Experts say powerful storms fueled by a warmer climate have become a greater risk to lives and property around the world and in New Jersey—creating business for environmental firms that are well prepared.

Compiled by Miles Z. Epstein
Editor, COMMERCE

GOVERNMENT, BUSINESSES AND citizens are changing their tune in the face of what may be the new norm—extreme weather. Hurricane Sandy proved that Mother Nature can damage infrastructure, businesses and homes, and powerful storms are predicted to hit New Jersey with a vengeance in the future.

Approximately 100,000 New Jersey residents experienced significant structural damage to their primary homes from the wrath of Hurricane Sandy, and this “disaster footprint extends from Cape May in the south of the state to several miles north of the George Washington Bridge, and stretches from the shoreline to over 20 miles inland,” according to a report by Rutgers University and New York University.

COMMERCE asked some of New Jersey’s top environmental firms the following questions. How does extreme weather impact your environmental firm? What type of projects does it create? What are the challenges and opportunities for environmental firms as extreme weather becomes the new norm? Here’s what 12 industry leaders had to say.

**AECOM**
*By Gary Lawrence, VP and Chief Sustainability Officer*

As Superstorm Sandy reminds us all too well, sea level rise, coastal subsidence and rainfall causing riverine flooding are risks in New Jersey. These risks can be exacerbated by coastal development, poor infrastructure and limited investment capital due to competition with other priorities. They can be reduced by designing for resilience—using risk assessment tools and modeling solutions that master the complexity and maximize value at the intersection of the built environment and nature. We develop solutions that combine best practice with innovation and science to create solutions that optimize the use of financial capital and eco-system services so that essential services remain resilient or return to use at the lowest cost. Our current work in New Jersey is applying these practices for coastal resilience, transportation, water, industrial and manufacturing infrastructure. A fully integrated professional and technical services firm with nearly 100,000 employees globally and over 1,400 in New Jersey, we are well positioned to design, build, finance and operate infrastructure assets almost anywhere. Identifying vulnerabilities through audits, design/construction of resilient infrastructure and restoration services enable us to assist our clients achieve success with the most sustainable and resilient options.

**Brennan Environmental, Inc.**
*By John Brennan, LSRP, Principal*

The increasing incidence and severity of weather events have a wide range of environmental repercussions, posing a significant business risk to our clients. Extreme rain, ice or snowstorms, as well as excessive heat, can cause facility or infrastructure damage, power or water outages, and many other issues. Runoff from damaged containment vessels or other structures, as well as chemicals or salts used for ice removal, can seep into the ground or water. Our firm supplies services that address both the prevention and the remediation of such conditions.

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The majority of our work for a major utility client is directly related to severe weather. Transformers can be damaged by prolonged high demand during periods of excessive heat and by flooding, lightning strikes or falling trees or telephone poles during storms. Our client relies on us for speedy, thorough and environmentally sound cleanup of resulting oil spills and other potential contaminants.

Brilliant Environmental Services, LLC
By Philip I. Brilliant, CHMM, LSRP, Owner, Principal Environmental Scientist

Over the past decade, extreme weather comes in three forms: heat, snow and hurricanes. All create obstacles to the successful completion of project work, but with today’s technology and the efforts of our staff, don’t require the closing of our offices. Extreme heat may limit our ability to work long hours in the field, but our staff has adapted to starting in the early morning and trying to complete work prior to the mid-day heat. Hydration is the number one concern. Snow emergencies, floods and hurricanes have become more and more a part of our fall and winter planning, but we have adapted by allowing staff to work remotely. VoIP systems for communication allow staff members who are snowbound to still handle client needs as if they are sitting in our office. Remote access to our servers, with backups in the cloud, allow for continuous communication and access to files and project data.

CHEMTECH
By Emanuel Hedvat, President

CHEMTECH, is an environmental analytical laboratory that is definitely affected by extreme weather. Our business tests the quality of soil, water and air for contaminants and pollutants. We also work hand-in-hand with environmental firms and government agencies. Snow storms are increasing and during prolonged snowfall, there is no access to soil and water due to frozen grounds, which hinders ongoing projects and business excessively. Heat waves in the summer seasons are also becoming more common and intense, and last longer. The hot summers lead to more days that neglect to meet air quality standards. As drought periods are projected to become longer and heavy rainfall events more frequent, this will affect Earth’s soils. This results in problems emerging in other ecosystems, such as ground water contamination and depletion in the natural development of rivers. The number of heavy precipitation events in the United States is increasing, helping to yield incredibly destructive floods and snowstorms. This creates many challenges for analytical testing as heavy rainfall can destroy projects, and droughts lead to periods of project shortages.

Connell Foley LLP
By Agnes Antonian, Esq., Chair, Environmental Law Group

In thinking of extreme weather, Superstorm Sandy comes quickly to mind. Sandy impacted the shore and inland communities immeasurably, affecting our clients and the communities in which they live, work and vacation. The various changes—physical and regulatory—caused by Sandy raise complex legal and technical issues, yet give rise to the opportunity to steer clients through novel situations. Sandy created, altered and removed land features, including former wetlands, and agencies are creating new structures such as dunes, bulkheads and breakers. New and existing uses for land impacted by extreme weather may be grandfathered from new permitting, zoning and local and state regulatory requirements. Connell Foley helps interested parties, including owners, municipalities, insurers and consultants, address the effects of Sandy and other extreme weather events. For example, we are working with clients to assess and respond to the new FEMA flood area maps, which are under review for adoption and implementation at the federal, state and local levels. We also work with clients to prepare for future severe weather events by appearing before local boards and state and federal agencies such as the NJDEP and FEMA, as well as advise on leases, sales, grants, financings and other transactions.

Dewberry
By Craig Johnson, President Northeast Region

As a major environmental and engineering firm, we have had opportunities to assess damage to bridges, buildings and the coastline; assist in cleanup operations; assist with obtaining funding for various programs; and finally be part of the rebuilding efforts where we placed facilities at the proper elevation or with the proper flood protection to help protect them from the storms of the future. Immediately after Sandy and Irene, we placed numerous staff to oversee the debris cleanup operations, both on land and in waterways, working seven days per week in New Jersey. We also assisted FEMA with mapping the new coastline after both events and set new Advisory Base Flood Elevations. We then helped with residential building programs in both New York and New Jersey where we evaluated both the feasibility and environmental consequences of rehabilitating, raising and/or reconstructing more than 15,000 homes. The early challenge was getting staff deployed as quickly as possible to assist with the assessment and cleanup efforts. Opportunities for additional assignments such as the study phase of two resiliency projects to provide long-term flood protection to the Red Hook area of Brooklyn and the Hoboken waterfront, are still in the works and will likely continue for a number of years.

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According to a recent study, of the 1,047,000 residents in Hurricane Sandy’s destructive path, 100,000 New Jersey residents experienced significant structural damage to their primary homes.
EAI, Inc.
By Robert Carvalho, P.G.

We are still working on Sandy flood projects and on preventing future flooding events. This work varies due to the environmental issues at each particular site. For the retrofit of existing buildings, the foundations have extended waterproofing and vapor barriers installed. This creates excavation and often soils classification and disposal of those soils. The soil test results may deem the materials suitable for reuse, or, on the other hand, the dirt may be contaminated with particular contaminants that have to be dealt with correctly. Another major item with Sandy flood elimination projects has been the removal of large above-ground oil storage tanks. These tanks need to be handled correctly for the disposal of contents and dismantling that takes place, which may or may not generate asbestos removal. For new construction, sub slab depressurization systems and vapor barriers generate additional materials to install where previously there were none. Depending on elevations design, we now have the vapor barrier/waterproofing extending above grade to take flooding into account. It would be a wise course of action for all engineering and environmental firms who work and design in flood areas to take into account that these floods will happen again. It's just a matter of time.

Emilcott Technologies, LLC
By Bruce D. Groves, CIH
President

Of course the biggest extreme weather event to hit our area was Superstorm Sandy. While the issues brought about by this storm were not new, they were extremely challenging because they were so widespread—impacting the entire metro region. Challenges to our firm, like many others, were centered on business continuity—loss of power and telecom; employees unable to get to work; and everyone faced travel restrictions. Meeting our client demands was very difficult. As part of our lessons learned, we invested in more Web-based applications. When we lost power to our server, we lost our Web site, our internal reporting processes and most importantly, our e-mail server. Now we are using cloud-based options to maintain better access to these internal and external communication methods. Sandy brought us ample opportunities to help our local clients who were dealing with storm damage and water intrusion. Many of our clients had hired “less than qualified” contractors to clean up and remediate damage—too many of our inspections uncovered post cleanup mold and bacterial growth and required work to be redone to make buildings habitable. Now we encourage our clients to identify and secure relationships with qualified contractors before the next event.
GZA GeoEnvironmental, Inc.
By Wayne Cobleigh, CPSM, VP, Client Services

Awareness of extreme weather events and our clients’ preparation of proactive flood mitigation measures has significantly impacted GZA’s business. After a 2010 earthquake and tsunami caused massive damage to Japan’s Fukushima Daiichi Nuclear Power Plant, the U.S. Nuclear Regulatory Commission required all licensed U.S. plant owners to conduct flood hazard re-evaluations for worst-case storm scenarios. GZA joined the Nuclear Energy Institute’s Post-Fukushima Flooding Task Force to establish industry guidance for conducting the work. Using state-of-the-practice hydrodynamic models to assess riverine and coastal flood hazards, we helped assess worst-case scenario flood hazards at over 30 percent of the U.S. nuclear power plants. Demand for flood hazard modeling increased after Irene and Sandy as owners of critical infrastructure made risk-informed decisions for rebuilding, insuring and managing assets. Land owners and municipalities appealing the new FEMA Flood Insurance Risk Maps and coastal communities preparing climate change vulnerability assessments also created new consulting opportunities. Business challenges: significant investment required in modeling technology and training; inherent difficulty in assessing future, extreme weather events; and communicating return on investment and loss avoidance benefits. A main concern is lack of government funding for resiliency planning and natural disaster preparedness relative to spending on disaster recovery.

McCarter & English, LLP
By J. Wylie Donald, Esq., Insurance Coverage Partner, Co-Chair, Climate Change & Renewable Energy Specialty Group

Extreme weather is a boon to our insurance coverage legal practice representing only policyholders. We are still pursuing claims for Superstorm Sandy where the insurers failed to honor the terms of their policies. But extreme weather is more than just damage caused by high winds and torrential rains. Extended high temperature stresses equipment, which can lead to failure and resulting personal injury or property damage, even if the equipment failure itself is not covered. Extreme cold leads to freezing, which can result in obvious or hidden damage. Insurance coverage is implicated in all of these situations. The challenge here is to overcome the understandable urge by risk managers not to rock the boat and give their

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insurers reasons to raise the premium. That is a concern, but insurance policies are valuable assets that should be explored when the weather gets extreme and, if appropriate, realized upon.

Whitestone Associates, Inc.
By Thomas K. Uzzo, LSRP, President

Extreme weather poses many challenges to an environmental consulting firm, especially scheduling, rescheduling and conducting field work for active projects. Often, several subcontractors and/or vendors are involved with site investigation and remediation efforts, so keeping all players apprised of schedule changes can be tricky and time-consuming. In addition, we’re often working on behalf of a prospective purchaser at a site that is under control of a third party, which adds coordination concerns and logistical issues. Since Superstorm Sandy hit in 2012, the NJDEP has taken a more active role in communicating with the LSRP of record regarding site status and stability following extreme weather events. In preparation for poor weather (especially winter storm events) which may render travel to the office unsafe or impractical, Whitestone staff and managers bring files home and are prepared to log in remotely to their desktops to maintain productivity and client accessibility, as well as to ensure that project deadlines are met.

Woodard & Curran
By Doug McKeown, CEO

For many of our clients, extreme weather is neither a theoretical nor a new concern. But with the increased frequency and awareness of severe weather, we have seen more clients pursuing formal hazard mitigation planning as part of their risk management strategy. We have also seen increased focus on infrastructure hardening projects, flood mitigation and better storm water management. These things have long been important parts of our projects, though they have come to the fore recently because of increased public awareness. Another area of focus for our clients is building robust backup power systems, which can include combined heat and power and even full microgrid development. And some of the major storm events in recent years have reinforced the importance of protecting these systems from flooding and storm surge. Needless to say, if your backup generator is under water, you may as well not have one. On the opposite side, clients are also becoming more concerned with managing water resources to protect against drought or other supply interruptions. Assessing water supplies for vulnerabilities and working to mitigate risks will be more and more important in the coming years for both public and private entities.