the support, time and effort of all the teammates that helped. Essayons!

- Chris Gardner, editor

Commander's Reflections

Col. Paul E. Owen
Commander

At about 2:30 p.m. on Oct. 29, 2012, I was standing in Battery Park watching the nine-foot swells from Hurricane Sandy barely lap over the sea walls. We knew there would be one more high tide later that night and the surge would have a greater magnitude and force. The confluence of three major events would make Hurricane Sandy one of the most powerful and damaging storms ever experienced in New York. The simultaneous arrival of the full moon, high tide, and Hurricane Sandy storm system would come together at approximately 8:30 p.m. The combination of these three events resulted in unprecedented storm surge at Battery Park causing unprecedented inundation of the city's subterranean infrastructure and tremendous damage to the coastal areas in New York and New Jersey.

The response from the employees of New York District was heroic. So many people "ran to the sound of the guns" and made incredibly valuable contributions while enduring personal hardships in the aftermath of the storm. With our Emergency Operations Center (EOC) activated at 26 Federal Plaza, we lost power late in the evening of October 29. We didn't get it back for 10 days. With both Continuity of Operations (COOP) sites at West Point and Caven Point compromised, we quickly adapted to set up our EOC at Fort Hamilton and Unwatering Command and Control at Battery Park in the USACE Deployable Tactical Operation System (DTOS) vehicles. There are too many incredible individual actions to mention in this short introductory message. Every day I continue to learn more and am humbled by the sacrifice and dedication I witnessed from our employees. We found ourselves at the very tip of the spear of the President's highest national priority. We produced unbelievable results.

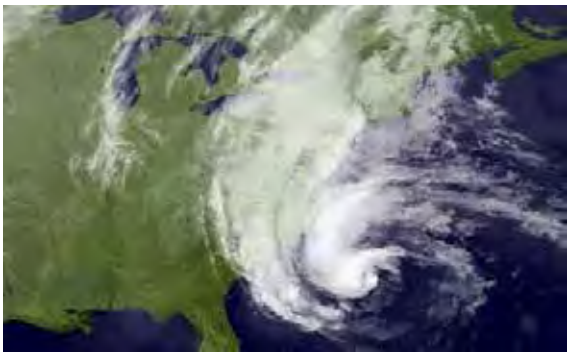
Along with individuals and organizations from the entire US Army Corps of Engineers and Department of Defense, we successfully executed the response phase as the initial lead for FEMA's Emergency Support Function 3. The aggressiveness and tenacity with which the New York District initially responded amazed many outside the organization. Our ability to muster the necessary assets and leaders right after the storm ensured a rapid, effective federal response to the storm at an extremely critical time to our National leaders – just days before National Election Day. Without this initial effort, the response for ESF 3 would have been delayed by days. Because of our initial effectiveness, we were never declared an "affected district."

Almost two months after we experienced the impact of Hurricane Sandy, we have much work left to do. Now that the response operations have shifted to recovery, a Recovery Field Office for New York has assumed the responsibility for the FEMA mission assignments associated primarily with the longer term efforts for debris removal. Eventually, this mission will return to New York District. In the meantime, we will continue the arduous task of planning to restore the damaged coastlines of New York and New Jersey.

I am proud and honored to serve with all of you.

Essayons!

Hurricane Sandy batters NY District's AOR, District responds



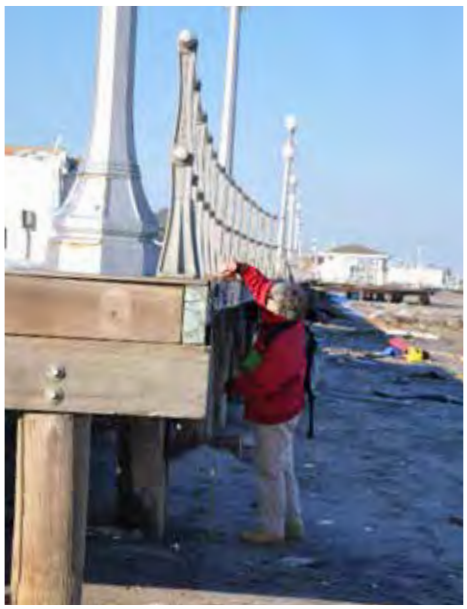
Satellite imagery of Hurricane Sandy as it approached New York District's area of responsibility, bringing powerful storm surges and massive damage. (image courtesy of NOAA)

By Ken Wells, New York District

In the wake of damage caused by Hurricane Sandy, the U.S. Army Corps of Engineers, New York District, worked diligently to put itself back together and provide support to the larger federal response effort in support of FEMA. Like every other organization impacted by Sandy's presence, the Corps of Engineers experienced a great deal of damage across its area of responsibility, including power outages, flood damage, equipment damage and the loss of its Caven Point Marine facility, which is home to the District's fleet of drift collection vessels and survey boats.

Hurricane Sandy caused flooding and damages equivalent to a 100-year event in most areas and up to the 500-year event in extreme cases of reported flooding. Within hours of Sandy's passing, New York District personnel were conducting post-storm damage assessments of local projects, meeting with stakeholders and elected officials at the local, state and federal levels as well as laying the groundwork to support FEMA's emergency operations missions.

Army Corps boat crews also stepped up their efforts in the wake of the storm despite the destruction of the District's marine facility **(see page 9)**. Crews conducted hydrographic surveys to assess any impacts the storm may have caused to federal navigation channels in and around the New York and New Jersey Harbor, including searching for new potential obstructions that may have found their way into the channels during the storm. The District's drift collection fleet continued to execute their mission aimed at safe navigation by clearing storm debris from the harbor that could potentially be hazards to navigation. Working with regional partners to reopen the harbor became an essential task because oil tankers and other ships needed to use the harbor to deliver critical goods to the region, including fuel.



New York District Coastal Engineer Diane Rahoy assesses the Avon-by-the-Sea, N.J., coast November 9, 2012 after a nor'easter struck the area just days after Hurricane Sandy struck. (photo by Dan Desmet, New York District)

New York District also closed barrier island breaches on Long Island caused by Hurricane Sandy. It was the first activation of the Breach Contingency Plan developed in the 1990s **(see page 13)**.

New York District personnel also played a major role in supporting FEMA missions across the District's area of responsibility. More than 3,000 employees from the North Atlantic Division and an additional 990 team members deployed from other USACE Divisions across the Nation during the height of the recovery effort **(see page 4)**. In the wake of Hurricane Sandy, USACE received 68 FEMA Mission Assignments exceeding a total of $254 million. In these types of situations, the Army Corps of Engineers is driven by three important principles: Support immediate emergency response priorities; Sustain lives with critical commodities, temporary emergency power and Initiate recovery efforts by assessing and restoring critical infrastructure.

Army Corps personnel from across nation respond to Sandy in big way

USACE teams from around the nation converge on NY and NJ to support recovery operations, FEMA missions

By JoAnne Castagna, New York District

"She was wandering around mounds of debris along the waterfront at Breezy Point, New York, and the shock on her face was pretty powerful for me," said Jim Balocki, chief, Interagency and International Services, Headquarters, U.S. Army Corps of Engineers.

"Her name was Kathleen and she told me she had lost everything to Hurricane Sandy and that she was grateful for everything we were doing to help her community and I was glad to be there to speak with her," said Balocki who deployed to New York City as part of the Army Corps' Hurricane Sandy Recovery Mission.

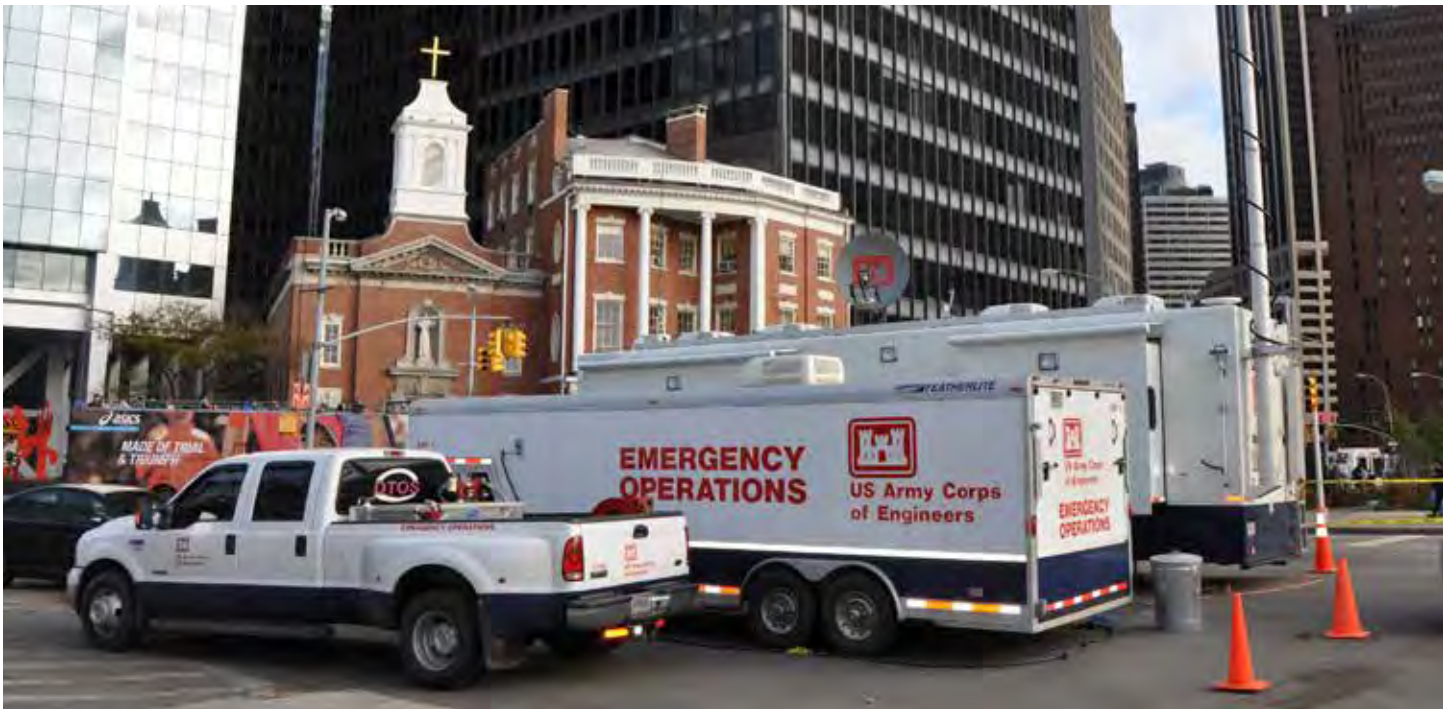
Kathleen represents many of Sandy's victims and Balocki many of the hundreds of Army Corps personnel who deployed from around the nation to the New York-New Jersey metro area to take part in recovery missions assigned by the Federal Emergency Management Agency (FEMA).

The Army Corps has teamed with federal, state, city and regional agencies to unwater flooded areas, provide temporary power, remove debris and just as important provide an ear, a hand or a hug.

Hurricane Sandy was the largest Atlantic hurricane on record, causing severe damage across 24 states, hitting New York and New Jersey especially hard.

The super storm's 95 mile-per-hour winds and record breaking storm surge flooded streets, subways and vehicular tunnels with salt water wreaking havoc on communities throughout the region, especially those in coastal areas creating major debris issues and

National Corps Response cont'd on 5...



U.S. Army Corps of Engineers Deployable Tactical Operation System vehicles, deployed from the USACE Readiness Center in Mobile, Ala., were quickly set up in Battery Park in the days after Hurricane Sandy hit. In this November 1, 2012 photo the DTOS set up a command center for Task Force Unwatering. (photo by Chris Gardner, New York District)

— *National Corps Response cont'd from 4* —

knocking out power to millions of residents.

The Army Corps plays a major role in disaster response with more than 40 specially trained response teams capable of providing a wide variety of public works and engineering related support.

After the hurricane, the Army Corps immediately had teams on the ground working around the clock to get things back to normal, families safely back in their homes and people back to work.

"Twenty employees from our district jump-started the initial operations," said Col. Paul Owen, commander, New York District. "Even though our district was severely impacted, we maintained the ability to perform emergency operations and quickly established recovery field offices throughout the region. I was proud to see my employees so energized and dedicated to work on the mission, even though their own families had damaged homes and no power."

On top of supporting FEMA-assigned missions throughout the region, the Corps' New York and Philadelphia districts also carried out their own regular missions following the storm. For New York District, these included helping the critical port of New York and New Jersey reopen, closing barrier island breaches in Long Island, and assessing damages to federally authorized and constructed shoreline projects while developing short-, mid-, and long-term alternatives for coastal storm damage risk management.

UNPRECEDENTED UNWATERING MISSION

One of the first FEMA response missions the Army Corps received was to unwater critical public infrastructure in the NYC metro area. "Before we could get transportation systems and critical infrastructure back online the flood waters had to be drawn down," said Thomas Heinold, deputy chief, Operations Division, Rock Island District, who was part of the Army Corps' Unwatering Task Force. This team also played a major role unwatering the flooded streets of New Orleans in the aftermath of Hurricane Katrina. "This is critical because flooding creates dangerous situations, such as drowning and public health hazards."

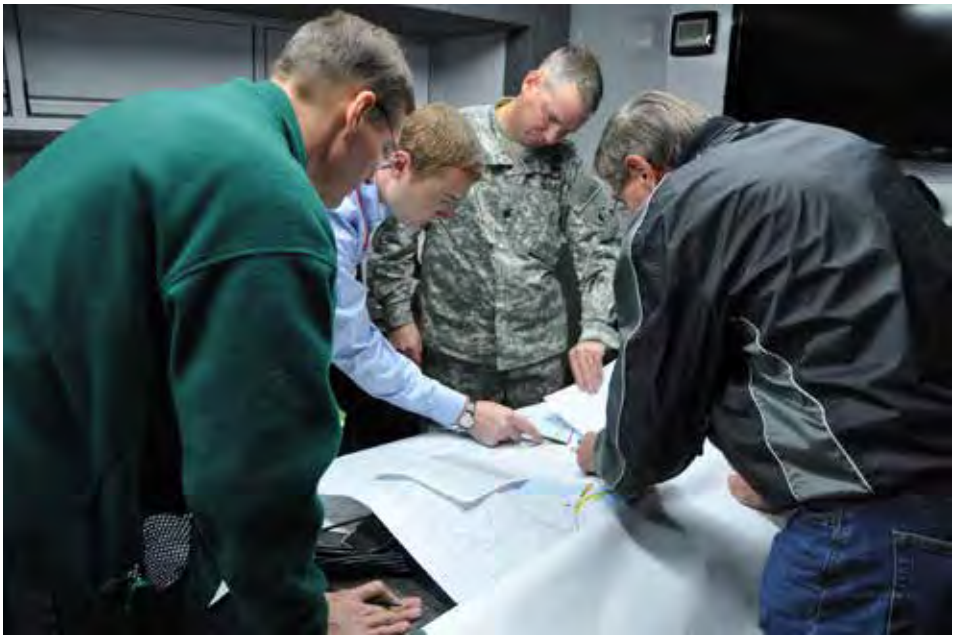
One of the major challenges in the aftermath of the storm was removing hundreds of millions of gallons of seawater that washed into New York City's mass transit system. According to a story by New York University, almost 70 percent of the 1.6 million commuters who work in Manhattan use the subway system, be it MTA or PATH, on a daily basis.

"The mass transit system was basically shut down in the whole area. Having the system flooded like this has a tremendous negative effect on normal business activities and ultimately the economy," said Roger Less, chief, Design Branch, Rock Island District, who served as senior project manager on the Unwatering Task Force. "I saw some of the worst flooded areas of the city. There were subway stations that had water that came so high it was on the subway platforms."

The U.S. Army Corps of Engineers worked with and supported various partners to unwater critical infrastructure, especially transit infrastructure, immediately following Hurricane Sandy. Here are some of the figures for amount of saltwater removed via Task Force Unwatering:

Asset Unwatered	Est. Water Removed	Owners/ Partners
14th Street Tunnel (L)	3.5 million gallons	MTA
Battery Park Underpass	57 million gallons	NEW YORK CITY DOT
Montague St. Tunnel (N, R)	60 million gallons	MTA
PATH Train and WTC work site	20 million gallons	THE PORT AUTHORITY OF NY & NJ
South Ferry Station (1, N, R)	20 million gallons	MTA
Brooklyn-Battery Tunnel	86 million gallons	MTA
Amtrak Kearny Substation	40 million gallons	AMTRAK
Passaic Valley Wastewater Treatment Plant	200 million gallons	Passaic Valley Sewerage Commission

The Corps also provided technical support to various other unwatering efforts at critical infrastructure sites throughout the region.



(l to r) Roger Perk of the Unwatering Team from the U.S. Army Corps of Engineers, Rock Island; Michael Hogg, project manager from New York District, Lt. Col. Michael Clancy, New York District deputy commander; and Roger Less, also from the Rock Island Unwatering Team, look over a map of tunnels in lower Manhattan while discussing how to remove hundreds of millions of gallons of water from them after Hurricane Sandy. (photo by Chris Gardner, New York District)

The team immediately had pumps of various types and sizes sent to points around the transit system and began pumping. The task force provided technical assistance and unwatering for the Brooklyn Battery Tunnel (est. 86 million gallons), World Trade Center / PATH Train (est. 20 million gallons), South Ferry Subway Station (est. 20 million gallons), 14th Street Tunnel-Canarsie (est. 3.5 million gallons), the Battery Park Exchange (est. 57 million gallons), the Montague Street Tunnel (est. 60 million gallons), the Amtrak Substation Kearny (est. 40 million gallons), and the Passaic Valley Wastewater Treatment Plant (est. 200 million gallons). The Corps also provided technical assistance for other similar infrastructure unwatering efforts throughout the region.

The pumps efficiently removed about 116,000 gallons of saltwater per minute and in just nine days approximately 286 million gallons of saltwater had been drained from the city's subways and tunnels. The team also supported removing an additional 200 million gallons of water from the Passaic Valley Wastewater Treatment Plant in Newark, N.J.

Even though the water was pumped out rather quickly, it had to be done carefully. "If you draw the water down too fast and the water on the other side of tunnel walls and structures doesn't have time to gravity drain at the same rate, this can collapse a wall and create further damages," said Heinold.

Roger Perk, assistant chief, Project Management Division, Rock Island District, who was on the Unwatering Task Force team said, "The public has been asking why the pumps already installed in these tunnels to routinely pump out rain water and snow melt, did not remove the water. What many may not understand is that if you have an extremely large flow of saltwater filling the tunnels it makes these pumps useless. The water makes the electrical system go down, so the pumps lose their power and can't function. In these situations you need an agency like the Army Corps to come in and use pumps that have their own power source. Once the tunnels are pumped, maintenance crews can then come in to clean dirt and debris and get the tunnel's regular pumps powered up again."

The Corps' unwatering efforts augmented the existing capacities and efforts of local and state authorities like the MTA and the Port Authority that went straight to work to drain their subway lines, tunnels and other infrastructure

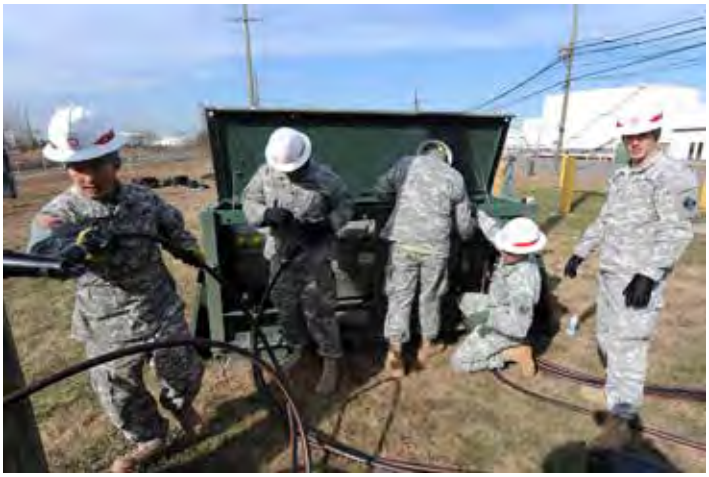
Some of an approximate total of 57 million gallons of water is pumped out of the Battery Park Underpass Nov. 2, 2012, in lower Manhattan just days after Hurricane Sandy hit. (photo by Chris Gardner, New York District)

sites. The destruction caused by the storm was the worst disaster in the 108-year history of the city's subway system.

In other locations in the metro area, another unwatering team led by the U.S. Army's 19th Engineer Battalion, based out of Fort Knox, Ky., worked with members of the Army's 86th Engineer Dive Detachment, the Army's 76th Engineer Company, the Marine's 8th Engineer Support Battalion and others to remove trash and debris, conduct engineering and structural assessments on piers and public property, and pump out large municipal buildings such as public housing complexes operated by the Housing Authority of New York and waste water treatment plants.

EMERGENCY TEMP POWER

The Corps also played a vital role in providing temporary emergency power to critical public facilities including water and wastewater treatment plants, hospitals, nursing homes, public housing



Soldiers from the 249th Engineer Battalion (Prime Power) install electrical generator equipment Nov. 6, 2012, at a Carteret, N.J., fuel depot that lost power during Hurricane Sandy. Power outages contributed to temporary gas shortages after the storm and getting fuel depots running was important to ending shortages. (DoD photo by EJ Hersom)

developments, fire stations and police stations. The temporary emergency power allowed these sites some level of operability while the commercial grid was restored by local power authorities.

"Power is what people need immediately after a disaster because it means life," said Balocki, who served as the Army Corps' Leader for Task Force

Army Corp of Engineers personnel stage and prepare generators in central New Jersey for deployment to support the Emergency Temporary Power mission in the aftermath of Hurricane Sandy. (photo by Mary Markos, St. Louis District)

Power. "It's important to get power to such places as hospitals because people lives are on the line. People there are receiving critical care for illnesses and injuries that need the power to stay alive. Hospitals were also experiencing a surge of new people coming in because they were harmed during Sandy. We also provided power to facilities that are life sustaining so we can provide people the ability to shelter and care for their families and loved ones so they don't require additional support from the state and federal government."

Task Force Power included hundreds of Soldiers from the 249th Engineer Battalion (Prime Power) and Corps civilians from Temporary Power Planning and Response Teams and ultimately installed 202 temporary FEMA generators throughout the metro area. The generators had the capacity to provide 54 megawatts of power and directly supported more than 25,000 residents, with thousands more benefitting indirectly. In addition to the above mentioned municipal facilities like police and fire stations, the Corps worked to provide temporary emergency power to a wide range of critical infrastructure including mass transit like the Hoboken ferry, New Jersey's PATH trains, and the Long Island railroad as well as petroleum terminals that were critical to returning normalcy to fuel availability in the region after the storm.

The generators were specific to the various power situations they encountered. "This is not a one–size-fits-all situation where we rolled up with 75 generators

in the back of a van and started dropping them off and hooking them up," said Balocki. "Every one of the generators had to be specially matched and connected to safely provide temporary power. Because it's custom made, it takes a bit longer than what people expect and want, but it's for the safety of the people living and working in the facility."

The generators were used until the grid power from the area's service provider was available. One of the places the team installed generators was in a public housing development in Rockaway Beach that houses 1,200 residents who had no power for several days.

"Two ladies from the development were there watching us do our work and I explained everything we were doing so they would understand the situation," said Balocki. "Although they were not pleased with having to wait for electricity, they were grateful to have the Army corps there and that we took the time to explain things to them. They gave me a hug."

DEBRIS REMOVAL MISSION

Picking up the pieces after a hurricane like Sandy is the hardest thing for residents to do and it's also the Army Corps' most intensive and largest mission that will continue into early 2013.

Sacramento District's Josh Jimerfield, a debris engineer with the U.S. Army Corps of Engineers New York Recovery Field Office, takes a photo, Nov. 30, 2012, of a home burned to the ground in Queens, N.Y. Teams of Army Corps and FEMA real estate specialists and field assessors met homeowners and conducted site assessments as part of the debris removal mission assigned to the Corps by FEMA after Hurricane Sandy. (photo by Brandon Beach, San Francisco District)

"It's important to clear the debris from streets so that people can get to their homes and begin to rebuild their lives and eventually get back to normal," said Col. John Pilot, the debris team chief who deployed from the Corps' South Atlantic Division. "Once the streets are clear then residents are able to bring the debris from their property to their curbs for pick up. This allows them to clean up their homes and begin their recovery process, file insurance claims, rebuild or in some cases demolish their homes."

FEMA, the Corps' Debris Task Force and the Environmental Protection Agency, in cooperation with state and local agencies, continue to clean up an estimated 3.6 million cubic yards of debris left behind from Hurricane Sandy in the metropolitan area - or enough to fill about seven Yankee Stadiums. The debris is being sent to temporary storage areas in the region where it's being handled, sorted and recycled and then transported to landfills – often via barges.

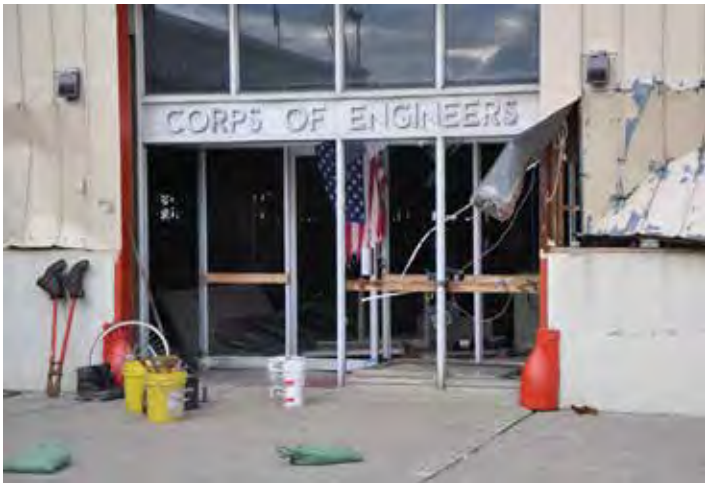
The Army Corps also assisted those trying to gather their belongings among the mounds of debris.

"I saw an older couple with some friends having some difficulty trying to carry a piano out of a house to the curb to be taken away. I ran up to them to give them a hand and they were very appreciative," said Col. Trey Jordan, commander, Baltimore District, who took part in the debris removal effort as commander for the New York Recovery Field Office. "We talked for a while and one of them told me he had worked for the Army Reserves for 20 years. It was a nice chance to bond with the people we were trying to help out. It's a personal way for the Army Corps to help besides what we are accomplishing through our assigned missions."

Although USACE did not receive a direct federal assistance assignment for debris removal in New Jersey, the Corps did receive an $800,000 technical assistance mission to provide guidance and best management practices to New Jersey to ensure state landfills were not over-burdened. The team initially provided assistance for eight New Jersey counties and will continue to provide support and coordination as the debris removal mission moves into waterway debris removal property debris removal.

National Corps Response cont'd on 12...

Caven Point hit hard by Sandy, supports NY/NJ Harbor and begins own recovery



New York District's Caven Point Marine Terminal in Jersey City, N.J., was devastated by Hurricane Sandy's powerful storm surge as seen in this Nov. 2, 2012, photo of the facility's main entrance after the storm. (photo by Chris Gardner, New York District)

By Chris Gardner, New York District

When Hurricane Sandy hit New York and New Jersey it brought incredible storm surges and severely damaged areas along the water. Facilities at New York District's Caven Point Marine Terminal in Jersey City, N.J., were destroyed by the 5-foot plus wall of water that tore through whatever was in its path.

"Once the siding was ripped apart, the wave action inside the building caused complete devastation," said Tony Lauria, Heavy Mobile Equipment Supervisor at Caven Point. Lauria has worked at Caven Point for 28 years. "This storm was one in a million, we've never seen this kind of tidal surge here—ever."

Despite the loss of their facilities, the personnel working out of Caven Point knew they still had important missions to support the New York and New Jersey Harbor, which is a critical piece of the region's infrastructure and economy.

"Reopening the harbor is very important because it's the lifeblood of commerce in the region," said John Tavolaro, New York District's Deputy Chief of Operations. "The things we need on a daily basis, most of that comes by water. The fuel problems we had in the region right after the storm— a part of that was due to the fact that fuel barges could not transit through these channels until the port reopened."

Personnel at Caven Point also knew they would need to start cleanup and recovery efforts at Caven Point as soon as possible because the critical missions there would need to continue regardless of their facility's status or condition.

SURVEYING TO OPEN THE PORT

The Port of New York and New Jersey was closed to marine traffic during and immediately after Hurricane Sandy. Not only did the storm wash large objects into the water, like heavy metal shipping containers and all manner of other debris, but it could have possibly altered the dimensions of navigation channels.

Because of those potential hazards, the U.S. Coast Guard could not reopen the harbor immediately following the storm until it was proven safe and worked with the U.S. Army Corps of Engineers to survey the harbor with hydrographic survey vessels and equipment to map safe routes for navigation as quickly as possible. District personnel worked with the National Oceanic and Atmospheric Administration (NOAA) as well as private industry to ensure the major navigation channels were clear of debris and shoaling. NOAA surveyors were also able to supplement Corps surveying capabilities by making sure equipment was available to replace whatever Corps equipment was lost in the storm.

After Sandy, New York District's hydrographic survey vessels went to work right away, surveying for possible submerged obstructions and mapping the safest possible shipping lanes so the U.S. Coast Guard could mark routes with buoys so container ships and fuel tankers could make their way safely into port without any groundings or large spills. A major grounding or spill could have caused serious problems, especially considering the region was still picking up the pieces following the storm.

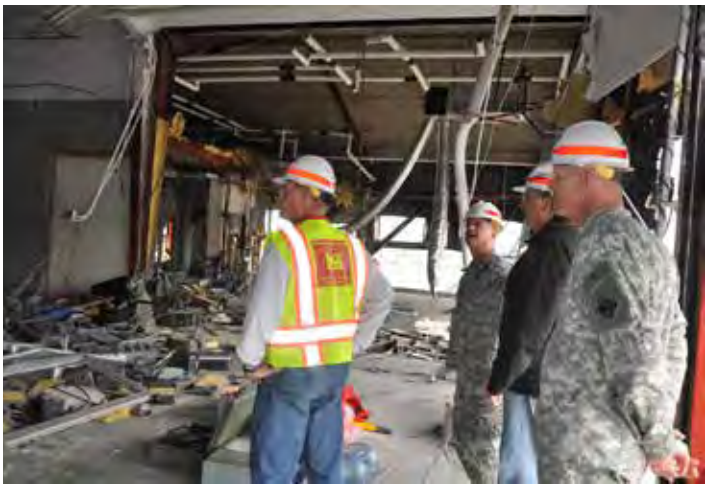
As always, data gathered by survey vessels must go to land-based crews to be interpreted and translated into charts and maps. With their normal facilities destroyed by the storm, land-based Survey Section personnel worked out of a Corps of Engineers Deployable Tactical Operations System's Emergency Command and Control Vehicle rushed to Caven Point from the Corps' Readiness Center in Mobile, Ala. SV Moritz, the largest of the Corps' fleet of survey vessels, was used as floating office space for land-based survey personnel until the large command vehicle arrived via police escort.

After initial surveys of the major New York and New Jersey Harbor channels, the District's survey vessels focused on supporting the massive debris removal mission that was ramping up and surveyed around the Fresh Kills landfill on Staten Island to ensure barges could safely bring the storm debris from there to upstate landfills for disposal.

DRIFT COLLECTION MISSION

New York District's fleet of drift collection vessels regularly patrol in and around the New York and New Jersey Harbor collecting large amounts of drift and debris that are hazardous to navigation, and the days and weeks after Hurricane Sandy were no exception.

Before the storm hit, New York District's larger survey vessels and its drift collection vessels headed north up the Hudson River, with their crews, to ride out the storm in hoped for calmer waters in Rockland County. The crews still had to battle tremendous swells for two days and nights in order for their vessels to make it through the slow moving superstorm.



U.S. Army Corps of Engineers Deputy Commanding General Maj. Gen. Ken Cox surveys the severe damage at Caven Point on Nov. 2, 2012, with New York District leaders after Hurricane Sandy's storm surge devastated the facility. (photo by Chris Gardner, New York District)

Because of the contingency plan for the vessels to seek shelter before a major storm like Sandy, the crews and vessels all made it through the storm safely, and were immediately able to get to work cleaning out the channels in the harbor when they returned Tuesday morning.

"The ports had been filled with debris and obstructions so an immediate call for assistance came to us the following morning after the storm came through, and our crews jumped right into action," said Bill Lyness, Marine Superintendant at Caven Point.

Caven Point cont'd on 11...

All three of New York District's drift collection vessels went right to work clearing drift and debris that could pose a hazrd to navigation in the New York and New Jersey Harbor after Hurricane Sandy struck the area. In this Nov. 2, 2012, photo, taken just two days after the storm, the Corps' debris barges are already piled high with several tons of potential navigation hazards. (photo by Chris Gardner, New York District)

– Caven Point cont'd from 10 —

He noted crews even began gathering debris as they headed back down river into the harbor before even being able to return to see the damage at Caven Point.

"It's unprecedented the amount they've been bringing in," Lyness said. "I'll give you an example. In the nearly three-week period between October 31st and today (November 19th), we've collected forty percent of our whole annual targeted goal."

That means that in the initial weeks following the storm the District's drift collection vessels pulled approximately 212,000 cubic feet of drift and debris out of the harbor in less than three weeks following Hurricane Sandy when they estimate in a regular year they would normally pick up approximately 530,000 cubic feet.

Removing that much debris from the Harbor was also important because it allowed the Coast Guard to quickly and safely reopen the Harbor to marine traffic.

CAVEN POINT REBUILDING

With Caven Point's facilities essentially destroyed, that meant the nerve center for the District's floating plant operations, which includes the District's working vessels, was knocked out of commission. That included dry dock, fueling stations and the maintenance shops.

The personnel knew they needed to continue to support the floating plant in order to keep the survey vessels and drift collection vessels working in the harbor to help reopen all of the Port of New York and New Jersey.

"Our top priority was that all of our floating plant was able to leave the facility on a day in and day out basis," Lauria said. "In order to do that, we (Caven Point) are their lifeblood. If they don't have the facility here to get the fuel, the stores, the water, things like that, then their mission execution is not possible because they need these things to get underway."

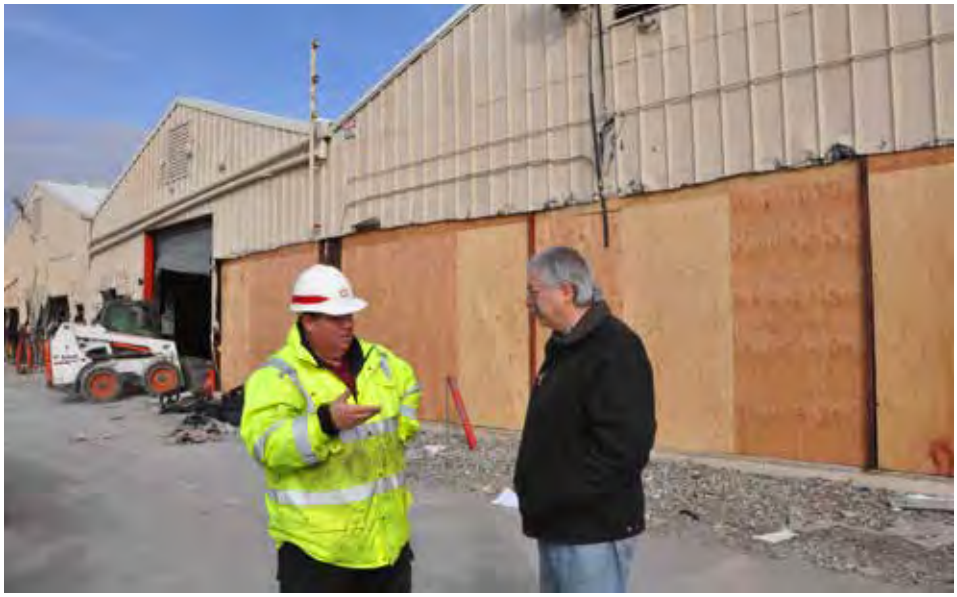
Other than ensuring the District's floating plant was operable, personnel at Caven Point had to begin the arduous task of cleaning up the mess and working toward rebuilding.

Personnel worked long hours in difficult conditions, including on weekends, to sift through the what was left, clear the debris and repair what could be repaired so they could continue whatever operations possible at the facility and continue to support the District's missions on the water.

"We've been working pretty much from sun up to sun down and in the beginning we didn't have lighting at all," Lauria said. "It was especially difficult and very dangerous. You couldn't see where you were walking, it was slippery; there was slop and broken walls and cinderblocks. The damage was very severe."

U.S. Navy Seabees crews lined the blown out walls with wooden boards and rigged makeshift lighting inside the maintenance shop in order to get it back operational. In a matter of weeks, temporary modular facilities were installed at Caven Point for personnel to continue working out of - including the Survey Section so they would no longer need the

Caven Point cont'd on 12...



New York District's Tony Lauria, heavy mobile equipment supervisor at Caven Point, and John Tavolaro, deputy chief of operations, discuss Hurricane Sandy cleanup efforts at Caven Point on Nov. 19, 2012, about three weeks after the storm destroyed most of the facility. Progress is already visible with temporary walling in place to help make the maintenance shop usable and crews can be seen in the background clearing debris. (photo by Chris Gardner, New York District)

— *Caven Point cont'd from 11* —

Emergency Command and Control Vehicle.

Caven Point Marine Terminal is a long way from where it was before Sandy hit, but with temporary modular office facilities, a bit of structural repairs to the docks via U.S. Army dive team Soldiers from the 7th Sustainment Brigade out of Fort Eustis, Va., and contractor crews continuing to work toward restoring previous capabilities at the facility - New York District has been able to continue carrying out its missions supporting the New York and New Jersey Harbor.

"I was very much impressed by the resiliency of the people that work here in this facility," Tavolaro said. "Boats on the way back from riding out the storm were picking up drift because they knew that's what they would have to do. The people that work here lost everything, their offices, all of their personal items. They had no place to work, yet they still showed up and they came here and said 'what do we need to do to get back on our feet.'"

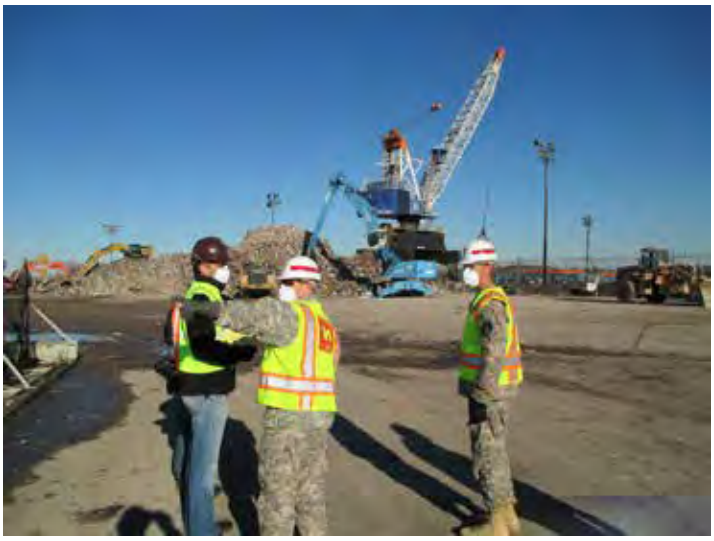
— *National Corps Response cont'd from 8* —

More than 15,000 trees were downed in the NYC metro area during the storm. The trees and broken limbs, currently estimated at 100,000 cubic yards, are being collected at Floyd Bennett Field. The City anticipates an additional 100,000 cubic yards to be collected as clean-up continues. In partnership with NYC, the Corps will convert tree debris into reusable materials, including biofuel, mulch and landfill cover.

The Corps also assisted FEMA in providing commodities during its response mission in the form of bottled water, which began the first week of November and ended by Thanksgiving. During the three week time period, the Corps delivered 8.9 million liters of water, or enough water for 2.5 million people, to FEMA's Incident Support Bases along the east coast for staging. FEMA then worked with the states, including West Virginia, New York, New Jersey and Massachusetts, to set up points of distribution and determine the amount of truckloads necessary.

This show of support isn't only occurring between the task force teams and citizens, but also between the various agencies that are teaming together on this mission. All of the teams agree they are being welcomed by other agencies and find working with them to be very gratifying.

"It doesn't matter where they came from. They quickly plugged in and established working relationships with people from around the country and they were focused on getting these missions done. They brought an energy into the situation because they were coming to help fellow citizens. It's always rewarding to help the public," said Jordan.



Army Corps personnel oversee debris operations at Fresh Kills Park in Staten Island, N.Y., where debris removed from private and public property is temporarily stored before being hauled to long-term sites. The Corps provided debris removal assistance after Hurricane Sandy as part of a FEMA mission assignment. (photo by Ron Fournier, Rock Island District)

This interagency teamwork is continuing as there is still work to be done. Although the unwatering mission is complete, pump teams have redeployed back to their home stations, and temporary emergency power generators are being unplugged, the debris removal mission will continue into 2013.

"I continue to be impressed with how the Army Corps can react to these types of disasters on relatively no notice and bring a very wide range of groups together and have a very positive impact," Perk said. "I hope we can continue to provide emergency operations for the nation in the future."

Sandy forces Breach Contingency Plan into action for first time on Long Island

New York District Commander Col. Paul E. Owen stands on the edge of a dune and looks over a barrier island breach in Cupsogue County Park on Long Island Nov. 16, 2012, that was created by Hurricane Sandy. Crews are visible mobilizing to begin breach closure operations. (photo by Chris Gardner, New York District)

By Chris Gardner, New York District

When Hurricane Sandy struck Long Island it brought destruction to coastal areas and power outages throughout the region.

It also punched three breaches in barrier islands in Suffolk County, leading to the activation of the U.S. Army Corps of Engineers, New York District's Breach Contingency Plan - which had never actually been fully activated.

The Breach Contingency Plan is a formal project partnership with the New York State Department of Environmental Conservation that allows the Corps and the state to rapidly begin breach closure operations in the event that a barrier island is breached. It was developed in the mid 1990's after a series of powerful storms in the early 1990's eroded the barrier islands in Westhampton on Long Island and a 1992 storm caused a breach that took 10 months to close.

Hurricane Sandy punched a 1,500-foot-wide breach just east of Moriches Inlet in Cupsogue County Park, a 500-foot-wide breach to the west of Moriches Inlet at Smith Point County Park and a third breach in the National Park Service's Fire Island Wilderness Area.

The primary reason for breach closure operations is public safety as closing breaches can reduce coastal storm and tidal flooding risks and overall water levels for bayside communities that lie behind the barrier islands. There are also economic reasons to close breaches as breaches can potentially impact sediment movement leading to increased shoaling in navigation channels – which occurred following aforementioned the 1992 breach and had a negative impact on local marine industries. Increased salinity from the breach connecting the bayside to the ocean has had negative impacts on the shell fishing industry in the past as well.

Through the Breach Contingency Plan, the Corps was able to work with the state of New York and Suffolk County to activate and ultimately complete breach closure operations at both Cupsogue County Park and Smith Point County Park in a matter of a few weeks rather than several months.

The Cupsogue County Park work was carried out by contractor Great Lakes Dredge and Dock, which is headquartered in Oak Brook, Ill. Approximately 200,000 cubic yards of sand was dredged from nearby

Breach Contingency Plan cont'd on 14...

Cupsogue County Park breach closure operations are visible and nearly complete on Nov. 26, 2012, with the dredge in the background, sand pumping into the breach and earthmovers positioning the freshly pumped sand. (photo by Chris Gardner, New York District)

Corps personnel assist Hurricane Sandy victims outside normal missions as well

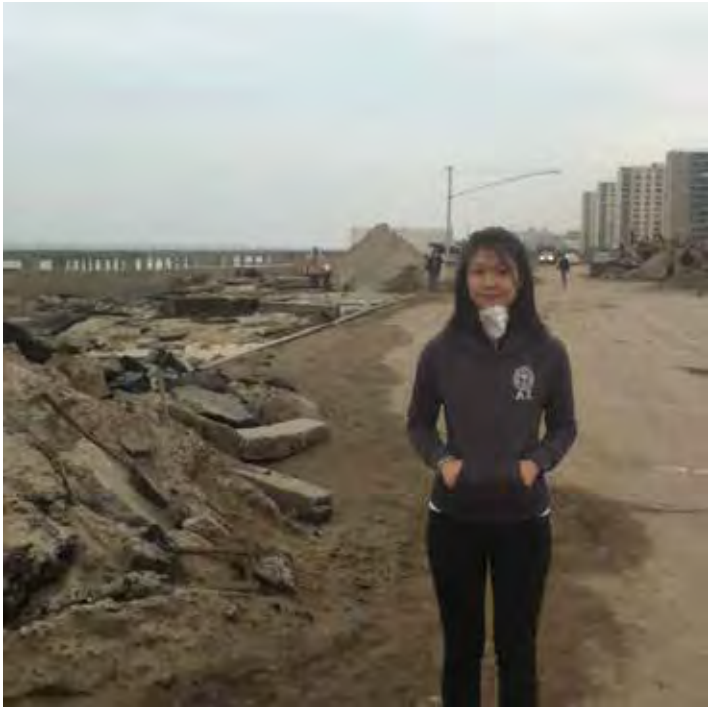
By Hector Mosley, New York District

Hurricane Sandy left devastation along the coastal areas of New York and New Jersey, causing families to lose their homes and other necessities. While the U.S. Army Corps of Engineers kicked into gear to support emergency response and recovery missions, often in support of FEMA mission assignments, some Corps of Engineers personnel also helped those impacted by the storm outside of their roles with the Corps. Jean Lau, equal employment opportunity specialist, U.S. Army Corps of Engineers, New York District, was one of them. She wasn't affected nearly as much as many and looked at it as an opportunity to help those in need.

"I volunteered at the Bowery Mission in lower Manhattan distributing hot meals, and once I had power and internet back I started researching other opportunities to volunteer," Lau said.

While the U.S. Army Corps of Engineers was managing a debris removal mission in Rockaways, Queens, as part of a FEMA mission assignment, Lau took it upon herself with the help from friends and family, to volunteer time to help residents in the area.

"With an organization called New York Cares, I helped distribute food, water, blankets, and baby supplies and went door to door to deliver supplies and helped the organizers gather information about what people needed other then the items that were donated," said Lau. "I learned that there are a lot of caring people in the world. From a volunteer standpoint there was an overwhelming amount of generosity from not only locals, but from people all around the world. Every person I met was a stranger and I may never see them again, but it feels good to be working alongside people that care about helping those in need no matter where they are from."



New York District employee Jean Lau, not directly assigned to any specific Army Corps of Engineers emergency response missions, volunteered to directly help victims of Hurricane Sandy in her personal time. She is pictured here in a hard-hit area in Queens. (Courtesy Photo)

– Breach Contingency Plan cont'd from 13 ——

Moriches Inlet navigation channel, pumped through a series of pipes and used to close the breach. Using sand from Moriches Inlet provided additional benefit because it helps improve navigation as well.

Work at the smaller breach at Smith Point County Park was carried out by Long Island-based small business contractor Village Dock. Approximately 50,000 cubic yards of sand was dredged from the nearby Long Island Intracoastal Waterway navigation channel and used to close the breach.

Breach closure operations were not activated at the third breach, which is on National Park Service land. The Corps and the state of New York are coordinating with National Park Service personnel who are monitoring the breach.

Jamaica Bay marsh islands withstand Sandy, helps mitigate impacts

By Vince Elias, New York District

The U.S. Army Corps of Engineers, New York District, has been working in recent years to restore marsh islands in the salt marshes and coastal wetlands in Jamaica Bay in New York as part of the Hudson Raritan Estuary Comprehensive Restoration Plan. The Marsh Islands complex is an integral part of Jamaica Bay, being restored in a joint effort by the Corps and various partners and agencies. Wetlands can help to absorb the wave energy of hurricanes and Jamaica Bay serves as a natural wave energy "sponge" with dunes and marshes.

"The Marsh islands restoration project at Jamaica Bay held up and sustained the storm," said Lisa Baron, Project Manager. "Sand at these islands did not show a significant loss to the ocean and weathered the storm."

"The Hudson Raritan Estuary was reminded again the concerns associated with the increase to the vulnerability to coastal storms and the long-term impacts of climate change must be considered when planning for future sustainability of coastal and estuarine habitats," said Peter Weppler, chief, Coastal Section, New York District. "The challenge is restoring habitats for ecological purposes and to increase the region's coastal resilience.

A marsh island is constructed in Jamaica Bay in this file photo. Wetlands can act as an important buffer during storms. Marsh islands restored by the Army Corps of Engineers and partners in recent years faired well during Sandy and helped mitigate wave action. (File Photo Credit - Galvin Brothers, Inc.)

"Future restoration efforts should be coordinated and integrated with storm damage risk reduction, flood control, navigation, and other development," Weppler added. "Human urbanization and development changes have left the coastal and estuarine habitats less resilient and more vulnerable to nor'easters and other coastal storms."

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