Statement of Qualifications

COVID-19 Disinfection Services
What is Coronavirus?

Recently, a novel ("new") coronavirus – COVID-19 – that had not been previously found in humans was detected in China. The World Health Organization (WHO) and the U.S. Centers for Disease Control and Prevention (CDC) are actively monitoring thousands of confirmed cases in China and additional cases in a growing number of countries internationally, including the United States. In the last few days the situation has escalated, and COVID-19 is now considered a pandemic. The current understanding of how COVID-19 spreads is still largely based on what is known about similar coronaviruses, such as Middle East Respiratory Syndrome (MERS-CoV) and SARS. Understanding that there is still much to study about COVID-19, the CDC has been able to develop the following characteristics about the virus and how it is transmitted:

- COVID-19 is spread between people who are in close contact with one another (within about 6 feet) via respiratory droplets produced when an infected person coughs or sneezes. These droplets can land in the mouths or noses of people who are nearby or possibly be inhaled into the lungs.

- It may be possible to contract COVID-19 by touching a surface or object that has been exposed to the virus and then touching one’s own mouth, nose, or eyes, but this is not thought to be the main way the virus spreads.

- People are thought to be most contagious when they are most symptomatic (the sickest).

- Some spread might be possible before people show symptoms, but this is not thought to be the main way the virus spreads.

*While federal and state public health agencies are making strides in developing capacity to prepare for and respond to public health incidents, the COVID-19 has demonstrated our nation’s continued vulnerability to widespread public health emergencies.*
Now a pandemic, the sheer magnitude and spread of COVID-19 will increase dramatically if public health and safety is not a top priority. Pandemic influenza or any large-scale outbreak creates important vulnerabilities to consider. At the very time when expedited response and increased staffing levels are needed, upwards of 20% of staff may be unavailable due to illness. Understanding these vulnerabilities and planning for both an influx of patients (surge capacity) and shortness of staff is an essential first step to creating a plan for responding to and recovering from a public health disaster. Additionally, aggressive disinfection and containment protocols must be rapidly implemented to control the quick spread of the virus, which could have dire consequences on the nation’s healthcare system and the overall population.

How Tetra Tech Can Help

About Tetra Tech

Tetra Tech, Inc., (Tetra Tech) is a leading provider of specialized management consulting and technical engineering services. Clients include a diverse base of public and private-sector organizations located throughout the United States and internationally. The company was founded in 1966 and became a publicly traded company (NASDAQ-TTEK) in 1991.

Tetra Tech brings preparedness, response, and recovery capabilities that are established, experienced, and ready to go across the nation, including in U.S. territories. Our firm has a long history of providing emergency response services to the U.S. Environmental Protection Agency (EPA) and other clients pertaining to public health, manmade and natural disasters of all kinds, including pandemic influenza. We routinely provide planning, training and exercise services to clients to improve their preparedness and response capabilities for high consequence diseases (HCD) threats, and how activities to assess, isolate, disinfect, and quarantine should occur. Additionally, we manage several EPA Superfund Technical Assessment & Response Team (START) contracts, giving our firm access to the supplies necessary for disinfection services.

During steady-state conditions, our disaster preparedness strategies include developing and applying technology to better inform clients about the wide array of hazards they face; prioritizing, scoping, and implementing projects designed to mitigate risks; and planning, training, and exercising public safety professionals to enhance their readiness to respond. Post-disaster, Tetra Tech offers a wide range of incident management support including augmenting staff and personnel; facilitating and monitoring rapid infrastructure repair and debris management; and advising and guiding clients through comprehensive financial management, community resilience, and economic redevelopment phases of disaster recovery.

We offer a proven, field-tested methodology for public health preparedness planning, response and recovery. Our methodology is process-centric and has been used by governments, schools, businesses and public health agencies across the country to develop disaster readiness plans and enact responses. This methodology is based upon the latest emergency planning principles, industry standards and best practices and approaches. The focus of the Tetra Tech methodology is on identification of the core operations processes, identification of essential facilities, equipment, records and other resources that are required to perform those processes and the plans to facilitate a timely and orderly recovery from an emergency. Tetra Tech’s methodology for planning and response is designed to meet the requirements of the Center for Disease Control (CDC) guidelines, the World Health Organization (WHO), the Emergency Management Accreditation Program (EMAP), National Incident Management System (NIMS), the National Fire Protection Association
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(NFPA) 1600 planning standards, the National Response Plan and the Homeland Security Exercise Evaluation Program (HSEEP).

Tetra Tech is one of the foremost providers of response services in the wake of biological incidents and hazardous materials, having responded to thousands of hazmat releases across North America and more than 100 suspected terrorist incidents with potential biological releases. Our broad base of technical resources, and our nationwide presence, Tetra Tech’s hazardous material and biological technical experts are knowledgeable of the complex issues involved with management of potential biological incident-generated wastes. We routinely provide hazmat services including analysis of compliance issues and application of regulatory requirements, and our regulatory specialists and technical personnel actively maintain strong relationships with federal, state, and local regulatory agencies involved with potential biological incident emergency responses.

Additionally, Tetra Tech provides comprehensive training on the correct use of personal protective equipment (PPE) for a wide variety of applications for Levels A through D, including donning and doffing N95 masks, powered air purifying respirators (PAPR), and a variety of resistant suits and coveralls (Tyvek, etc.). Tetra Tech has extensive experience in the first responder, first receiver, emergency department, and acute care hospital settings. In addition, with more than 20,000 employees around the world, Tetra Tech has the capacity to provide services to federal agencies, large state agencies, and health systems.

Our expansive service portfolio is illustrated in the following graphic. Additionally, Tetra Tech holds OASIS UR Pools 1, 3, & 4 | Pool 1 - GS00Q14OADU138 – Engineering, Environmental, Management Consulting; Pool 3 - GS00Q14OADU337 - Engineering Support for Military Applications; Pool 4 - GS00Q14OADU436 - R&D Support Services.
COVID-19 Service Capabilities

Tetra Tech can provide the following services for the COVID-19 response following a presidential declaration as a major or emergency declaration.

<table>
<thead>
<tr>
<th>Service</th>
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| **Development of a COVID-19 Response Framework** | Incident action plan within 48 hours on how staff and contractors will be engaged to support the response efforts to include:  
- Staffing requirements  
- Timeline  
- Deliverables  
- Report and metrics  
- Mobilization within designated areas |
| **Disinfection, Spraying, and Monitoring Services – Mass Transit and High-Risk Facilities** | Disinfection, spraying, and monitoring services at areas identified as known or suspected to have COVID-19 including mass transit facilities and vehicles (e.g. buses, subway cars, trains), public facilities and open spaces, utilities and healthcare facilities.  
- Develop a disinfection plan based on critical infrastructure and facilities  
- Deploy staff to disinfect identified areas  
- Develop real-time cloud-based monitoring system to determine areas that have been disinfected and dashboards for reporting  
- Pre-and-post disinfection sampling  
- Monitoring of PPE use, completion of scope of work, reconciliation of invoices |
| **COVID-19 Assessments, Inspections and Testing—Public and Private Facilities** | **Assessment:** Evaluation of for housekeeping/janitorial operations at public facilities to include:  
- Desktop inspections and document reviews of contracts/plans/staffing/standard operating procedures (SOPs)  
- On-site assessments/observations of housekeeping/janitorial operations  
- Report development and supplemental training on areas for improvement  
**Hygiene Inspections:** Collection of swab samples assessing germ loads at heavy traffic areas to include common area/lobby, elevators/escalators, cafeteria, bathroom, primary entrances/exits  
- Swab sampling would focus on general viruses/germ counts to assess loads per location to provide an indication of housekeeping/janitorial performance (not presence of COVID-19)  
- Results for swab samples received within 72 hours  
- Pass/Fail issued with recommendations for improvement and mandatory hygiene/housekeeping training  
**Testing Protocols:**  
- Less than 30 Employees: 5-10 Samples  
- 30-100 Employees: 10-20 Samples  
- 100-500 Employees: 25-50 Samples  
- 500 Employees: TBD/Case by Case  
- Re-inspection would occur within 2-3 weeks for poor performing/failing facilities  
**COVID-19 Inspection/Testing:** In addition to general hygiene testing as described above, those higher-risk facilities (including mass transit facilities, nursing homes, schools, ports of entry, hospitals, clinics and other state/local critical facilities) would be screened specifically for COVID-19 |
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<tr>
<td>COVID-19 Outreach, Inspections, Monitoring and Testing – Private Property</td>
<td>• Operating 24/7 call center to perform desktop inspection information gathering on COVID-19 reports and distribute information to local health departments and other officials&lt;br&gt;• <strong>COVID-19 Inspection</strong>: For those private property, where the virus was identified as suspected of being present, including homes, hospitals, pharmacies, industrial, manufacturing, museums, retail, restaurants, gaming/casinos – inspection protocols as described above would be followed for COVID-19</td>
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<td>Ad Hoc Instructional Services to Employees on the donning and doffing of Personal Protective Equipment (PPE) and correct use of Powered Air Purifying Respirator (PAPR)/N-95 respirator face mask (including fit-testing).</td>
<td>• Course Instruction includes 4 staff – 2 x Lead Instructor and 2 x Instructor Model&lt;br&gt;• On-site training for employees with 1:3 Instructor to Student Ratio&lt;br&gt;• Maximum of 12 students per class&lt;br&gt;• Minimum of 3 classes per employee within week 1 of initiation and monthly refresher class every 30 days thereafter&lt;br&gt;• Training courses are approximately 30 minutes to 1 hour&lt;br&gt;This training is also relevant to other health professionals in the medical field including nurses, home health, clinical staff, pharmacists and emergency care facility staff.&lt;br&gt;• Staff to be deployed within communities for the following activities:&lt;br&gt;  o Distribution of flyers on COVID-19 transmission, prevention and self-reporting at ports of entry, public transit hubs and other public areas by properly badged and credentialed staff&lt;br&gt;  o COVID-19 Informational Personnel at Disaster Recovery Centers&lt;br&gt;• Operation of call center(s) to distribute information to the general public</td>
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<td>Dissemination of Informational Materials within Public Areas on COVID-19</td>
<td>• Delivery of home health and/or testing kits and other essential supplies that may be needed by disaster survivors should social distancing measures be put in place&lt;br&gt;• Personnel support at Point of Distribution (POD) sites</td>
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<tr>
<td>Asset Delivery Services for Individuals</td>
<td>• Collection of contractor and force account labor records to be submitted for FEMA reimbursement&lt;br&gt;• Documentation creation, timesheet records and equipment logs&lt;br&gt;• Procurement reviews and assistance&lt;br&gt;• Data entry into FEMA GrantsPortal system</td>
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<td>FEMA Public Assessment Data Collection</td>
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**Relevant Experience**

The following projects are just a few examples of Tetra Tech’s disinfection services available in a public health crisis.

**ZIKA Virus Inspection, Remediation, Aerial Spraying and Eradication - Miami-Dade County, Florida**

Spread of the Zika virus was concentrated in the large populous Miami Dade County, Florida (County) area. The discovery by the Center for Disease Control (CDC) of mosquito-based transmission, combined with horrific health consequence for pregnant women and fetuses, demanded a comprehensive mosquito remediation program be conducted. With a population of 2.6 million and an area of over 1,900 square miles, the challenge of a large area aerial spray effort combined with a door-to-door inspection and remediation program presented a significant challenge to the County.
The County reached out to Tetra Tech to solve several key problems they were facing in the implementation of the door-to-door inspection and remediation program, key needs included:

- Developing a protocol for collecting critical data
- Monitoring and managing the activities of County mosquito spraying crews
- Tracking and documenting contractor crew progress and performance
- Designing, training, and deploying a technology-based quality assurance/quality control (QA/QC) program
- Designing a real-time cloud-based spray crew tracking system to verify areas remediated, and detect when Zika-carrying mosquitoes had been eradicated

Tetra Tech proposed and was awarded a contract to use the RecoveryTrac™ technology to assist the County in this effort by providing contractor crews handheld smart phone devices loaded with the RecoveryTrac™ software to capture and report the survey and remediation activity data in real-time. Data collected was critical to the County in directing resources in response to changing health concerns and changing mosquito counts.

With the project goals established, a review of the contractor procedures was conducted along with applicable County protocols. Several Tetra Tech Response and Recovery Standard Operating Procedures (SOP), developed and refined in other projects, were modified for the unique requirements of providing a non-Tetra Tech employee with the handheld technology and the unique data collection needs. Protocols were evaluated for technical correctness, health, and safety requirements, and operational efficiency goals. Protocols were reviewed and approved by the County project manager. Health and safety protocols were reviewed and approved to address the unique risks associated with the program requirements. The RecoveryTrac™ technology was prepared and tested using the approved protocols.

Technical training was prepared along with required training aids to re-enforce data collection protocols and implemented as follows:

- Tetra Tech QC field inspectors received initial technical and quality training
- Contractor training was conducted in small group sessions including hands on practical training until proficient with the technology
- Tetra Tech QC field inspectors shadowed the newly trained and observed their activities correcting any issues on the spot
- The training process was completed in 4 days and the ongoing daily QC protocols were implemented

Daily QA/QC protocols were in place to address a continuous improvement goal where information is shared between the County, Tetra Tech, and the contractors to correct deficiencies and provide the highest quality of service and productivity by the contractors and accurate timely data for the County to evaluate the program’s effectiveness.

Operationally coordinating the efforts of several hundred personnel spread over a 1,900 square mile area presented a significant challenge. A project QC controller continually monitored the performance and locations of all personnel using a RecoveryTrac™ geospatial application. By responding proactively and working closely with the contractors, problems were identified and the closest QC supervisor was dispatched, and the issue as addressed almost as soon as it occurred. Contractors’ supervisors requested and were provided access to Tetra Tech’s advanced mobile mapping tools to aid in finding their crews raising the quality of work while promoting the “one team” concept.
Daily briefs were held with the QC supervisors and any specific areas to inspect were assigned. Lessons learned and coordination issues were discussed with the contractors and the County, as needed. Progress reporting was provided with daily reports to the County, which included contractor production rates and mapping detailing the properties visited and remediated.

Tetra Tech exceeded expectations in several areas including deployment, ability to coordinate with the contractors, problem solving, and the ability to provide any level of documentation required. By taking ownership of the project and solving implementation issues the County was able to focus on other critical priorities including public meetings and handling media and elected official requests for information. By leveraging existing response and recovery operations protocols and technology, a superior high-quality product was delivered providing a valuable service in support of a community with a significant health issue.

**US EPA START Response Contract**

Tetra Tech currently manages the EPA Region 4, 5, and 7 START contract, supporting EPA under various regulatory frameworks in performing site assessments; preparing for and responding to emergency pandemics, chemical, oil, hazmat, and other man-made, natural, or technological hazards; and providing other technical support services. Tetra Tech routinely draws on scientists, engineers, and other experts from a pool of several thousand environmental professionals to support multiple, concurrent projects involving the START SOW areas under various regulatory authorities.

- Tetra Tech maintains a core response team in each region with 24/7/365 response readiness capabilities, ICS-and Level A trained personnel, and response vehicles and equipment. Our staff are trained to evaluate appropriate decontamination/disinfectant techniques and recommend procedures for setup and implementation.
- Tetra Tech supports regional and local contingency planning efforts, supports each region’s BioWatch program, and supports tabletop and full-scale exercises.
- We have completed hundreds of CERCLA site assessments, including field investigations that met the goals of both the CERCLA remedial and removal programs simultaneously.
- For natural disaster and other large responses, Tetra Tech supports EPA as lead agency under ESF #10 of the ICS structure.
- Tetra Tech supports EPA Regions with specialized data management applications as well as managing data as an integral part of projects. We provide state-of-the-art GIS/data management tools and applications.
- Tetra Tech supports EPA’s annual full-scale exercise consisting of a refresher of basic response skills, including use of direct-reading instruments, personal protective equipment (PPE), field characterization (including HazCat), and dexterity and confidence building activities in PPE.
Anthrax Decontamination and Sampling Response on Capitol Hill

In October 2001, Tetra Tech responded to Washington, DC to assist USEPA and several other governmental agencies in assessing, characterizing, and cleaning up anthrax contamination in over 20 buildings of the Capitol Hill Senate complex. Tetra Tech led the sampling teams assembled by the Incident Commander in entering suspected hot zones and helped collect over 10,000 samples for anthrax analysis. Tetra Tech provided 7-day a week, 24-hour a day operational support on this effort with up to 60 sampling personnel at a time for site support operations. Tetra Tech supplied sampling and monitoring equipment as well as necessary personal protection equipment for this effort. As part of the pre-design of the fumigation phase, Tetra Tech assisted EPA in conducting treatability studies on the efficacy of different biocide technologies, especially chlorine dioxide, in destroying anthrax spores. Tetra Tech provided on-site support in determining appropriate concentration and dose response, and the deleterious effects of the fumigant. Tetra Tech drafted a Treatability Study Report documenting the results of the study. Finally, Tetra Tech provided EPA with chlorine dioxide expertise for the disinfection phase of the project and helped design the fumigation of the HVAC system in the Hart Senate Building. Tetra Tech personnel provided strategic support during the gassing operations of the Hart Building. Tetra Tech helped design and implement the post-fumigation validation sampling to determine if the fumigation/disinfection operations were successful. Tetra Tech also performed post-removal response support monitoring chlorine levels at the reoccupied Hart Senate Building.

Ricin Release Decontamination and Sampling | Sun Prairie, Wisconsin

The Sun Prairie Ricin site is a 0.10-acre residential property located in Oshkosh, Wisconsin. On October 31, 2014, a tenant of the Site, was detained by the Oshkosh Police and Federal Bureau of Investigation (FBI) for suspicion of preparing ricin. In the following days, members of the FBI executed a search warrant of the Site. During the execution of the search warrant, authorities discovered a glass vial believed to contain ricin in a drawer of a dining room hutch. Technicians from the FBI collected 30 wipe samples from throughout the residence for analyses by the FBI Laboratory in Quantico, Virginia. Two of the wipe samples and the powder within the glass vial collected by FBI technicians tested positive for ricin.

Tetra Tech was tasked with: (1) providing technical support to EPA; (2) providing written and photographic documentation of site activities; (3) collecting wipe and micro-vacuum samples from throughout the Site; (4) assisting the Wisconsin 54th Civil Support Team (CST) with decontamination of the Site; (5) analyzing wipe and micro-vacuum samples using a handheld assay (HHA); and (6) interpreting the analytical data received from the CST mobile laboratory.

USEPA Region 4 BioWatch Biological Hazard Sampling | Training

To support EPA training initiatives, Tetra Tech was tasked to provide technical support for the design and presentation of BioWatch training for Region 4 On-scene Coordinators (OSC), EPA air division staff, and Georgia Environmental Protection Division staff. As part of this effort, Tetra Tech was tasked with incorporating the Bio-sampling training module developed under START II TDD No. 4T-04-12-E-007 to the maximum extent practicable. Other specific tasks included attending a scoping meeting; preparing a staffing plan and milestone schedule; developing a generic Rio Watch Response Plan; and preparing a health and safety plan (HASP) that addresses biological organisms covered under BioWatch and outlines procedures for sample collection, documentation, and chain-of-custody. Presentation of the BioWatch training...
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included presenting the HASP, demonstrating the proper use of sampling equipment and sampling methods, and conducting practice exercises. The BioWatch sampling plan (SAP) is intended to give guidance to Region 4 EPA and START personnel in the event that a positive analytical result occurs during daily monitoring of the biohazard monitoring stations. The SAP includes proper sample collection techniques, equipment needs, and information on how to conduct sampling at a BioWatch monitoring station. Activities include multi-media sampling such as wipe sampling of the BioWatch monitor; retrieving a BioWatch filter from the monitor; collecting samples of bulk materials such as suspicious powders and/or vegetation; and air monitoring during sampling activities.

BioWatch Support | Air Sampling and Biological Response Training

In April 2008, START conducted BioWatch training for response personnel in St. Louis, Missouri. The DHS funds and oversees the BioWatch program and relies on EPA to manage and coordinate associated sampling activities. Under the BioWatch program in EPA Region 7, daily air samples are collected from four fixed locations in the City of St. Louis by City Health Department personnel, from six locations in St. Louis County by County Health Department employees, and from two locations in East St. Louis, Illinois, by Illinois EPA staff. These samples are analyzed for pre-determined biological agents. Phase I sampling may be initiated if any of those agents is detected in any of the daily samples, to confirm the presence and viability of the detected organism(s). Presently, Phase I sampling would be conducted by City and County Hazardous Materials (Hazmat) team personnel and Illinois EPA.

On April 28, 2008, classroom training was provided by START, along with personnel from the St. Louis County Health Department and the Federal Bureau of Investigation (FBI). A hands-on exercise on April 29, 2008, was coordinated by START. Attendees included personnel from EPA Region 7, Illinois EPA, EPA contractors from Regions 5 and 7, the St. Louis County Health Department, and area Fire Departments/Hazmat teams. Classroom training focused on a review of Phase I sampling methodologies, chain-of-custody procedures, sample packaging, and sample transport for laboratory analysis. Issues pertaining to PPE, decontamination, determination of control zones, and appropriate administration of prophylactic antibiotics and vaccines to responders were also discussed. The following hands-on exercise involved implementation of a sampling plan developed for one of the daily air sampling locations in St. Louis County, to gain experience with the various sampling procedures discussed during the classroom training the previous day.

Infectious Disease Exercises – New York City Department of Health and Mental Hygiene

As Tetra Tech has been contracted by NYCDOMHMH to manage multiple infectious disease exercises including:

- Special Pathogens Functional (2019) and Full-Scale Exercises (2019-20)
- Medical Countermeasures (MCM) Distribution (Full Scale 2020) and Dispensing (Full Scale – 2021)

Additionally, Tetra Tech has maintained a multi-year Public Health Emergency Evaluation standby contract for the evaluation of real-world emergencies. Due to the current COVID-19 crisis, the MCM Distribution exercise was postponed and real-world operations were implemented to deliver over 1 million masks to 169 healthcare facilities and key stakeholders. Tetra Tech will continue to support this project through a contract scope change to evaluate the real-world response.
Tetra Tech provided EPA with technical support for the Region 3 BioWatch program from 2004 until 2010. The program was first introduced in the Philadelphia area and has been subsequently expanded to include the four counties of southeast Pennsylvania (Bucks, Montgomery, Delaware, and Chester), the greater Baltimore, Maryland area, the National Capitol Region, and Richmond, Virginia. For this work, Tetra Tech provided technical assistance for the setup and maintenance of more than 70 permanent monitoring sites, as well as monitors for special, high-visibility events, such as the 2008 and 2009 World Series games held in Philadelphia, the National Governor’s Association meetings, and the annual Army/Navy football games. Tetra Tech provides the initial assessment of potential BioWatch sampling stations, prepares and revises sampling plans for each permanent station or special event, conducts site reconnaissance and setup support, and develops BioWatch training and exercises. We have participated in several tabletop and full-scale exercises in and around the various regions actively involved in the BioWatch program. Tetra Tech assisted EPA and participated in a joint, full-scale exercise at the Pentagon with the Pentagon Force Protection Agency; full-scale exercises in Fairfax, Virginia, and Norristown, Pennsylvania; and an exercise in Philadelphia involving the FBI and the Philadelphia SWAT team. Tetra Tech’s BioWatch support assisted EPA in expanding the program from the Philadelphia region to the surrounding counties and three other metropolitan areas. We assisted EPA in upgrading the BioWatch program by revising and upgrading sampling methodologies and plans, decontamination methods and sampling kits.

BioWatch Support – Region 7 | Biological Pathogen Early Warning System

Tetra Tech has provided technical support for Region 7’s BioWatch program, an early warning system designed to alert response personnel of a release of a biological warfare agent in major metropolitan areas. In Region 7, Tetra Tech plays an active role in the BioWatch program, which is managed by the U.S. Department of Homeland Security (DHS) and jointly operated by EPA, U.S. Department of Energy (DOE), Centers for Disease Control and Prevention (CDC), U.S. Department of Defense (DoD), Federal Bureau of Investigation (FBI), and state agencies to detect and respond to an airborne release of biological pathogens shortly after the release has occurred, enabling maximum protection of the nearby population.

Under the START II and III contracts, Tetra Tech has worked closely with EPA and the St. Louis County Department of Health to develop and update sampling plans and provide training to parties potentially involved in follow-up response that would identify the nature, viability, and extent of any agent(s) that may present a threat to the surrounding
population. These efforts have contributed to overall awareness and preparedness of those responders. We periodically inspect and maintain BioWatch sampling kits in the City of St. Louis and St. Louis County to be used if Phase I sampling is required (including replacement of expired/updated items, as needed). Tetra Tech has also compiled jurisdictional profile information and developed Phase I and II sampling plans for BioWatch monitoring locations in the St. Louis area. Our START personnel have attended BioWatch Advisory Committee meetings and other meetings/workshops, as requested by EPA, and have provided periodic Phase I and II sampling training for EPA, START staff, and hazardous materials (HazMat) personnel.

BioWatch Support | GIS-Monitored Sampling and Equipment Maintenance

EPA tasked Tetra Tech START to help the On-scene Coordinator (OSC) prepare documents and review sampling plans, develop training and sampling exercises, coordinate maintenance of equipment caches, and perform other tasks to support the BioWatch program in St. Louis, Missouri. Since November 2007, START has been involved in the program—attending workshops about sampling protocol and decontaminations procedures, and presenting training for EPA, START, and state/local response agencies at the St. Louis EPA office/warehouse. Numerous training sessions have been developed and delivered to EPA, regional responders, and START personnel in 2008, 2009, and 2010.

EPA tasked START to coordinate with St. Louis city and county personnel to assist with coordination of BioWatch equipment maintenance, deployment of meteorological stations, and review/update of Phase 1 sampling plans. These activities are ongoing. START has distributed the revised Phase 1 sampling plans for both the St. Louis County and City monitoring sites/jurisdictions. In 2010, START was tasked to draft a BioWatch Phase 2 sampling plan for the 10 BioWatch monitoring locations in St. Louis, with guidelines for further verification sampling in the event that a Phase 1 BioWatch Actionable Result (BAR) is encountered in the future.

START has also assisted with compiling "jurisdictional profile" information for proximities around the BioWatch monitoring stations in EPA Region 7. Conversion of this information into Google Earth format is occurring to enable efficient display of the data, which include locations of nearby sensitive populations, areas where endemic biological agents of interest could occur, and agent-specific information. The BioWatch Google Earth (GE) Jurisdictional Profile is designed to assist the BioWatch Advisory Committee (BAC) in determining the geographic scope of a biological agent release, allowing federal, state, and local officials to more rapidly determine emergency response, medical care, and consequence management needs. The GE Jurisdictional Profile consolidates various forms of geospatial information into a comprehensive and easy-to-use application in which Google Earth provides the display and mapping component. The GE Jurisdictional Profile is comprised of the following layers:

- BioWatch Agent Fact Sheets
- Health Care/Family Services
- BioWatch Monitoring Stations
- Educational Institutions
- Animal Sites
- Water Resources
- Emergency Services
- Potential Environmental Reservoirs

Each layer is organized and grouped in an intuitive layer structure that can be turned on or off in the Google Earth Places pane and is attributed with response-pertinent information. The GE Jurisdiction Profile is designed and built using ESRI
ArcGIS and standard HTML editing software, and is easily updated and enhanced, allowing for low-cost and efficient maintenance.

## BioWatch Support | Biological Incident Phase 1 Sampling Training

On May 12, 2009, START provided training on BioWatch Phase 1 sampling procedures to personnel from EPA Region 7, the St. Louis County Health Department, and St. Louis County HazMat teams. In addition, 11 START members from Kansas City and St. Louis attended the training. Phase 1 sampling is conducted in response to detection of a biological agent in a daily air sample collected by health department staff. The purpose of the follow-up Phase 1 sampling is to verify that the agent is still present at that location in either an airborne or deposited state, and to determine if the agent is viable. The training was conducted at an actual BioWatch monitoring location in the St. Louis metropolitan area. The training covered an overview of the BioWatch program; personal protection equipment; logistical issues; collection of air, wipe/swab, vacuum, and vegetation samples; documentation; decontamination procedures; and delivery of samples for laboratory analysis. The training was followed by a hands-on exercise to practice the sampling techniques.

In addition to providing training, START is also updating BioWatch Phase 1 sampling plans for the St. Louis area monitoring locations, and compiling jurisdictional profile information for those locations that will be presented in a Google Earth format. When completed, the jurisdictional profile information will be provided to all members on the BioWatch Advisory Committee (BAC), to utilize as a reference in the event of a release.

## PPE Training for 2014 Ebola Epidemic – Mount Sinai Health System

Located in New York City, the Mount Sinai Health System includes 6 hospital campuses, 12 free-standing ambulatory surgery centers, and more than 45 ambulatory practices throughout the five boroughs of New York City, Westchester, and Long Island. In October 2014, the CDC and State of New York designated Mount Sinai Hospital as a “receiving facility” for suspected Ebola cases. Recognizing the need to ensure that infection control procedures were not only reinforced with their clinical providers, but that new CDC guidance required retraining all staff, the Mount Sinai Health System requested that Tetra Tech provide PPE, Fit Testing and Powered Air Purifying Respirator (PAPR) training to thousands of their clinical staff members across all 6 acute care facilities and 45 ambulatory practice centers. Tetra Tech then developed and implemented a long-term, employee education maintenance program.
Mass Care and Shelter Annex – Metro

As part of our support of the Metro Atlanta UASI’s regional three-phase Evacuation, the Tetra Tech team developed a Regional Mass Care and Shelter Annex. The project involved guiding a stakeholder group of more than 80 participants representing 10 counties and non-governmental organizations. The Annex is based on the concepts outlined in the National Mass Care Strategy and effectively integrates Georgia’s guidance document: Information and Definitions: Functional & Access Needs & Medical Needs Populations.

Using the National Plan Development Process, Tetra Tech developed a base plan with supporting appendices. The base plan outlined core concepts and roles and responsibilities for activating, operating, and demobilizing mass care services across the region. The operations appendix to the base plan contained detailed decision making processes and flow charts for the activation of mass care options as well as operational guidance for each mass care option (shelter, feeding, and distribution of emergency supplies; family reunification services; immediate health, emotional and spiritual health services; and access to information). Tetra Tech also conducted a validating tabletop exercise.

Based on the success of the Annex process, the Atlanta UASI engaged Tetra Tech to develop standard plan formats for shelter operations and evacuation transfer points. Using these plans and our other tools, Tetra Tech worked with a representative group of local emergency managers, human services leaders, and American Red Cross Representatives to select five high-occupancy shelters (target population >1,000 people) and five evacuation transfer points to develop site-specific operational plans for all 10 sites. These plans integrated basic information, operational concepts, and most importantly site-specific floor plans, forms, and checklists so that the staff working in those facilities have the tools they need to begin operations quickly during an emergency.

Our efforts significantly increased the shelter facility capacity of the Metro Atlanta Region. The Region identified new facilities for shelters that were high volume and compliant with the Americans with Disabilities Act (ADA), and many of them are now able to facilitate pet sheltering and medical needs all at one site.

Staff Qualifications

Our subject matter experts include former local, state, and federal public health leaders, emergency managers, and expert clinicians (both physicians and nurses) with infectious disease prevention and control expertise. Additionally, we are able to expertly support healthcare disaster and pandemic operations with just-in-time planning, training, and exercises. Our team has the capacity to support comprehensive emergency management goals throughout the continuum of health emergency preparedness and response.

To ensure broad regional and interagency coordination, we bring state and federal emergency management executives with decades of experience in emergency planning and operations and a technical instruction team of hazardous materials experts. Our staff supports clients daily with complex emergency plan development and technical, on-site expertise in chemical, biological, radiological, nuclear, and high-yield explosives (CBRNE); and bio-hazard environments.

Additionally, Tetra Tech’s professional instructors have been training emergency responders, hazardous materials workers, and healthcare workers in the donning and doffing of PPE for more than 20 years.
Jonathan Burgiel, Disaster Recovery Business Unit President

MBA, University of Central Florida | B.A., Economics, Tufts University

As President of Tetra Tech’s Disaster Recovery Business Unit, Mr. Burgiel has over 30 years of experience and manages the business operations of all disaster recovery efforts, including preparedness planning, project staffing, logistics, grant administration and agency reimbursement support. Mr. Burgiel is dedicated to helping communities plan for and recover from disasters and provide the necessary documentation to receive the maximum allowable reimbursement from federal and state emergency management agencies. Mr. Burgiel has served as principal in charge to many of the firm’s largest disaster response projects to incidents such as Hurricane Ike, Katrina, Sandy, Harvey, and Irma where he has overseen the deployment of thousands of staff and equipment.

Additionally, Mr. Burgiel spearheaded the Miami-Dade County response to the ZIKA virus. The discovery by the U.S. Centers for Disease Control and Prevention (CDC) of mosquito-based transmission, combined with horrific health consequences for pregnant women and fetuses, demanded a comprehensive mosquito remediation program be conducted. With a population of 2.6 million and an area of over 1,900 square miles, the challenge of a large area aerial spray effort combined with a door-to-door inspection and remediation program presented a significant challenge to the County. Mr. Burgiel led the efforts to innovatively assist the County to capture and report the remediation activity in real-time. This was critical to direct resources in response to changing health concerns and changing mosquito counts. Under Mr. Burgiel’s leadership, Tetra Tech exceeded expectations in its deployment, ability to coordinate with the contractors, problem solving, and the ability to provide the high level of documentation required.

Anne Cabrera, Deputy Director, Post Disaster Programs

MBA, Florida Atlantic University | B.A., Liberal Arts, Florida Atlantic University

Ms. Cabrera has worked nationwide on numerous major post-disaster activations since Hurricane Wilma in 2005, where she has served in a variety of roles focusing on reimbursement for more than $2 billion from the Federal Emergency Management Agency (FEMA). Ms. Cabrera has worked on behalf of cities and counties throughout the United States and is a highly regarded expert in the debris management industry. In addition to her work with post-disaster recovery operations, Ms. Cabrera has worked with a number of clients on longer-term financial recovery, including serving as a technical resource to clients during implementation of the FEMA Public Assistance (PA) Program and other federal grant programs and assisting in the preparation, development, and review of FEMA PA Project Worksheets (PWs) for disaster related activities, state appeals, and closeout processes. Within the Tetra Tech post-disaster practice Ms. Cabrera is the lead technical expert on the FEMA PA Program remaining up to date on policy and guidance changes and providing a resource to our post-disaster projects across the board to ensure consistency in understanding and implementation of requirements.

Ms. Cabrera was also part of the project management team that assisted with implementation of the ZIKA spraying and eradication program for Miami-Dade’s response to the ZIKA virus. She also assisted with public meetings, and handling media and elected official requests for information. She leveraged her previous response and recovery operations experience to assist in the County with a significant health issue.

Chris Burns, Project Manager

B.S, Fisheries and Wildlife Science, Penn State University

Mr. Burns has more than 16 years of experience providing management, scientific, and technical consulting services, including private and public sector clients under a variety of technical assistance, emergency response, emergency management, planning, and training and exercise programs. Mr. Burns is currently the Emergency Response Coordinator and Deputy Program Manager for the US EPA Region 5 START Contract, where he assists with preparing for and
responding to pandemics, emergency chemical, oil and other man-made, natural, or technological hazards. He coordinates on-call schedules and deployments for more than 150 short- and long-term emergency response actions across the six-state region, with as many as 150+ simultaneous projects with durations ranging from 1 day to 2 years. He manages a preparedness training program, involving approximately 10 training courses and exercises annually for contractor staff.

Mr. Burns is trained in the operation and maintenance of field equipment for use in emergency response operations. Specific equipment used includes radiation detection meters, multi-media sampling equipment, and air monitoring equipment such as FIDs, PID s, Drager colorimetric tubes and pumps, HAPSITE Portable GCMS and Headspace Sampler, and Suma Canisters. Mr. Burns is also experienced in the collection of asbestos samples and is versed in the 2009 asbestos framework for collection asbestos samples, he currently manages 5 asbestos sites for Tetra Tech. Most recently, he has been overseeing health and safety and environmental operations, including air and soil sampling, for several projects in California in response to the devastating wildfires.

**Doug McIlvain, CHMM, Senior Program Manager**

**M.En, Environmental Sciences, Miami University | B.A. Zoology, Miami University**

Mr. McIlvain is a Senior Program Manager and Environmental Scientist with over 25 years of professional experience in providing environmental and emergency management consulting for a wide variety of public and private sector clients including state and local public health, healthcare, and emergency management agencies. His management experience includes directing/supporting local state, and federal programs, which technical support of the Ohio Department of Health (ODH), the Ohio Army National Guard (OHARNG), and numerous emergency management/community resiliency clients and local health departments.

Mr. McIlvain recently provided on-site technical support for the ZIKA planning and response efforts in Ohio. His responsibilities included Developing a Zika Readiness, Response, and Recovery Plan per Centers for Disease Control and Prevention (CDC) guidelines; facilitating weekly Zika Task Force meetings attended by representatives from ODH’s Zoonotic Disease Program, Maternal and Child Health Program, Office of Health Preparedness, and the ODH Laboratory; and developing and conducting Zika tabletop exercises and workshops in each of Ohio’s eight public health regions (for all 88 counties). He has also assisted with Ebola and Special Emerging Pathogens (SEPATH) planning support to the Central Ohio Region and Franklin County Public Health; and conducted an Ebola CONOPS Regional Tabletop Exercise and Functional Exercise for Hamilton County Public Health, which focused on the region’s capabilities to respond effectively and efficiently to an Ebola Virus Disease (EVD) outbreak. He has also led multiple training and exercises for public health agencies in Ohio to test capabilities to a regionwide pandemic influenza, and has also conducted numerous mass fatality incident exercises.

**Jeremy Kaufman, CEM, MEP, Project Manager**

**M.S. Threat and Response Management, University of Chicago | B.A. Biology, Wittenberg University**

Mr. Kaufman has been a consultant for over 20 years and currently serves as the National Preparedness Coordinator for Tetra Tech’s Emergency Management/ Community Resilience practice. He is also Tetra Tech’s industry representative to the Big Cities Emergency Managers. Mr. Kaufman is a Certified Emergency Manager (CEM) and Master Exercise Practitioner (MEP). Mr. Kaufman is a subject matter expert in evacuation planning. In 2014, he was selected to serve on the National Fire Protection Association 1616 Technical Committee for Common Mass Evacuation and Sheltering to write the Mass Evacuation Standard (published December 2016). Mr. Kaufman has developed the evacuation plans for the State of Massachusetts, New Madrid Seismic Zone (Missouri), Boston, Chicago, Honolulu, and Philadelphia regional multi planning initiatives. Mr. Kaufman is well versed in the requirements of the National Response Framework, and has
operated within the National Incident Management System in his ongoing role as an emergency responder to the EPA’s Superfund Technical Assistance and Emergency Response Team, where he manages and assists with emergency response activities for mercury releases and hazardous materials.

Additionally, Mr. Kaufman was the lead planner for the City of Chicago Regional Catastrophic Planning Team to assist with the development of an evacuation system linking evacuation assembly points (EAP), regional hub reception centers (RHRC), and shelters. These locations are needed to coordinate evacuation and mass care following catastrophic incidents. He also assisted the Los Angeles Department of Public Health in developing a logistics framework to accommodate medical counter measures. The framework linked the Receiving, Staging and Storage site to the local points of distribution. The project developed standards for resource ordering and tracking, staging, and other logistics processes. The ConOps served as the precursor for a subsequent logistics operations plan. He also was the lead onsite coordinator for the Mount Sinai Health System Ebola PPE Training.