

# **FEDERAL ACTIONS IN RESPONSE TO THE AUGUST 23, 2011, VIRGINIA EARTHQUAKE REPORT**

**05 December 2013**



**FEMA**



## ADMINISTRATIVE HANDLING INSTRUCTIONS

The title of this document is *Federal Actions in Response to the August 23, 2011, Virginia Earthquake Report*.

The information gathered in this study is designated as unclassified in order to maximize information sharing with partners within and outside government. This type of information sharing supports the Federal Emergency Management Agency (FEMA) Strategic Plan, Initiative 4, to enhance FEMA's ability to learn and innovate as an organization.

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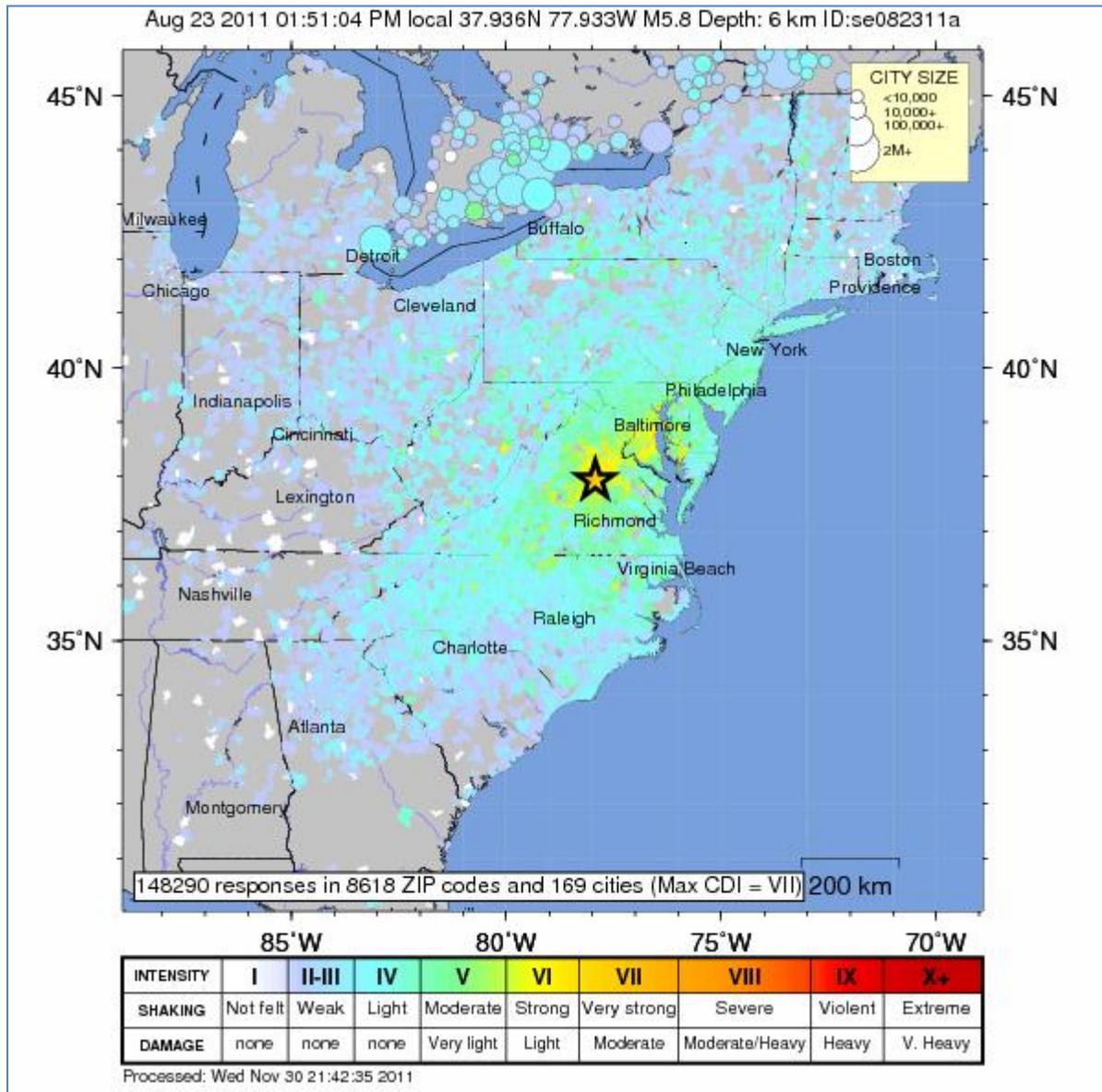
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## EXECUTIVE SUMMARY

On Tuesday, August 23, 2011, at 1:51 p.m. Eastern Daylight Time (EDT), a 5.8 magnitude earthquake struck the Piedmont region of Virginia. The epicenter, in the town of Mineral, Louisa County, was located 38 miles northwest of Richmond and 84 miles southwest of Washington, DC. According to the U.S. Geological Survey (USGS), the earthquake was felt throughout the eastern United States and in Canada (see Figure 1). The earthquake resulted in no fatalities and caused limited damage to buildings and transportation infrastructure.



**Figure 1: Map of the Intensity of the August 23, 2011, Earthquake**  
(Source: USGS)

In the aftermath of the earthquake, people at work throughout the National Capital Region (NCR) evacuated their office buildings. By 2:00 p.m. EDT, Federal departments and agencies, as well as private sector and non-profit agencies, evacuated their facilities, and some began to release their personnel. Federal, state, and local governments, as well as private sector and non-profit organizations, began to assess the damage to buildings and infrastructure, including the transportation system. Communications were difficult for 30 minutes after the earthquake due to very high demand, creating problems for government departments and agencies to gain situational awareness after the earthquake and complete these assessments.

Shared information among the governments and organizations led to improved situational awareness as the event continued to unfold, particularly once all key stakeholders were able to actively participate in the conference calls established by the Metropolitan Washington Council of Governments (MWCOC) through the Regional Incident Communication and Coordination System (RICCS). At 3:47 p.m., the U.S. Office of Personnel Management (OPM) issued an announcement recommending that Federal departments and agencies consider early dismissal of non-emergency employees in the NCR. The OPM announcement was predicated on the understanding that individual agencies were better positioned to make decisions on a building-by-building basis, given the varied levels of damage anticipated and ongoing structural assessments at the over 750 Federal facilities in the NCR, as well as ongoing efforts to assess the structural integrity of the transportation infrastructure. The early release of the workforce across the NCR, combined with transportation systems that were operating on a non-rush hour schedule and coupled with the ongoing damage assessments, strained the NCR's road and rail transportation systems.

## About this Report

On October 13, 2011, the House Committee on Transportation and Infrastructure, Subcommittee on Economic Development, Public Buildings, and Emergency Management, conducted a hearing entitled "Streamlining Emergency Management: Improving Preparedness, Response, and Cutting Costs." The hearing examined how FEMA can streamline its programs to improve disaster preparedness and reduce costs. FEMA Administrator Craig Fugate and OPM Deputy Director for Facilities, Security & Contracting, Dean Hunter, testified before the subcommittee. Delegate Norton asked FEMA and OPM to develop a report focusing on the Federal Government's response to the August 23, 2011, Virginia earthquake.

FEMA's National Preparedness Assessment Division (NPAD) and Office of National Capital Region Coordination (NCRC) collaborated with OPM to develop an analysis of the Virginia earthquake response. A joint NPAD-NCRC team interviewed 10 senior staff from the FEMA NCR Watch Desk, the FEMA National Continuity Program (NCP) Directorate, OPM, the Metropolitan Washington Council of Governments (MWCOC), and the District of Columbia Homeland Security and Emergency Management Agency (DC HSEMA). The joint team also collected and reviewed situation reports, logs, and other data to complement the information provided during the interviews. Based on an analysis of this information, this report presents key findings designed to facilitate improved decision making and corrective action development where necessary.

## Key Findings

The joint NPAD-NCRC team identified seven key findings related to Federal actions following the Virginia earthquake. These findings are organized into three overarching themes: Maintaining Federal Operations; Emergency Communications; and Information Sharing.

- Maintaining Federal Operations
  - Finding 1: Federal departments and agencies successfully maintained their essential functions after the earthquake.
  - Finding 2: Federal personnel evacuated from their workplaces while their department or agency assessed the damage caused by the earthquake.
  - Finding 3: Some Federal departments and agencies released their NCR personnel shortly after the earthquake while others waited for OPM guidance.
  - Finding 4: Some Federal personnel self-released prior to receiving department or agency or OPM guidance.
- Emergency Communications
  - Finding 5: Federal officials used NCR communications and information sharing systems to gain situational awareness due to cellular communications congestion.
- Information Sharing
  - Finding 6: Federal departments and agencies employed Twitter, Facebook, and other social media to push emergency information to Federal personnel after the earthquake.
  - Finding 7: Federal departments and agencies used multiple websites and systems to disseminate emergency information to their personnel following the earthquake.

## Report Organization

Section 1 of this report provides background information on the environment and sequence of events immediately following the earthquake. Section 2 presents detailed analysis supporting each of the seven key findings identified above, and as appropriate, includes associated recommendations. Section 3 of the report summarizes key progress by Federal departments and agencies and other NCR entities in implementing certain corrective actions identified following the Virginia earthquake.

## SECTION 1: BACKGROUND

### Profile of the National Capital Region

The NCR encompasses the District of Columbia and parts of Maryland and Virginia, including the cities of Alexandria, Fairfax, Falls Church, Manassas, and Manassas Park, and the counties of Arlington, Fairfax, Loudoun, and Prince William in Virginia, and Montgomery and Prince George's in Maryland (see Figure 2). The region has a population of more than 5.5 million people, making it the fourth-largest metropolitan area in the United States.

The NCR is the home to all three branches of the Federal government, 271 Federal departments and agencies, and approximately 340,000 Federal personnel. More than 2,100 non-profit organizations, 40 colleges and universities, the World Bank, the International Monetary Fund, and more than 170 embassies are located in the NCR. The regional transportation infrastructure includes two major airports which serve more than 40 million passengers a year; the Nation's second-largest rail transit system; and the fifth-largest bus network in the United States. Approximately 20 million tourists visit the NCR each year.



**Figure 2: : Map of the NCR**  
(Source: FEMA NCRC)

### The August 23, 2011, Virginia Earthquake

On Tuesday, August 23, 2011, at 1:51 p.m. EDT, a 5.8 magnitude earthquake struck the Piedmont region of Virginia. The epicenter, in the town of Mineral, in Louisa County, was located 38 miles northwest of Richmond and 84 miles southwest of Washington, DC. This was the largest earthquake to strike east of the Rocky Mountains since 1875 and the most widely felt earthquake in U.S. history. The USGS recorded 30 aftershocks between August 23 and September 19, 2011, with magnitudes ranging from 1.8 to 4.5. The first aftershock, with a 2.8 magnitude, occurred approximately 45 minutes after the earthquake, while the last aftershock took place on September 19, with a magnitude of 2.3.

### Impact of the Earthquake

The earthquake had the greatest impact in the Commonwealth of Virginia where it destroyed or caused major damage to more than 200 properties. It forced Units 1 and 2 of the North Anna Power Station, in Louisa County, 11 miles from the epicenter of the earthquake, to automatically

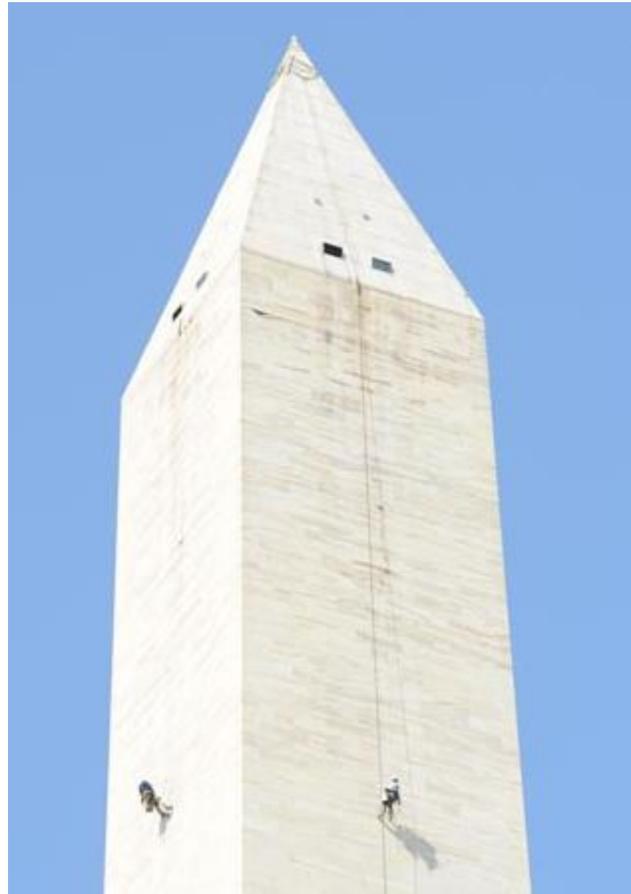
shut down due to an off-site power outage. The power station remained off-line until November 16, 2011.

The earthquake caused limited damage to buildings and infrastructure within the NCR. Still, the Washington National Cathedral, the Washington Monument, and the Smithsonian Castle suffered damage (see Figure 3). Cellular and landline communications became difficult for 30 minutes after the earthquake due to very high demand. This disruption of communications affected the ability of government departments and agencies to gain situational awareness after the earthquake.

At the time of the earthquake, the FEMA National Response Coordination Center (NRCC) was already activated in anticipation of Hurricane Irene's impending landfall. After conducting an initial analysis of the earthquake damage, FEMA continued previously planned operations for the approaching hurricane. The FEMA NCR Watch Desk monitored operations in areas impacted by the earthquake, collected data from emergency responders and other entities, and disseminated this information to its stakeholders.

Federal departments and agencies within the NCR took prompt actions to assess the damage caused by the earthquake, focusing on structures that house Federal personnel and critical infrastructure. The Washington Metropolitan Area Transit Authority (WMATA), in accordance with its standard operating procedures, reduced the maximum speed of Metrorail trains from approximately 60 miles per hour (mph) to 15 mph while its personnel conducted track inspections of the entire rail system. In addition, engineers from the Federal Highway Administration (FHWA) and local agencies inspected bridges and highways in the impacted area. Similarly, operations at Ronald Reagan National Airport were suspended for approximately 90 minutes after the earthquake.

The inspections contributed to delays on roads and on commuter rails as workers throughout the NCR departed their workplaces earlier than the normal afternoon rush hour. According to the Metropolitan Area Transportation Operations Coordination (MATOC) Program, travel times on NCR roads lengthened beginning at 2:30 p.m. and peaked just before 4:00 p.m., when travel times were approximately 1.75 times longer than normal (see Figure 4). Congestion on NCR



**Figure 3: Workers Inspect the Washington Monument for Earthquake Damage**  
(Source: U.S. Department of the Interior)

roads due to the earthquake began easing at approximately 4:00 p.m. Travel times returned to normal rush hour lengths shortly after 6:00 p.m. that evening. However, rail systems remained congested for a longer period of time due to the extended period of reduced speeds and track inspections.

On November 4, 2011, President Barack Obama issued a Major Disaster Declaration for areas in Virginia affected by the earthquake (FEMA-DR-4042) and issued a second Major Disaster Declaration on November 8, 2011, for the Washington, DC, area (FEMA-DR-4044), triggering a range of federal disaster assistance for the area.

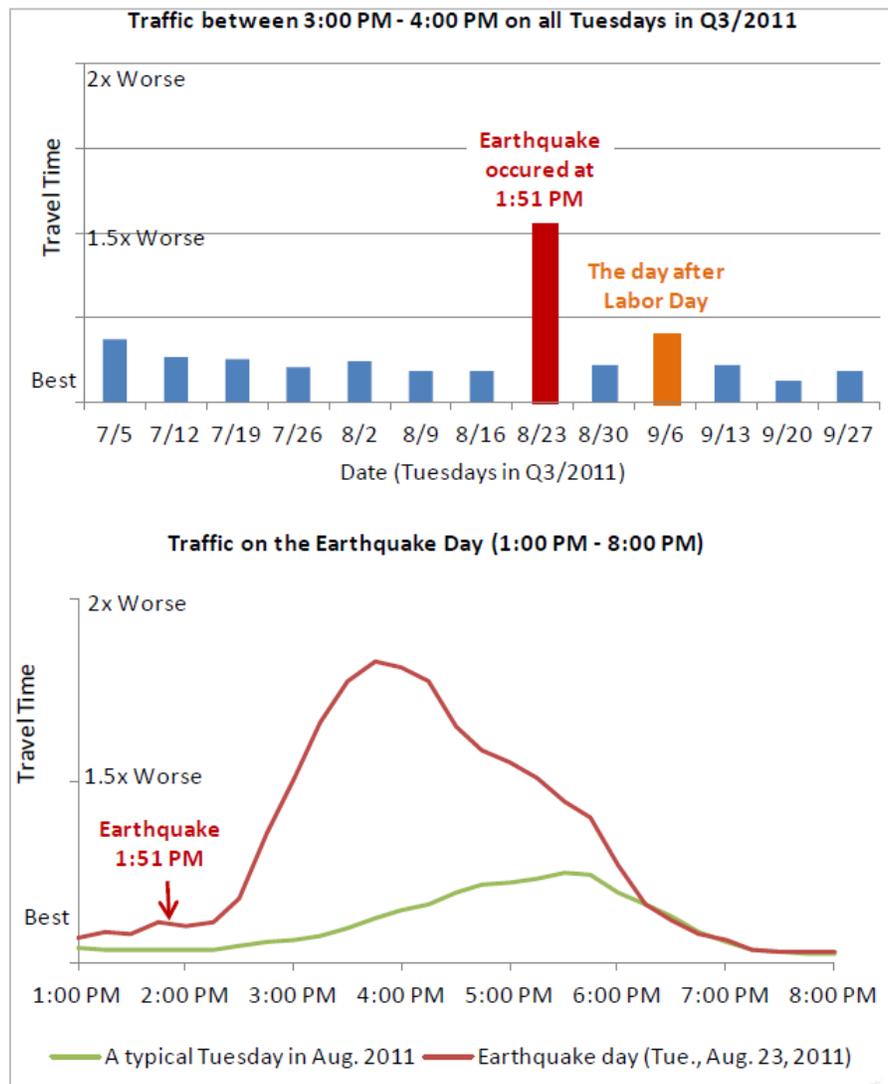


Figure 4: MATOC Program Analyses of Post-Virginia Earthquake Traffic in the NCR  
(Source: MATOC)

## SECTION 2: ANALYSIS

This section presents key findings related to Federal government actions taken after the August 23, 2011, Virginia earthquake. These key findings are grouped according to three broad themes: Maintaining Federal Operations; Emergency Communications; and Information Sharing.

### Maintaining Federal Operations

#### **Finding 1: Federal departments and agencies successfully maintained their essential functions after the earthquake.**

**Discussion:** The Federal Government identified eight National Essential Functions (NEFs) that are necessary for leading and sustaining the Nation during a crisis or emergency. In accordance with national-level continuity policy, Federal departments and agencies are responsible for identifying Mission Essential Functions and Primary Mission Essential Functions (PMEFs) that support the NEFs. The FEMA National Continuity Programs (NCP) Directorate leads Federal Executive Branch efforts to maintain continuity of NEFs following an incident. In addition, FEMA NCP collaborates with Federal departments and agencies to support identification of PMEFs and ensure that those functions can be continued throughout, or resumed rapidly after, a disruption to normal activities. FEMA NCP has responsibility for managing the Readiness Reporting System (RRS), which measures and reports the individual and aggregate ability of Federal departments and agencies to continue their PMEFs in support of the NEFs. The near real-time assessments of the RRS enable FEMA NCP to determine needs and gaps in Federal continuity capabilities.

Despite the disruptions caused by the August 2011 Virginia earthquake, Federal departments and agencies successfully maintained their PMEFs without encountering any problems or gaps in operations. Federal departments and agencies reported the status of their workforce to the RRS in a timely manner. This allowed FEMA NCP to monitor effectively the status of PMEFs across the Federal government after the earthquake.

#### **Finding 2: Federal personnel evacuated from their workplaces while their department or agency assessed the damage caused by the earthquake.**

**Discussion:** Following the earthquake, Federal departments and agencies ensured the safety of their personnel by evacuating their work facilities (see Figure 5). Facility managers and security personnel had to assess the structural integrity of office buildings before personnel could re-enter them. Federal officials had to consider various factors—including the ability of their department or agency to perform essential functions and the relative damage to Federal buildings—when deciding whether personnel could re-enter their facilities or should be released for the day. For federally owned facilities, building managers and security personnel familiar with office-specific emergency functions determined when federal workers could re-enter evacuated facilities. Federal departments

and agencies located in leased buildings waited for building managers' decisions prior to providing guidance to their employees.

Conducting damage assessments after the earthquake was a time-consuming process, challenging the ability of federal departments and agencies to provide rapid guidance to their workforces. OPM Deputy Director of Facilities, Security & Contracting, Dean Hunter, acknowledged these challenges in congressional testimony after the earthquake, noting: "The initial response to any no-notice event is very chaotic, and through the fog you would need to take some time to develop some level of situational awareness. That hampered our capabilities from the standpoint that we did not have immediate damage assessments nor were we fairly certain at the initial onset of exactly what had happened. It takes time to gather that information and make that decision."



**Figure 5: Pentagon Evacuation following the Earthquake.**  
(Source: U.S. Navy)

Damage assessments, particularly the inspection of critical infrastructure, will likely have cascading effects for Federal decision-makers. Federal departments and agencies may be unable to make key workforce-related decisions until they have received damage assessments from within their department or agency as well as from relevant Federal or NCR partners.

### **Finding 3: Some Federal departments and agencies released their NCR personnel shortly after the earthquake while others waited for OPM guidance.**

**Discussion:** Federal departments and agencies have the authority to release employees and close facilities on a building-by-building basis. Some departments and agencies, including the Department of the Interior (DOI) and the General Services Administration (GSA), began releasing their NCR personnel for the day shortly after the earthquake. Conversely, at 2:10 p.m., only 19 minutes after the earthquake, the Department of Defense (DOD) gave the all-clear signal for personnel to return to the Pentagon. By 3:30 p.m., other Federal personnel, including those in the Executive Office of the President (EOP) and the Government Accountability Office (GAO), returned to their offices.

Between 3:30 p.m. and 4:00 p.m., Federal Chief Human Capital Officers (CHCOs) began providing official guidance to Federal employees in the NCR. For instance, FEMA's CHCO sent an email at 3:35 p.m. notifying personnel of the agency's operating status:

“Following the recent earthquake in the National Capital Region, FEMA employees at various locations were evacuated to ensure their safety. Some building owners have not cleared employees to return to their offices.” In addition, the email listed a number of facilities that were closed. At 3:47 p.m., OPM posted the following message on its website: “Many agencies in the National Capital Region are releasing employees for the day. OPM recommends any remaining agencies in the National Capital Region consider early dismissal for non-emergency employees.” Soon after, many Federal CHCOs sent emails to their department’s or agency’s personnel notifying them of OPM’s guidance.

The varied courses of action taken by Federal departments and agencies were consistent with OPM’s *Washington, DC, Area Dismissal and Closure Procedures*, issued in December 2010. According to those procedures, each Federal department and agency has its own authorities, policies, and instructions for dismissing personnel and closing facilities. However, these procedures emphasized that Federal departments and agencies should “avoid independent action” during area-wide disruptions due to the impact on the NCR transportation system. After the earthquake, OPM revised and expanded its *Washington, DC, Area Dismissal and Closure Procedures* to also address agency-specific emergencies.

**Recommendation:** OPM and Federal CHCOs should continue to review and refine coordination procedures, as appropriate, for the release of Federal employees across the range of emergencies that may be encountered within the NCR.

#### **Finding 4: Some Federal personnel self-released prior to receiving department or agency or OPM guidance.**

**Discussion:** Immediately following the earthquake, Federal personnel waited for guidance from department or agency officials, OPM, or facility managers at their designated evacuation locations. Facility managers needed time to conduct building inspections, Federal departments and agencies required time to formulate accurate assessments, and OPM required time to develop situational awareness and guidance for the Federal workforce. In the absence of guidance, an unknown number of Federal personnel decided to self-release before their department or agency or building manager identified an appropriate course of action and prior to OPM releasing official guidance. The joint NPAD-NCRC team did not have access to data regarding the number of Federal personnel that self-released after the earthquake as no federal department or agency collected this data.

**Recommendation:** Federal departments and agencies should educate their personnel about earthquake safety, including shelter-in-place procedures, and the time required to conduct initial assessments during emergencies. This may help ensure that Federal personnel do not inadvertently place themselves in greater danger while an incident is still ongoing or before damage assessments have been completed.

## Emergency Communications

### **Finding 5: Federal officials used NCR communications and information sharing systems to gain situational awareness due to cellular communications congestion.**

**Discussion:** Following the Virginia earthquake, cellular telephone companies experienced high call volume and network congestion throughout the East Coast which hindered Federal interagency coordination. In addition, landline communications in the NCR became difficult immediately after the earthquake due to very high demand. Disruptions in phone service continued for approximately 30 minutes after the earthquake.

When OPM personnel evacuated their facility, they attempted to transfer landlines to smart phones in order to maintain communications connectivity. However, cellular demand hindered their ability to communicate with other entities. OPM personnel could not contact FEMA NCRC, the DHS National Operations Center, WMATA, or GSA via cell phone to obtain and share situational awareness information. At approximately 2:10 p.m., OPM contacted the MWCOG to request a conference call, but the Council could not immediately organize one due to the communications problems. At that point, the demand for communications also overwhelmed the Government Emergency Telecommunications Service (GETS) and the Wireless Priority Service (WPS), both of which are designed to grant priority to emergency government and public safety calls. The DHS Office of Emergency Communications took steps after the earthquake to implement the necessary corrective measures for GETS and WPS service.

In response to the communications challenges after the earthquake, Federal and other NCR officials used NCR information systems, including the Regional Incident Communication and Coordination System (RICCS) and the Washington Area Warning System (WAWAS), to gain situational awareness after the earthquake (see Appendix B for a description of selected NCR information sharing systems). The RICCS network delivers emergency alerts, notifications, and updates to Federal, state, and local officials via user-defined communication modes, including email, text message, or voice alert. WAWAS is a node of the National Warning System (NAWAS), a Cold War-era, dedicated party-line voice system for emergency managers and military use. WAWAS connects more than 119 Federal, state, and local operations centers in the NCR.

Federal agencies shared status updates, damage assessments, and information about transportation capabilities through WAWAS. OPM personnel used WAWAS to gain general situational awareness. OPM officials attempted but were unable to ascertain the information they needed about the status of the transportation infrastructure or the status of the Federal workforce through WAWAS.

The MWCOG RICCS functioned as intended and supported its mission to facilitate a coordinated NCR response to the earthquake. The Fairfax County Department of Emergency Management recorded the first RICCS message within 15 minutes of the earthquake. At 2:50 p.m., approximately one hour after the earthquake, MWCOG staff

disseminated a RICCS message to schedule a call at 3:15 p.m. to several pre-established groups—the Chief Administrative Officers (CAOs)/Senior Policy Group and the Regional Emergency Support Function (R-ESF) #5 (Information and Planning) core group. Several Federal entities, including OPM, are part of the R-ESF #5 call group and should have received an invitation to the call. However, OPM staff was not included on the original invitation. The MWCOG staff attempted to contact OPM about the meeting but failed due to busy circuits. Consequently, OPM did not participate in this conference call. Forty-seven partners participated on this call; no participants reported major damage or requested mutual aid. Many of the participants were still in the process of conducting initial assessments.

The RICCS system recorded 21 messages in the 14 hours immediately after the earthquake. In addition, MWCOG conducted two conference calls during that time. OPM staff participated on a 9:00 p.m. call in order to coordinate the status of the Federal government on August 24, 2011. Following the earthquake, MWCOG established an OPM group in the RICCS system to address gaps in NCR communications processes. This will allow MWCOG members to easily add OPM to RICCS conference calls when necessary.

**Recommendation:** Staff from MWCOG, OPM, and other relevant Federal departments and agencies should conduct periodic reviews of RICCS processes, including invitations to the R-ESF #5 call group, to ensure that the appropriate Federal personnel are able to participate.

## Information Sharing

### **Finding 6: Federal departments and agencies employed Twitter, Facebook, and other social media to push emergency information to Federal personnel after the earthquake.**

**Discussion:** Federal departments and agencies, including FEMA and the U.S. Department of Justice (DOJ), used social media to provide emergency information to federal personnel and the public soon after the earthquake. Within 30 minutes of the earthquake, FEMA Administrator Fugate tweeted, “FEMA is monitoring reports from the #earthquake, cell service is busy in DC, try to stay off your cell phone if it is not an emergency” to his approximately 20,000 Twitter followers. This tweet encouraged individuals to use mechanisms that place less of a strain on communications bandwidth. Administrator Fugate released his tweet approximately 100 minutes before FEMA issued a press release with similar information. DOJ also used social media to disseminate emergency information. The DOJ Human Resources (HR) Twitter feed indicated that DOJ had implemented continuity of operations plans for NCR area offices. In addition, the DOJ HR Twitter feed instructed DOJ employees to “stay tuned for guidance from OPM.”

This use of social media after the earthquake illustrates that Federal departments and agencies are incorporating social media policies into their emergency procedures. Social

media, as well as text messaging, offers the ability to push concise messages to large numbers of Federal personnel quickly during an emergency. Federal departments and agencies can use a Twitter account, Facebook page, or other social media platform to push information to their Federal personnel as well as the public after an incident. For example, OPM posted information about the Federal Government's operating status to its Facebook page which has more than 8,600 "Likes" as of May 30, 2012.

Evidence suggests that Federal personnel do not use social media to gather information about government operations. Some Federal department or agency Twitter feeds have a small number of subscribers relative to their number of total employees. For example, the DOJ HR Twitter feed currently has only 738 total followers (as of May 30, 2012) even though there are approximately 24,000 DOJ employees in the NCR. Similarly, the OPM Twitter feed has approximately 3,800 followers (as of May 30, 2012). Incorporating social media into the culture of Federal personnel will further encourage department and agency administrators and their HR staff to use social media to disseminate emergency information.

**Recommendations:** Federal departments or agencies should inform their personnel if the organization is planning to use social media to disseminate emergency information. The departments and agencies should encourage their personnel to sign up for the social media tool that it plans to employ.

### **Finding 7: Federal departments and agencies used multiple websites and systems to disseminate emergency information to their personnel following the earthquake.**

**Discussion:** After the earthquake, most Federal departments and agencies posted information for their personnel in the NCR on their websites. However, in some cases, this information could not be quickly and easily located. Consequently, Federal personnel in the NCR had to consult various websites, blogs, community forums, and other sources to access emergency information.

During the October 13, 2011, House Committee on Transportation and Infrastructure, Subcommittee on Economic Development, Public Buildings, and Emergency Management hearing, Delegate Eleanor Holmes Norton inquired about developing an easy-to-use website for use by Federal personnel during emergencies. In November 2011, the NCR launched a virtual joint information center (V-JIC), the National Capital Region News and Information website ([www.capitalregionupdates.gov](http://www.capitalregionupdates.gov)). The site contains news feeds from NCR jurisdictions as well as emergency alerts and weather, traffic, and utilities status information. However, it is undetermined if this system will be able to handle a sudden increase of traffic from a large number of Federal personnel during an incident in the NCR. Federal personnel should consult the V-JIC website for general NCR updates following an incident, including information on regional emergency alerts and travel conditions. However, Federal personnel should continue to rely on the OPM website and that of their own department or agency for authoritative Federal Government-specific emergency information.

Congestion of cellular networks after an incident may make it difficult for Federal personnel to use a mobile device to access a website for emergency information when they are not at their workplace. Consequently, an alert system based on text alerts or social media may offer benefits for disseminating information to Federal personnel following an event. There may be opportunities to link Federal alert system(s) to other NCR emergency alert systems so that Federal personnel receive emergency updates from NCR entities, such as WMATA.

**Recommendation:** OPM, in conjunction with Federal departments and agencies, should consider developing text alert systems. This would enable OPM or other federal department and agency officials to provide information to Federal personnel during emergencies and periods of limited communication bandwidth. Federal departments and agencies should encourage their personnel to register for text alerts from other relevant NCR entities, such as WMATA.

## SECTION 3: CORRECTIVE ACTIONS IMPLEMENTED AFTER THE EARTHQUAKE

At the time of the Virginia earthquake, Federal, state, and local NCR stakeholders and MWCOG members were assessing the impact of the January 11, 2011, snowstorms and developing corrective actions. Some issues that Federal personnel encountered during the August 23, 2011, earthquake had been observed during the January 26, 2011, snowstorm. These issues included how emergency managers and transportation officials communicated, coordinated, and employed a variety of communication mechanisms to deliver public messages. Further, in both events, many Federal departments and agencies looked to OPM for guidance on how to manage the safety and release of their employees. The Federal government and other NCR entities have implemented corrective actions in the months after the Virginia earthquake to address the challenges encountered in both incidents.

In March 2011, MWCOG established a committee to identify improvements to regional incident management based on the lessons of the January 2011 snowstorm. On October 26, 2011, the committee released its report, *The Report of the Steering Committee on Management and Response*, which identified areas for improvement. Specifically, the committee recommended that the NCR establish a V-JIC and improve the readiness and capability of the public to shelter-in-place. NCR entities have taken steps to implement both recommendations since the earthquake.

### Virtual Joint Information Center

MWCOG's report emphasized the need for coordinated, real-time public messages delivered through various mechanisms. The NCR Public Information Officer (PIO) committee established the NCR V-JIC ([www.capitalregionupdates.gov](http://www.capitalregionupdates.gov)) in November 2011. The NCR V-JIC enables PIOs to communicate and coordinate with emergency managers, CAOs, and elected officials to generate public information messages during an emergency. In addition, the V-JIC provides a location for individuals to access emergency public information to make appropriate protective action decisions during incidents. The website also provides public access to NCR updates related to incidents. Further, the V-JIC allows the public to subscribe to text and e-mail alerts during emergencies and allows department and agency PIOs to push information to the media during an event. The NCR V-JIC also provides material to the public for developing individual preparedness plans.

### Shelter-In-Place Procedures

MWCOG's report noted that NCR workers and residents needed to be better prepared to shelter-in-place during emergencies. The committee recognized that the NCR transportation infrastructure would be unable to support the rapid evacuation of commuters and residents. The committee also recommended that NCR Federal, state, local, private sector and non-profit partners establish or improve their shelter-in-place procedures as well as educate the public on how to prepare for sheltering-in-place.

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In December 2011, OPM updated its *Washington, DC, Area Dismissal and Closure Procedures* to include shelter-in-place guidance. OPM also began to encourage Federal personnel to complete an emergency preparedness kit. Following the release of the new procedures, OPM took steps to educate Federal personnel about shelter-in-place procedures by collaborating with Federal CHCOs, hosting a live webcast for employees, conducting a press conference, and posting videos on YouTube. As of August 2012, the NCR has not experienced an event that has required OPM to recommend shelter-in-place procedures.

### **Federal Workforce Preparedness**

To encourage both Federal employees and the whole community in the Washington, D.C. area to take practical steps to better prepare themselves and their families during emergencies that could threaten their homes, workplaces, and communities, NCRC, in collaboration with OPM, created a comprehensive preparedness guide with specific NCR emergency information for Federal employees. The *Emergency Preparedness for Federal Employees in the National Capital Region* (FEMA P-912) Guide is available online [<http://www.fema.gov/library/viewRecord.do?id=6018>] and is being distributed to Federal departments and agencies throughout the NCR. To further educate the Federal workforce NCRC, co-created, with the Emergency Management Institute (EMI), an Independent Study Course based on the Guide that will result in a higher level of employee preparedness for an incident in the NCR. The course is available online as part of EMI's Independent Study Program [<http://training.fema.gov/EMIWeb/IS/is450nc.asp>]. DHS is mandating that the course be taken by all Federal employees as part of the Employee Preparedness Initiative.

OPM has also taken steps to improve its ability to disseminate information to the Federal workforce during emergencies. For example, OPM released its OPM Alert mobile application in May 2013. The OPM Alert application provides real-time information via mobile devices on the operating status of the Federal Government in the NCR. Through the application, users can sign up to receive notifications when the Federal Government's operating status changes and can view OPM's dismissal and closure procedures for the NCR. OPM also continues to use Facebook, Twitter, and other social media tools to disseminate information to Federal workers throughout the NCR.

## SECTION 4: CONCLUSION

The August 23, 2011, Virginia earthquake illustrates the challenges that Federal departments and agencies face during area-wide no-notice events that occur during normal work hours. In this incident, departments and agencies successfully maintained their essential functions and reported such information to FEMA NCP through the RRS. Departments and agencies evacuated their places of work and assessed buildings for structural damage. Further, department and agency officials made decisions about evacuation, building closure and re-entry, and release of personnel based upon their office emergency plans and the information available to them at the time. The overall success of this decentralized decision-making confirmed the validity of the Federal government's processes for managing building closure and release of personnel during incidents within the NCR.

As noted in section 3, OPM and Federal departments and agencies have taken additional steps since the earthquake to protect Federal personnel throughout the NCR. These efforts focused on measures such as educating the Federal workforce about the benefits of shelter-in-place and on developing individual preparedness plans and associated kits. This report also identified the need to expand the ability of OPM and Federal departments and agencies to disseminate emergency information to Federal personnel by using text messaging systems and social media platforms. Together, these measures can help to ensure that Federal personnel remain safe when an emergency occurs within the NCR during the workday.

## APPENDIX A: EVENT CHRONOLOGY

DAY	TIME (EDT)	VENUE/ AGENCY	ACTIVITY
August 23	1:51 p.m.	U.S. Geological Survey (USGS)	USGS reports that a 5.8 magnitude earthquake struck the Piedmont region of Virginia. The epicenter, in the town of Mineral, in Louisa County, was 38 miles northwest of Richmond and 84 miles southwest of Washington, DC.
August 23	1:51 p.m.	Dominion Virginia Power	Units 1 and 2 of the North Anna Power Station in Louisa County, VA, automatically shut off due to a temporary off-site power outage. The epicenter of the earthquake is located approximately 11 miles from the power station.
August 23	1:52 p.m.		Federal and private sector workers throughout the National Capital Region (NCR) leave their place of work and begin self-evacuating. This includes staff of the White House, Pentagon civilian and military personnel, and Government Accountability Office (GAO).
August 23	1:52 p.m.		Cell phone companies experience higher call volume and network congestion in the NCR. Affected individuals encounter difficulties making cell phone calls. Verizon Wireless service returns after 20 minutes.
August 23	1:52 p.m.	Office of Personnel Management (OPM)	OPM experiences communications challenges that hinder its ability to gain situational awareness: <ul style="list-style-type: none"> <li>▪ Cell phone, landline, and E-mail communications are sporadic; and</li> <li>▪ Personnel are unable to obtain government Emergency Telecommunications Service and Wireless Priority Service connectivity.</li> </ul>
August 23	1:57 p.m.	Federal Emergency Management Agency (FEMA) NCR Watch Desk	The NCR Watch Desk reports an evacuation of FEMA Headquarters. Personnel leave the building via designated emergency exits. The National Watch Center and collocated liaisons also are evacuated.
August 23	1:59 p.m.	General Services Administration (GSA)	GSA, DOI, and many other Federal departments and agencies in the NCR begin releasing employees for the day.
August 23	2:05 p.m.	Fairfax County, Virginia, Emergency Operation Center (EOC)	Fairfax County EOC representative sends the first Regional Incident Communication and Coordination System (RICCS) alert notifying members that the county has activated its EOC at a monitoring level to assess damage from the earthquake.
August 23	2:10 p.m.	OPM	OPM officials contact MWCOG and request a conference call. MWCOG is unable to schedule the call due to communications challenges.
August 23	2:10 p.m.	Pentagon	By 2:10 p.m. officials give the all-clear for Pentagon staff who had evacuated to return to work.

DAY	TIME (EDT)	VENUE/ AGENCY	ACTIVITY
August 23	2:18 p.m.	FEMA	Craig Fugate tweets, "FEMA is monitoring reports from the #earthquake, cell service is busy in DC, try to stay off your cell phone if it is not an emergency," to approximately 20,000 Twitter followers.
August 23	2:19 p.m.	Media	Media reports that the White House, the U.S. Capitol, and Union Station have been evacuated.
August 23	2: 22 p.m.	NCR Watch Desk	The NCR Watch Desk reports that "FEMA HQ evacuation has been halted and the working spaces reoccupied."
August 23	2:25 p.m.	DC Public Schools (DCPS)	DCPS posts on its Facebook page "Students are being sent to their fire evacuation location. Stay calm and stay safe."
August 23	2:30 p.m.	Maryland Rail Commuter Service (MARC)	MARC trains are suspended.
August 23	2:34 p.m.	WMATA	WMATA issues its first news release related to the incident: "As of 1:59 p.m., all trains are operating at 15 mph. Metro personnel are conducting track inspections of the entire rail system. There are no reported customer injuries at this time."
August 23	2:34 p.m.	MWCOG	RICCS reports: "No reports of major traffic at this time."
August 23	2:39 p.m.	DC HSEMA	DC HSEMA providing communications assistance to OPM via Washington Area Warning System to assess the Federal workforce status.
August 23	2:46 p.m.	USGS	USGS reports earthquake aftershock of 2.8 magnitude occurs 5 miles south-southwest of Mineral, VA.
August 23	2:50 p.m.	MWCOG	MWCOG representative alerts CAOs and emergency managers on RICCS that there is a 3:15 p.m. conference call related to the earthquake; 110 representatives are sent this alert.
August 23	2:52 p.m.	U.S. Nuclear Regulatory Commission (NRC)	NRC reports that between 2:00 p.m. and 2:52 p.m. several nuclear power stations and research reactors declare an "Unusual Event": Hope Creek, NJ (2:00 p.m.); Salem, NJ (2:00 p.m.); Three Mile Island, PA (2:01 p.m.); Peach Bottom, PA (2:01 p.m.); North Anna, VA (2:03 p.m.); Surry, VA (2:04 p.m.); Oyster Creek, NJ (2:05 p.m.); Susquehanna, PA (2:05 p.m.); University of Maryland, MD (2:05 p.m.); Calvert Cliffs, MD (2:05 p.m.); Limerick, PA (2:15 p.m.); Cook Power Reactor, MI (2:24 p.m.); Harris, NC (2:24 p.m.); North Carolina State University, NC (2:30 p.m.); and Palisades, MI (2:52 p.m.).
August 23	2: 55 p.m.	NCR Watch Desk	The NCR Watch Desk reports: "AMTRAK and CSX reports delays due to track, tunnel, and bridge inspections."
August 23	3: 00 p.m.	DC HSEMA	DC HSEMA reports that by 3:00 p.m. the DC Mayor, the DC City Council, and other personnel in the John Wilson Building have been evacuated. Only essential personnel remain in the building.

DAY	TIME (EDT)	VENUE/ AGENCY	ACTIVITY
August 23	3: 08 p.m.	NCR Watch Desk	The NCR Watch Desk reports: "CSX reports operations are within a 50 mile radius of the District of Columbia and are running at restricted speeds. AMTRAK running at restricted speeds."
August 23	3: 14 p.m.	NCR Watch Desk	The NCR Watch Desk reports: "Reagan National has ceased operations until further notice. Dulles International is operational."
August 23	3:15 p.m.	MWCOG	A total of 47 participants attend a RICCS conference call to share initial assessment information. These participants include CAOs, emergency managers, and other officials. Minimal damage is reported.
August 23	3:15 p.m.	DCPS	DCPS does not implement early dismissal. Students are dismissed at 3:15 p.m. and after-school programs continue as planned.
August 23	3:20 p.m.	USGS	USGS reports that an earthquake aftershock of 2.2 magnitude occurs near the epicenter.
August 23	3:20 p.m.	WMATA	WMATA issues its second news release for the incident alerting costumers that: "customers should expect significant delays on Metrorail until further notice due to the reduced operating speed."
August 23	3:21 p.m.	GAO	GAO employees return to work.
August 23	3:25 p.m.	NCR Watch Desk	The NCR Watch Desk reports: "Reagan National has resumed operations both inbound and outbound."
August 23	3:26 p.m.	DC HSEMA	DC HSEMA reports that all congressional buildings have been evacuated and are being inspected. Building officials are allowing staff re-entry on a case-by-case basis.
August 23	3:28 p.m.	U.S. Secret Service	U.S. Secret Service gives the all-clear message to staff of the White House and adjacent buildings. Staff returns to their offices.
August 23	3:30 p.m.		By 3:30 p.m., EOP, GAO, and other department and agency personnel across the NCR returned to their offices.
August 23	3:35 p.m.	FEMA	FEMA's Chief Human Capital Officer sends an email informing all FEMA personnel in the NCR that, "Following the recent earthquake in the National Capital Region, FEMA employees at various locations were evacuated to ensure their safety. Some building owners have not cleared employees to return to their offices."
August 23	3:39 p.m.	DC HSEMA	DC HSEMA reports that the U.S. Park Police evacuated all the monuments and memorials on the National Mall.

DAY	TIME (EDT)	VENUE/ AGENCY	ACTIVITY
August 23	3:47 p.m.	OPM	OPM issues an announcement that states: "Many agencies in the National Capital Region are releasing employees for the day. OPM recommends any remaining agencies in the National Capital Region consider early dismissal for non-emergency employees."
August 23	3: 53 p.m.	District of Columbia Headquarters (DC HQ) Alert	DC HQ reports: "DC Department of Transportation reports that Rock Creek Parkway traffic is all outbound until further notice."
August 23	4:03 p.m.	FEMA	FEMA officials report that they have not identified any major earthquake damage throughout the impacted area or received requests for assistance. Preliminary damage assessments are currently taking place in all the affected states. FEMA also requests "that members of the public use email or text messages if possible to communicate for the next few hours, except in cases of emergency, so that emergency officials can continue to receive and respond to urgent calls. We encourage everyone in the affected areas to listen to the direction of their local officials. More information will be provided as it becomes available."
August 23	4:11 p.m.	OPM	OPM sends Facebook and Twitter messages notifying staff of early dismissal.
August 23	4:40 p.m.	Virginia Department of Transportation (VDOT)	VDOT notifies MWCOG participants that due to the early release of the Federal government, it has lifted the HOV restrictions on all interstate routes, including I-395, I-95, and I-66.
August 23	4: 45 p.m.	DC HSEMA	DC HSEMA reports that OPM has released Federal personnel for the day. Heavy traffic conditions continue and transit systems are experiencing crowded conditions.
August 23	4: 49 p.m.	NCR Watch Desk	The NCR Watch Desk reports: "Be advised that the Office of Personnel Management will update the Federal government operating status for Wednesday 24 August no later than 0400 Wednesday morning."
August 23	5:29 p.m.	DC HSEMA	DC HSEMA reports that the Metro Transit Police Department has returned to normal operations and is closely monitoring the residual crowds. On-duty personnel are prepared to redeploy if necessary.
August 23	5:40 p.m.	MWCOG	A MWCOG RICCS message summarizes roadway conditions: "All roads out of DC are reported as running slow due to heavy volume of traffic. Some delays could be attributed to the reduced speed for checking bridges."
August 23	7:00 p.m.	DC HSEMA	DC HSEMA reports that traffic conditions have improved and are close to normal rush-hour conditions. Metrorail and the commuter rail systems are still operating under speed restrictions and experiencing heavy delays.

DAY	TIME (EDT)	VENUE/ AGENCY	ACTIVITY
August 23	8:04 p.m.	USGS	USGS reports that an earthquake aftershock of 4.2 magnitude occurs near the epicenter.
August 23	9:15 p.m.	MWCOG	CAOs confirm minimal damage during a conference call with emergency managers and other officials. The GSA states that the earthquake damaged some Federal buildings.
August 24	12:04 a.m.	USGS	USGS reports aftershock of 3.4 magnitude has occurred in Virginia.
August 24	12:22 a.m.	OPM	OPM sends social media message stating: "OPM staff is working through the night to update employees in time for the morning commute."
August 24	1:03 a.m.	GSA	GSA provides OPM with a listing of 33 facilities that would be closed on August 24, 2011.
August 24	2:08 a.m.	OPM	OPM sends the following message: "Federal Executive Branch departments and agencies inside the Washington, DC, Beltway are OPEN with unscheduled leave and unscheduled telework available in accordance with agency guidelines. Some buildings are closed pending further inspections. Please see the bottom of this page for a list of closed buildings provided by GSA, as of 1:50 a.m. Wednesday, August 24 <sup>th</sup> . While this list is as complete as possible, we do not have the status of all buildings. Check with your agency (e.g., agency website, emergency phone number or supervisor, as appropriate) to see if your building has opened. Guidance from your supervisor supersedes this list. This list will not be updated again until 4 a.m. on Thursday, August 25 <sup>th</sup> ."
August 24	8:48 a.m.	FEMA	FEMA's National Situation Update: Wednesday, August 24, 2011 reports: "The District of Columbia, Delaware, Maryland, and Pennsylvania State Emergency Operations Centers were activated to Enhanced Readiness, with the exception of the Commonwealth of Virginia have returned to normal operating levels. [sic]"
August 24	11:53 a.m.	DC Department of Consumer and Regulatory Affairs	Inspectors report that all assigned inspections have been completed and no major damage was noted.
August 26		VA Governor	Virginia Governor Bob McDonnell declares a state of emergency for areas affected by the August 23 earthquake.
October 13		House Committee on Transportation and Infrastructure	House Committee on Transportation and Infrastructure; Subcommittee on Economic Development, Public Buildings, and Emergency Management conducted the Streamlining Emergency Management: Improving Preparedness, Response, and Cutting Costs hearing.
October 21		DC Mayor	DC Mayor Vincent C. Gray requests a disaster declaration for the District of Columbia because of the impact of the August 23 earthquake.

DAY	TIME (EDT)	VENUE/ AGENCY	ACTIVITY
November 4	3:37 p.m.	White House	President Barack Obama issues a Major Disaster Declaration (FEMA-DR-4042) for areas in Virginia affected by the earthquake. As of December 5, 2011, FEMA has approved over \$5 million in grants.
November 8	4:22 p.m.	White House	President Barack Obama issues a Major Disaster Declaration (FEMA-DR-4044) for areas in Washington, DC, affected by the earthquake.

## APPENDIX B: SELECTED NCR INFORMATION SHARING SYSTEMS

SELECTED SYSTEMS USED DURING THE AUGUST 23, 2011, VIRGINIA EARTHQUAKE		
SYSTEMS	DESCRIPTION	PARTICIPANTS/RECIPIENTS
<b>Readiness Reporting System (RRS)</b>	The RRS is a Federal continuity monitoring system that measures and reports the individual and aggregate ability of Federal departments and agencies to continue their Priority Mission Essential Functions in support of the required National Essential Functions. FEMA National Continuity Program Directorate manages the system and uses the system to determine needs and gaps in Federal government continuity capabilities.	<p><b>Participants:</b></p> <ul style="list-style-type: none"> <li>▪ Federal departments and agencies</li> </ul> <p><b>Recipients:</b></p> <ul style="list-style-type: none"> <li>▪ DHS</li> <li>▪ FEMA</li> <li>▪ The White House</li> </ul>
<b>Regional Incident Communication and Coordination System (RICCS)</b>	The RICCS network is the primary 24/7 communications capability that links local, state, and Federal officials for incidents within the NCR. The RICCS network delivers emergency alerts, notifications, and updates to members via user-defined communications modes, including email, text message, or voice alert.	<p><b>Participants/ Recipients:</b></p> <ul style="list-style-type: none"> <li>▪ Federal departments and agencies</li> <li>▪ Local agencies</li> <li>▪ Non-governmental organizations</li> <li>▪ Private sector entities</li> <li>▪ Schools and universities</li> <li>▪ State agencies</li> </ul>
<b>Regional Integrated Transportation Information System (RITIS)</b>	RITIS collects, analyzes, and distributes information about transportation systems' conditions to provide a comprehensive view of the regional transportation network to stakeholders. RITIS serves as the primary information resource for the MATOC Program.	<p><b>Participants:</b></p> <ul style="list-style-type: none"> <li>▪ State agencies</li> <li>▪ Local agencies</li> <li>▪ Transportation agencies</li> </ul> <p><b>Recipients:</b></p> <ul style="list-style-type: none"> <li>▪ Media</li> <li>▪ Metropolitan Area</li> <li>▪ Transportation Operations Coordination Program</li> </ul>
<b>Washington Area Warning and Alert System (WAWAS)</b>	WAWAS is a node of NAWAS, a Cold War-era, dedicated party-line voice system for emergency managers and military use. WAWAS connects more than 119 Federal, state, and local operations centers in the NCR.	<p><b>Participants/ Recipients:</b></p> <ul style="list-style-type: none"> <li>▪ Federal departments and agencies</li> <li>▪ Local agencies</li> <li>▪ Private sector entities</li> <li>▪ State agencies</li> </ul>

SELECTED SYSTEMS USED DURING THE AUGUST 23, 2011, VIRGINIA EARTHQUAKE		
SYSTEMS	DESCRIPTION	PARTICIPANTS/RECIPIENTS
<b>WebEOC</b>	WebEOC is a web-enabled crisis information management system that provides secure real-time information sharing to support decision making. Some, but not all, NCR Federal, state, local, private sector and non-profit partners use WebEOC to manage incidents and daily events, assign and track missions and tasks, provide situation reports, manage resources, and prepare reports. Jurisdictional WebEOC information is shared via the NCR Regional Board.	<b>Participants/ Recipients:</b> <ul style="list-style-type: none"> <li>▪ Federal departments and agencies</li> <li>▪ Local agencies</li> <li>▪ Private sector entities</li> <li>▪ State agencies</li> <li>▪ This could lead one to understand that all the above participants can communicate over WebEOC with one another. This is not true.</li> </ul>
<b>Microsoft Outlook</b>	The NCR Watch Desk uses Outlook to publish both incident –specific SPOT reports and Daily Situation Reports.	The NCR Watch Desk has over 200 stakeholders currently receiving reports.

## APPENDIX C: ACRONYMS

Acronym	Meaning
CAO	Chief Administrative Officer
CHCO	Chief Human Capital Officer
DC HQ	District of Columbia Headquarters
DC HSEMA	District of Columbia Homeland Security and Emergency Management Agency
DCPS	District of Columbia Public Schools
DHS	U.S. Department of Homeland Security
DOD	Department of Defense
DOI	Department of the Interior
DOJ	U.S. Department of Justice
EDT	Eastern Daylight Time
EOC	Emergency Operations Center
EOP	Executive Office of the President
ESF	Emergency Support Function
EST	Eastern Standard Time
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
GAO	Government Accountability Office
GETS	Government Emergency Telecommunications
GSA	General Services Administration
HR	Human Resources
MARC	Maryland Rail Commuter Service
MATOC	Metropolitan Area Transportation Operations Coordination Program
MWCOG	Metropolitan Washington Council of Governments
NAWAS	National Warning System
NCP	National Continuity Programs Directorate
NCR	National Capital Region
NCRC	Office of the National Capital Region Coordination
NEF	National Essential Functions
NPAD	National Preparedness Assessment Division
NRC	U.S. Nuclear Regulatory Commission
NRCC	National Response Coordination Center
OPM	U.S. Office of Personnel Management
PMEF	Priority Mission Essential Functions
PIO	Public Information Officer
RICCS	Regional Incident Communication and Coordination System
RITIS	Regional Integrated Transportation Information System
RRS	Readiness Reporting System
USGS	U.S. Geological Survey

<b>Acronym</b>	<b>Meaning</b>
V-JIC	Virtual Joint Information Center
VDOT	Virginia Department of Transportation
WAWAS	Washington Area Warning System
WMATA	Washington Metropolitan Area Transit Authority
WPS	Wireless Priority Service