

APPENDIX D: Water System Pandemic Influenza COOP Plan Template

The following template provides a structure for formulating a Pandemic Influenza Continuity of Operations (COOP) Plan based on guidelines from the Federal Emergency Management Agency and information from other sources. Sources of pandemic influenza information include the Centers for Disease Control and Prevention (CDC), U.S. government pandemic influenza planning documents, including the pandemicflu.gov website, and the World Health Organization.

The template can be used to develop a “stand alone” plan or it can be incorporated as an appendix in an existing “all hazards” emergency plan. Some existing water system plans can be used as sources of information for the pandemic influenza plan, e.g. “Strike Plans” could be used to prepare for employee shortages. Water utilities can modify the pandemic influenza template to meet their own needs and requirements. Divisions, bureaus, laboratories, etc. within water utilities should develop specific actions relevant to their unique activities. These action plans could be attached as annexes to an overall Pandemic Influenza COOP.

INFLUENZA PANDEMIC
CONTINUITY OF OPERATIONS
PLAN

Template

(Date)

City of _____ Water Department

(LOGO HERE)

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FOREWORD

The City of _____ Water Department has operations that must be performed, or rapidly and efficiently resumed, in an emergency. While the impact of an emergency cannot be predicted, planning for operations under such conditions can mitigate the impact of the emergency on our people, our facilities and our mission.

This continuity of operations plan (COOP) is designed to ensure that essential operations can be performed during an influenza pandemic. These operations are the foundation upon which the COOP is built. Continuity of Operations Plans for man-made or natural disasters are important resources in providing essential services to our customers during an emergency. Utilities can develop continuity of operations plans for all-hazards or for specific situations, e.g. "Strike Plans".

This template provides a structure for formulating a Pandemic Influenza Continuity of Operations (COOP) Plan based on guidelines from the Federal Emergency Management Agency and information from other sources. Sources of pandemic influenza information include the Centers for Disease Control and Prevention (CDC), U.S. government pandemic influenza planning documents, including the pandemicflu.gov website, and the World Health Organization.

Water utilities are encouraged to modify this template to meet their own needs and requirements. Divisions, bureaus, laboratories, etc. within water utilities should develop specific actions relevant to their unique activities. These action plans could be attached as annexes to the overall Pandemic Influenza COOP.

Necessary actions to take during different stages of pandemic influenza are located in Section 3.0 of the plan. Later sections of the plan provide details and background information.

This plan will be updated periodically as required to incorporate new directives/strategies, new information technology, legislative changes, and procedural changes based on lessons learned and best practices identified during exercises and actual events. A full review, update, and approval of the plan will be conducted annually. Revised plans will be distributed to the appropriate individuals.

Instructions and a template for developing general continuity of operations plans can be downloaded at the Federal Emergency Management Agency (FEMA) website at: <http://www.fema.gov/government/coop/index.shtm>

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1.0 INTRODUCTION

Flu pandemics occurred in 1918, 1957 and 1968. Public health and medical experts at the World Health Organization (WHO) and elsewhere believe that another pandemic could occur at any time. Pandemics occur when an influenza virus with severe health effects undergoes genetic shift and human to human transmission occurs readily. There is concern among public health officials that the avian influenza virus H5N1 could undergo genetic changes and cause a pandemic.

Avian influenza viruses can spread between wild birds and domestic birds. Migratory waterfowl can infect other birds directly or through fecal contamination of water used by domestic birds. Currently, human avian influenza H5N1 cases are associated with close contact with contaminated chickens and other poultry. There is some evidence indicating that limited, non-sustained human-human transmission of H5N1 may have occurred. If H5N1 undergoes genetic shift and becomes easily transmissible between humans, pandemic influenza could spread rapidly. Because of increased global commerce and international travel, diseases can now spread rapidly throughout the world which would likely make a pandemic in the 21st century much more deadly than in the past.

Avian Influenza virus H5N1 has a high mortality rate. High mortality rates and rapid human to human transmission differentiate pandemic influenza from “normal” seasonal influenza. As of January 3, 2008 there were 348 human cases of H5N1 influenza world wide with a death rate of 62%. These cases were mostly confined to Asia with other cases in the Middle East and Africa. Public health officials track these H5N1 cases in addition to tracking of “normal” seasonal influenza cases.

A Center for Disease Control and Prevention (CDC) study of disease rates for a new pandemic estimated that in the United States, 40 – 100 million people could be sickened. The CDC study provided a “most likely estimate” death toll of 89,000 – 300,000, with “best case” to “worst case” death toll range of 75,000 – 422,000.

It is considered unlikely that properly treated drinking water can serve as a mode of transmission for the H5N1 virus. However, a pandemic caused by an influenza virus could cause serious disruptions to the operations of drinking water systems. These disruptions could be caused by staffing shortages, power disruptions, and shortages of chemicals and other supplies. Protecting employee health is vital for continuing operations, especially if another emergency, e.g. flooding, occurs during an influenza pandemic. Ensuring continuity of operations for drinking water systems is crucial to protect public health and safety, and to the economy of all communities.

Plans for maintaining essential functions and services in a pandemic influenza must emphasize and implement procedures such as social distancing techniques, infection control and personal hygiene, cross-training, and telecommuting. Protecting the health and safety of employees must be a major focus of planning in order to ensure the continuity of essential functions. Vaccines and antiviral medications will be important tools for reducing the impact of influenza pandemics. However, a virus specific vaccine might not be available in sufficient supply until more than 6 months after a pandemic begins.

1.1 Definitions (from www.pandemicflu.gov)

Avian (or bird) flu is caused by influenza viruses that occur naturally among wild birds. The H5N1 avian flu virus is deadly to domestic fowl and can be transmitted from birds to humans. There is no human immunity and no vaccine is available.

Pandemic influenza is virulent human flu that causes a global outbreak, or pandemic, of serious illness. Because there is little natural immunity, the disease can spread easily from person to person. **Currently, there is no pandemic flu.**

Seasonal (or common) flu is a respiratory illness that can be transmitted from person to person. Most people have some immunity, and a vaccine is available.

Social Distancing are measures to increase the space between people and decrease the frequency of contact among people.

Teleworking (or Telecommuting) is working from home or an alternate site and avoiding commuting to the workplace through telecommunication (computer access).

2.0 PURPOSE

The purpose of this plan is to provide information and action steps for preparation, response, and recovery in the event of pandemic influenza. This plan should be used in conjunction with existing emergency plans.

3.0 PANDEMIC ALERT LEVELS AND ACTIONS

3.1 Pandemic Phases, Stages, and Water System Alert Levels

The **(insert utility name)** will implement its Pandemic Influenza COOP in response to changes or “triggers” in the Federal Government (U.S.) Response Stages. Preparation and actions are listed in Section 3.2 of this plan. Notification of various stages and actions will follow the normal chain of command. Managers and supervisors will be responsible for implementation following the normal chain of command. Details of preparations and response actions are listed in later sections of this plan.

As of January 3, 2008 the World Health Organization list the current global pandemic status as Phase 3 which corresponds with “No or very limited human-to-human transmission”. The U.S. government classifies the current pandemic status as Stage 0 which relates to “New domestic animal outbreak in at risk country”. It is currently believed that limited human to human transmission of H5N1 influenza may have occurred in Asia. Table 1 shows the relationship between Federal Government Stages, World Health Organization Phases, and suggested alert levels for water systems.

Table 1 – Relation between Water System “Alert Levels” and Pandemic Stages/Phases

WHO Phase 1 or 2: Inter-Pandemic Period	WHO Phase 3 Pandemic Alert Period	WHO Phase 4 or 5 Pandemic Alert Period	WHO Phase 6 Pandemic Period			
U.S. Stage 0	U.S. Stage 1	U.S. Stage 2	U.S. Stage 3	U.S. Stage 4	U.S. Stage 5	U.S. Stage 6
New Domestic Animal Outbreak in At-Risk Country	Suspected Human Outbreak Overseas	Confirmed Human Outbreak Overseas	Widespread Human Outbreaks in Multiple Locations Overseas	First Human Case in North America	Spread throughout United States	Recovery and Preparation for Subsequent Pandemic Waves
Water System Planning Stage	Water System Pre-Pandemic Alert Level A		Water System Pandemic Alert Level B		Water System Pandemic Alert Level C	Water System Preparation for Next Pandemic Wave Alert Level D

Note: The relationship between WHO Phases 1 - 3 and U.S. Stages 0 - 2 is approximate. WHO Phase 3 begins while U.S. Stage 0, “New domestic animal outbreaks in at-risk country” is still in effect.

3.2 Pandemic Planning

Table 2, “Pandemic Planning and Preparation”, indicates suggested actions for water systems to undertake in preparation for pandemic influenza. Tables 3, 4, 5 and 6 in section 3.3 list actions for water systems to undertake in response to various pandemic stages.

Table 2 – Pandemic Planning and Preparation

Pandemic Planning and Preparation (New domestic animal outbreak in at-risk country)		
Responsible Person or Team	Water System Action	Completed
	Identify critical functions that must be kept in operation.	
	Identify critical supplies, e.g. chlorine, necessary to maintain safe water.	
	Identify essential personnel.	
	Identify cross training needs and conduct cross training.	
	Develop pandemic influenza plan.	
	Participate in pandemic influenza planning and exercises with local public health and regulatory officials.	
	Consider developing mutual aid agreements.	
	Update Standard Operating Procedures for plant operations and other essential functions.	
	Define roles and responsibilities for all personnel during a pandemic.	
	Educate all employees regarding pandemic policy (changes in work rules, etc.), infection control measures (hygiene measures, use of N-95 masks, etc) and flu symptoms.	
	Plan for supply disruptions: Develop alternate treatment chemicals, supplies, and power.	
	Acquire supplies for sanitizing and personal protection: sanitizing stations, sanitizing agents, latex/vinyl gloves, and N-95 masks.	
	Develop emergency supply kits (food, water, PPE) to critical facilities.	
	Ensure IT system is capable for telecommuting and provide secure access to appropriate employees.	
	Establish necessary pandemic policies: Emergency communications, travel, social distancing, telecommuting, sequestering critical staff on-site, screening employees for influenza, sick leave (for sending employees home that have exceeded sick leave limits or have no accrued sick leave).	
	Encourage employees to receive annual influenza vaccinations and to stay home when they have influenza.	
	Set up pandemic influenza surveillance notification system with local public health officials.	
	Reserve funds for emergency purchases at increased costs.	
	Encourage employees and public to develop home emergency kits (food, water, etc.) and plans.	

3.3 TRIGGERS – Water System Actions in Response to Pandemic Stages

Table 3 – Alert Level A – Pre-Pandemic Actions

Alert Level A – Pre-Pandemic Preparation (Suspected human outbreaks overseas – Confirmed human outbreaks overseas)		
Responsible Person or Team	Actions	Completed
	Remind employees regarding pandemic policy (changes in work rules, etc.) and infection control measures (hygiene measures, use of N-95 masks, etc) and flu symptoms.	
	Review preparations for supply disruptions and staffing shortages (cross training and alternate treatment chemicals, suppliers, and backup power systems.	
	Set up sanitizing stations and provide work areas with sanitizing agents, latex/vinyl gloves, and N-95 masks.	
	Distribute emergency supply kits (food, water, personal protection equipment) to critical facilities.	
	Establish or finalize necessary pandemic policies: Emergency communications, travel, social distancing, telecommuting, sequestering critical staff on-site, screening employees for influenza, sick leave (for sending employees home that have exceeded sick leave limits or have no accrued sick leave).	
	Encourage employees to receive annual influenza vaccinations and to stay home when they have influenza.	
	Monitor pandemic status through pandemicflu.gov and local public health.	
	Maintain contact with critical supply vendors, e.g. chlorine, electric, gas, to determine their ability to deliver supplies.	
	Suspend travel outside state when human outbreaks are confirmed.	

Table 4 – Alert Level B – Pandemic Actions

Alert Level B – Pandemic (Widespread human outbreaks in multiple locations overseas – First human cases in North America)		
Responsible Person or Team	Actions	Completed
	Communicate pandemic status, and provide infection control and symptoms of flu refresher training to all employees.	
	Remind all employees to stay home when they have influenza.	
	Implement influenza screening (based on symptoms) of employees.	
	Suspend all travel.	
	Focus on conducting essential functions only.	
	Prepare to implement necessary pandemic policies for social distancing, telecommuting, sequestering critical staff on-site, screening employees for influenza, sick leave (for sending employees home that have exceeded sick leave limits or have no accrued sick leave).	
	Maintain contact with critical supply vendors, e.g. chlorine, electric, gas, to determine their ability to deliver supplies.	
	Prevent access to facilities by non-employees unless necessary.	
	Prepare for use of cross trained employees.	
	Review line of succession plans and update as necessary.	
	Continue to monitor pandemic status through pandemicflu.gov and local public health.	
	Provide supplies at facilities for sequestering essential staff.	
	Document actions and additional expenses.	

Table 5 – Alert Level C – Pandemic Actions

Alert Level C – Pandemic (Spread throughout North America)		
Responsible Person or Team	Actions	Completed
	Communicate pandemic status to all employees.	
	Focus on conducting essential functions only.	
	Remind all employees to stay home when they have influenza.	
	Continue influenza screening (based on symptoms) of employees.	
	Consider modifications of treatment to conserve chemicals and energy.	
	Reassign staff to insufficiently staffed facilities.	
	Consider sequestering essential personnel at facilities.	
	Provide daily absentee reports to Manager.	
	Suspend all travel.	
	Eliminate all non-essential face to face meetings.	
	Provide transportation to employees as necessary.	
	Maintain contact with critical supply vendors, e.g. chlorine, electric, gas, to determine their ability to deliver supplies.	
	Continue to monitor pandemic status through pandemicflu.gov and local public health.	
	Document actions and additional expenses.	
	Keep records of employees that have recovered from influenza. They will be vital for maintaining operations because of their acquired immunity.	

Table 6 – Alert Level D – Pandemic Recovery and Preparation Actions

Alert Level D – Pandemic Recovery and Preparation (Preparation for Subsequent Pandemic Waves)		
Responsible Person or Team	Actions	Completed
	Continue essential functions and evaluate reinstating non-essential activities.	
	Communicate pandemic status to all employees.	
	Stockpile essential supplies.	
	Allow necessary travel on a case by case basis.	
	Maintain contact with critical supply vendors, e.g. chlorine, electric, gas, to determine their ability to deliver supplies.	
	Restock supplies at facilities for sequestering essential staff.	
	Evaluate response and update plans.	
	Continue to monitor pandemic status through pandemicflu.gov and local public health.	
	Document actions and additional expenses.	
	Remind all employees to stay home when they have influenza.	
	Keep records of employees that have recovered from influenza. They will be vital for maintaining operations because of their acquired immunity.	

4.0 PANDEMIC PLANNING ASSUMPTIONS

These assumptions are adopted from the National Strategy for Pandemic Influenza Implementation Plan and Business Continuity Planning Assumptions for Influenza Pandemics from the North American Electric Reliability Council.

4.1 GENERAL ASSUMPTIONS

1. An influenza pandemic will occur in the future but timing of the outbreak is uncertain.
2. Susceptibility to the pandemic influenza virus will be universal.
3. Efficient and sustained person-to-person transmission signals an imminent pandemic.
4. The clinical disease attack rate will likely be 30 percent or higher in the overall population during the pandemic. Illness rates will be highest among school-aged children (about 40 percent) and decline with age. Among working adults, an average of 20 percent will become ill during a community outbreak. Some persons will become infected but not develop clinically significant symptoms. Asymptomatic or minimally symptomatic individuals can transmit infection and develop immunity to subsequent infection.
5. Of those who become ill with influenza, 50 percent will seek outpatient medical care. With the availability of effective antiviral drugs for treatment, this proportion may be higher in the next pandemic.
6. The number of hospitalizations and deaths will depend on the virulence of the pandemic virus. Estimates differ about 10-fold between more and less severe scenarios. Two scenarios are presented based on extrapolation of past pandemic experience (Table 7). Planning should include the more severe scenario. Risk groups for severe and fatal infection cannot be predicted with certainty but are likely to include infants, the elderly, pregnant women, and persons with chronic medical conditions.

7. Rates of absenteeism will depend on the severity of the pandemic. In a severe pandemic, absenteeism attributable to illness, the need to care for ill family members, and fear of infection may reach 40 percent during the peak weeks of a community outbreak, with lower rates of absenteeism during the weeks before and after the peak. Certain public health measures (closing schools, quarantining household contacts of infected individuals, “snow days”) are likely to increase rates of absenteeism.
8. The typical incubation period (interval between infection and onset of symptoms) for influenza is approximately two days.
9. Persons who become ill may shed virus and can transmit infection for up to one day before the onset of symptoms. Viral shedding and the risk of transmission will be greatest during the first two days of illness. Children usually shed the greatest amount of virus and therefore are likely to pose the greatest risk for transmission.
10. On average, infected persons will transmit infection to approximately two other people.
11. A pandemic outbreak in any given community will last about six to eight weeks for each wave of the pandemic.
12. Multiple waves (periods during which community outbreaks occur across the country) of illness could occur with each wave lasting two-three months. Historically, the largest waves have occurred in the fall and winter, but the seasonality of a pandemic cannot be predicted with certainty.
13. The stages of the pandemic should occur sequentially, though they may overlap or occur so rapidly as to appear to be occurring simultaneously or being skipped. For example, the pandemic could spread so rapidly that Federal Government Response Stages 3 and 4 may be activated simultaneously or the status could change directly from Stage 3 to 5.

Table 7: Number of Episodes of Illness, Healthcare Utilization, and Death Associated with Moderate and Severe Pandemic Influenza Scenarios in the United States*		
Characteristic	Moderate Pandemic (similar to 1957, 1968)	Severe Pandemic (similar to 1918)
Illness	90 million (30%)	90 million (30%)
Outpatient Medical Care	45 million (50%)	45 million (50%)
Hospitalization	865,000	9,900,000
ICU Care	128,750	1,485,000
Mechanical Ventilation	64,875	745,500
Deaths	209,000	1,903,000

*Estimates based on extrapolation from past pandemics in the United States. Note that these estimates do not include the potential impact of interventions not available during the 20th century pandemics.

4.2 (Insert Water Utility Name) ASSUMPTIONS

(Sample text)

1. Source water pumping, complete water treatment, treated water pumping and (other critical functions) will remain operational during a pandemic influenza outbreak.
2. Alternate facilities may be activated for use during a pandemic to separate staff, i.e. implement social distancing protocols. A pandemic influenza event does not necessarily require the use of alternate facilities.
3. Essential functions, operations and support requirements will continue to be people-dependent. Social distancing, hygiene, health screening and other measures may need to be implemented to protect the utility’s work force.
4. Disruptions of power and supplies, transportation restrictions, and staffing reductions could affect the performance of essential functions.
5. Water utilities must be prepared to rely on their own resources. The widespread effects of pandemic influenza would impact mutual aid from other utilities.

5.0 PANDEMIC RESPONSE TEAM AND COORDINATOR

(Water utility name) has designated **(insert name or position)** as the Pandemic Coordinator. The **(insert utility name and position)** shall serve as the Alternate Pandemic Coordinator. **(Insert name or position)** will establish a Pandemic Response Team (PRT) to anticipate the impacts of a pandemic on **(utility name)** and to assist with developing strategies to manage the effects of a pandemic outbreak. Each Division (or bureau or other category) shall establish and designate a representative to the PRT.

6.0 ESSENTIAL OPERATIONS

6.1 Essential Functions

Table 8 is an example list of essential functions with associated employees. In order to minimize the effects of a pandemic on staff and essential functions, **(insert utility name)** will emphasize and implement procedures such as social distancing techniques, infection control and personal hygiene, and cross-training. (Primary employees (currently perform these functions) and backup employees (cross trained, recently retired, etc.) should be determined as part of pandemic planning.)

Table 8: Example - Essential Functions and Supporting Information

Priority	Essential Function	Primary Employees	Backup Employees
1	Water Treatment		
2	Pumping		
2	Water Treatment and Pumping Equipment Repair		
3	Distribution System Water Testing		
4	Equipment Maintenance		

7.0 CRITICAL POSITIONS AND MINIMUM STAFFING LEVELS

7.1 Identification of Essential Positions and Skills

The **(insert utility name)** shall identify positions, skills, and personnel needed to continue essential functions and services. Back-up personnel will also be identified and cross-trained. (The utility may decide to attach “Essential Personnel” stickers on the back of ID badges for security and screening of non-essential personnel.)

Annex **(insert if applicable)** of the **(insert utility name)** COOP Plan identifies those personnel needed to support continuity of operations in all-hazards scenarios.

Table 9: Example - Employees with Essential Positions and Skills

Position (Back-up position)	Employee	Skills	Certifications/ Qualifications
Water Plant Operator (Maintenance)		Water Treatment Laboratory Plumbing	Water Operator III Water Analyst I Pump Repair License
Laboratory Analyst (Water Plant Operator)		Can repair anything	Water Operator III Water Analyst III

8.0 CROSS TRAINING AND ALTERNATE WORK ARRANGEMENTS

8.1 Cross Training

Employees will be cross-trained in advance of pandemics so that back-up workers are available for essential functions. Employees in non-essential and essential positions will be trained to perform essential tasks that are not part of their job description. Discussions should be held with unions and human resource departments to prepare for these situations. Table 9 provides a list of primary and backup employees.

8.2 Alternate Work Schedules

Regular work schedules may be modified in the event of a pandemic. Departments should review normal work schedules and determine how they can be modified to promote social distancing and continuity of operations. During pandemics, overtime is probable but meal and rest periods will still be required. Notification periods in collective bargaining agreements may be suspended.

8.3 Telework Policy

Telework, aka Telecommuting can be an integral part of plans and procedures to maintain essential functions and services in an influenza pandemic. **(insert utility name)** shall analyze its current IT capability for teleworking and identify which personnel can perform essential functions by teleworking during a pandemic. **(insert name or position)** shall develop and evaluate telework plans, procedures, and capabilities through reviews, testing, post-incident reports, lessons learned, performance evaluations, and exercises. Procedures shall be established to ensure that corrective action is taken on any deficiency identified in the evaluation process.

(List pre-identified tasks and/or jobs) can be done remotely during a pandemic. **(If applicable state, “Employees in these positions and their alternates have been enabled with the appropriate security to access electronic networks and work from home.”) (If applicable, insert, attach or reference Telework Plan here.)**

9.0 EMPLOYEE HEALTH PROTECTION

9.1 Vaccinations and Antiviral Medications

Employees should be encouraged to receive annual seasonal vaccinations. These vaccinations could protect the health of their work force before a pandemic. Establishing a relationship in advance with local public health officials could facilitate the distribution of anti-virals and vaccines to water system personnel. Prioritization of vaccination and antivirals distribution follows guidance from the U.S. Department of Health and Human Services Pandemic Influenza Plan. In accordance with guidance from the Public utility personnel are in Tier 2, subtier B for vaccinations and Tier 8 for antivirals distribution

Antivirals must be taken within 48 hours of symptoms to be effective (CDC). The current potential pandemic virus, H5N1 is resistant to amantadine and rimantadine, but oseltamavir and zanamavir would probably be effective (pandemicflu.gov).

9.2 Personal Protective Equipment and Supplies to Stockpile

Advance training and “just-in-time” training should be provided to employees regarding infection control measures. The following infection control supplies should be provided or made available at all times to employees:

- Soap and paper towels within washrooms
- Soap and paper towels within kitchen areas
- Hand sanitizer stations at various work areas
- Tissues
- Disinfectant spray for surfaces
- Extra trash cans and garbage bags for tissue disposal
- Personal Protective Equipment: Vinyl/latex gloves, N95 masks

9.3 Basic Hygiene

Employees shall be educated and reminded of hygiene measures to prevent the spread of disease:

- Cover coughs and sneeze with a tissue (or into shirt sleeve if necessary).
- During pandemics: Avoid hand shaking (use alternatives like nodding, elbow bumping, etc.).
- Keep work area and home clean and disinfected.
- Stay home when ill.
- Wash hands often, especially before eating (or touching near mouth, nose or eyes).
- Wash hands before and after smoking.
- Hand sanitizers are only effective if hands are not soiled.

9.4 Disinfection

During a pandemic workplace cleaning measures will be required on a daily basis to minimize transmission of influenza virus through hard surfaces (counters, door knobs, etc.). Thorough cleaning should be performed before disinfection, especially for the work areas of an ill employee. Disinfectants that can inactivate viruses should be used. Influenza viruses may live up to two days on surfaces. Employees should wear a mask and gloves when cleaning and disinfecting. The gloves and masks should be discarded afterwards. Hands must be washed and sanitized after the procedure.

9.5 Travel Restrictions and Social Distancing

Social Distancing are measures to increase the space between people and decrease the frequency of contact among people. Travel will be restricted or eliminated according to plans for alert levels A, B, and C.

Alert Level A (confirmed human cases overseas) – **Travel is restricted to in-state only.**

Alert Level B and C (widespread human outbreaks in multiple locations overseas - first human cases in North America) – **All travel is suspended.**

Alert Level D (preparation for next pandemic wave) – **Necessary travel evaluated on case by case basis.**

9.6 Employee Influenza Screening

Supervisors may rely on observations of employee symptoms to determine if an employee has influenza. These symptoms include:

- Fever
- Cough
- Sore throat
- Muscle aches
- Eye infections (conjunctivitis)
- Pneumonia
- Acute respiratory distress

9.7 Ill Employees

Employees with influenza symptoms should be isolated and sent home as soon as possible to prevent the spread of influenza. When the employee's condition improves to the point where the employee no longer poses a health hazard to fellow employees, the employee shall contact his or her supervisor and arrange for the employee's return to work.

Treatment of employees with influenza will be problematic because the health care system will be overwhelmed by a pandemic. Records should be kept of employees who have recovered from pandemic influenza. These employees will be vital for operations because of their acquired immunity.

10.0 CHAIN OF SUPPLY

10.1 Essential Contract and Support Services and Other Interdependencies

To prepare for pandemic influenza:

Existing inventory will be supplemented to keep essential services functioning for 7 days or more. Vendors of critical products and services shall be identified. Discussions with vendors shall include vendor plans for ongoing services and/or shipments in the event of absences, shortages, or disruptions in transportation systems. (insert utility name) shall initiate pre-solicited, signed and standing agreements with contractors and other third parties to ensure fulfillment of supply and service requirements.

(Insert utility name) shall develop relationships with more than one supplier should a primary contractor be unable to provide the required service. Table 10 is a sample chart used to depict the Contractual Staff and other interdependencies necessary to perform essential functions.

Table 10: Example - Essential Contractual Arrangement and Interdependencies

Essential Supply or Service	Primary Contractor And Contact Info.	Back-up Contractor And Contact Info.
Chlorine		
Water Main Repair		

11.0 HUMAN RESOURCES & UNION CONTRACT ISSUES

Discussions should be held with unions and human resource departments to prepare for alternate work arrangements that may be implemented during pandemics.

12.0 COMMUNICATION PLAN

Communications Plan

(insert utility name) shall develop a Communications Plan and mechanisms to provide relevant information to internal and external stakeholders, including but not limited to instructions for determining the status of agency operations and possible changes in working conditions and operational hours.

(Insert plan or refer to location of existing Communications Plan)

According to the National Strategy for Pandemic Influenza Implementation Guidance, workplace risk can be minimized through implementation of systems and technologies that facilitate communication without person-to-person contact.

13.0 DELEGATION OF AUTHORITY & NIMS

At the height of a pandemic wave, absenteeism may reach a peak of 40 percent. As such, delegations of authority are critical. **(insert utility name)** shall plan for delegations of authority that are at least three deep per responsibility to help assure continuity of operations over an extended time period, i.e., 30-60-90 days.

All employees should receive National Incident Management System training. Supervisors and managers should be certified at IC 300 and 400 levels.

14.0 INDIVIDUAL AND FAMILY PANDEMIC PREPARATION

Essential personnel should have family care succession plans in place to ensure that they can report to work if schools are closed, family members are ill, etc. All employees should receive educational materials that describe pandemic influenza protection measures for families. These materials are in Appendix F of this plan.

15.0 PANDEMIC PREPARATION TRAINING

15.1 Testing, Training, Exercises

Testing, training, and exercising are essential to assessing, demonstrating, and improving the ability of organizations to maintain their essential functions and services.

15.2 Social Distancing

(insert utility name) shall conduct annual tests, training, and exercises to ensure sustainable social distancing techniques, including telecommuting capabilities, and to assess the impacts of reduced staff on the performance of essential functions.

15.3 Tabletop, Functional, and Full-Scale Exercises

(insert utility name) shall conduct annual pandemic exercises (tabletop, functional, or full scale) to examine the impacts of pandemic influenza on essential functions, to familiarize personnel with their responsibilities, and to validate the effectiveness of pandemic influenza COOP planning by senior leadership.
(Attach Testing, Training and Exercise Plan in appendix.)

15.4 Annual Awareness Training

(insert utility name) shall conduct annual awareness briefings specific to pandemic influenza.

15.5 Cross-Training Successors and Back-up Personnel

(insert utility name) shall identify and train back-up personnel, by position, needed to perform essential functions.

APPENDICES

(Note: Utilities can use manuscript Appendix E for the “Template Appendix A”. Spreadsheets or tables with utility specific information should be developed and used for Appendices B, C, D, and E. Materials for “Template Appendix F can be obtained from public health agencies or public health web sites.)

Template APPENDIX A - Water Utility Pandemic Influenza Planning Checklist
(In Appendix E of manuscript.)

Template APPENDIX B – Essential Functions and Resources (Personnel, equipment, supplies, power, and other requirements, e.g. Supervisory Control and Data Acquisition Systems.)

Template APPENDIX C – Essential Personnel List (With qualifications, skills, certifications, etc.)

Template APPENDIX D – Inventory of Supplies (Utility specific information)

Template APPENDIX E – Testing, Training, and Exercise Plan (Utility specific information)

Template APPENDIX F – Educational Materials (Obtain from Local Public Health Agency)

Frequently asked questions about pandemic influenza

Employee and family pandemic influenza protection measures.

APPENDIX E: Pandemic Influenza Planning Checklist

Water Utility Pandemic Influenza Planning Checklist

The following checklist is a modified version of a pandemic flu checklists developed by the United States Department of Health and Human Services and Centers for Disease Control and Prevention. It identifies specific activities that water utilities can take to prepare for a pandemic flu event. This checklist can be modified to cover unique circumstances relating to your utility. Some items on the checklist may be covered by existing all-hazards, emergency response plans.

Pandemic Response Coordinator: _____ Date: _____

1.1 Plan for the impact of a pandemic on your water utility:			
Completed	In Progress	Not Started	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Identify a pandemic coordinator and/or team with defined roles and responsibilities for preparedness and response planning. Include input from all management levels and staff that are involved in day-to-day operations.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Identify critical functions that must be maintained, e.g. disinfection.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Identify essential personnel functions and critical inputs needed to maintain operations, including locations where they may be needed during a pandemic. Ensure there is redundancy in terms of personnel (cross-training), materials (chemical suppliers, equipment suppliers, etc.), communication (phones, radios, etc.), information technology, and power (electric, gas). Establish contingency agreements with other utilities (gas, electric) where feasible.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Identify key customers and customers with special needs, such as hospitals and nursing homes, and ensure services can be provided.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Cross train employees to provide backups for critical positions. Train and prepare an ancillary workforce (e.g. contractors and retirees). Develop mutual aid contacts through with other utilities through a Water Agency Response Network (WARN) or other means.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Develop and plan for scenarios likely to result in an increase or decrease in demand on your facilities during a pandemic (Loss of tourism, consumers at home instead of work, etc.)
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Determine the potential impact of a pandemic on utility-related travel (e.g. quarantines, border closures that limit availability of chemicals), including suppliers who make deliveries. Encourage suppliers to develop their own pandemic influenza continuity of operations plans.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Find up-to-date, reliable pandemic information from the local public health agency and other sources. Make this information available to all personnel.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Establish an emergency communications plan and revise it periodically. The plan should include identification of key contacts (with back-ups), chain of communications (including suppliers and key customers), and processes for tracking and communicating utility operational status and status of employees. Ensure public notification procedures are in place for potential scenarios.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Implement an exercise/drill to test your plan, and revise it periodically. Ensure that exercises include the participation or cooperation of local health agencies, emergency planning officials and the Environmental Protection Agency.

NOTES:

1.2 Plan for the impact of a pandemic on your employees and customers:

Completed	In Progress	Not Started	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Forecast and allow for employee absences during a pandemic due to factors such as personal illness, family member illness, community containment measures and quarantines, school and/or business closures, and public transportation closures.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Implement guidelines to limit the frequency and type of face-to-face contact (e.g. hand-shaking, meetings, office layout, shared workstations) among employees and between employees and customers. Take into consideration delivery personnel who would interact with employees. (See CDC recommendations.)
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Encourage and track annual influenza vaccination for employees. Consult local public health pandemic coordinators regarding pandemic vaccination and distribution of antiviral medications.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Evaluate employee access to and availability of healthcare services during a pandemic, and improve services as needed.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Evaluate employee access to and availability of mental health and social services during a pandemic, including corporate, community, and faith-based resources, and improve services as needed.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Identify employees and key customers with special needs, and incorporate the requirements of such persons into your preparedness plan.

NOTES:

1.3 Establish policies to be implemented during a pandemic:

Completed	In Progress	Not Started	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Establish policies for employee attendance, sick-leave absences and compensation unique to a pandemic (e.g. non-punitive, liberal leave), including policies on when a previously ill person is no longer infectious and can return to work after illness.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Establish policies for flexible worksite (e.g. telecommuting) and flexible work hours (e.g. staggered shifts). Take into account that longer shifts and onsite sleeping accommodations may reduce potential exposure to key workers. Consider needs and conditions (food, sleeping accommodations, family arrangements, etc.) for sequestering on-site critical staff.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Establish policies for preventing influenza spread at the worksite (e.g. promoting respiratory hygiene/cough etiquette, sanitizer stations, disinfecting work areas and break rooms, and prompt exclusion of people with influenza symptoms).
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Establish policies for employees who have been exposed to pandemic influenza, are suspected to be ill, or become ill at the worksite (e.g. infection control response, immediate mandatory sick leave).
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Establish policies for teleconferencing and videoconferencing to limit face to face contact.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Establish policies for travel to affected geographic areas and guidance for employees returning from affected areas (refer to CDC travel recommendations).
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Set up authorities, triggers, and procedures for activating and terminating the utility's response plan.

1.4 Allocate resources to protect your employees and customers during a pandemic:

Completed	In Progress	Not Started	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Provide sufficient and accessible infection control supplies (e.g. alcohol sanitizer stations, tissues, N-95 facial masks and receptacles for their disposal) at all work-related locations.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Enhance communications and information technology infrastructures as needed to support employee telecommuting and remote customer access.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Ensure availability of medical consultation and advice for emergency response.

NOTES:

1.5 Communicate to and educate your employees:

Completed	In Progress	Not Started	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Develop and disseminate programs and materials covering pandemic fundamentals (e.g. signs and symptoms of influenza, modes of transmission), personal and family protection and response strategies (e.g. hand hygiene, use of N-95 masks, coughing/sneezing etiquette, contingency plans).
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Anticipate employee fear and anxiety, rumors and misinformation and plan communications accordingly.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Ensure that communications are culturally and linguistically appropriate.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Disseminate information to employees about your pandemic preparedness and response plan.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Provide information for the at-home care of ill employees and family members.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Develop platforms (e.g. hotlines, dedicated websites) for communicating pandemic status and actions to employees, vendors, suppliers, and customers inside and outside the worksite in a consistent and timely way, including redundancies in the emergency contact system.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Identify community sources for timely and accurate pandemic information (domestic and international) and resources for obtaining counter-measures (e.g. vaccines and antivirals).

NOTES:

1.6 Coordinate with external organizations and help your community:

Completed	In Progress	Not Started	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Collaborate with insurers, health plans, and major local healthcare facilities to share your pandemic plans and understand their capabilities and plans.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Collaborate with local public health officials, Environmental Protection Agency officials and/or emergency responders; participate in their planning and training, share your pandemic plans, and understand their capabilities (e.g. surveillance) and plans.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Communicate with local and/or state public health agencies and/or emergency responders about the assets and/or services your utility may be able to contribute to the community.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Share pandemic continuity of operations best practices with other utilities and professional associations to improve community response efforts.

NOTES:

APPENDIX F: Sources of Best Practices for Pandemic Influenza Continuity of Operations Plans for Critical Infrastructure

Business Continuity for Water and Wastewater Utilities: How to Keep Your Utility in Business and Operating in Times of Crisis seminar, August 15 – 16, 2007, Alexandria, Virginia. American Water Works Association.

Business Continuity for Pandemic, Natural Disaster, and Terrorism webcast (2006). American Water Works Association.

Business Continuity Guideline: A Practical Approach for Emergency Preparedness, Crisis Management, and Disaster Recovery (2005). ASIS International.
<http://www.asisonline.org>.

Business Continuity Planning in the Event of an Influenza Pandemic: A Reference Guide (2007). Association of Metropolitan Water Agency. <http://www.amwa.net/>.

Business Pandemic Influenza Planning Checklist, version 3.5 (2005). U.S. Department of Health and Human Services. <http://www.pandemicflu.gov/index.html>.

Continuity of Operations/Continuity of Government and Pandemic Influenza Planning (2007). State of California, Office of Emergency Services.
[http://www.oes.ca.gov/Operational/OESHome.nsf/PDF/COOPCOG%20Document%20Downloads/\\$file/DP%20Pan%20Influenza%20.pdf](http://www.oes.ca.gov/Operational/OESHome.nsf/PDF/COOPCOG%20Document%20Downloads/$file/DP%20Pan%20Influenza%20.pdf)

Continuity of Operations Planning for Pandemic Influenza Guidance (2006). U.S. Department of Homeland Security. <http://www.fema.gov/government/coop/index.shtm>

Drinking Water Supply Emergency Plan (2003). Ohio Environmental Protection Agency. <http://www.epa.state.oh.us/ddagw/pwswebpg.htm#voll1>.

Disaster Response and Recovery Planning for Water Systems: A Kit of Tools, Project 2929 (2006). American Water Works Association Research Foundation.

Exemplary Practices in Public Health Preparedness (2005). Rand Corporation.
www.rand.org/

Electric Sector Influenza Pandemic Planning, Preparation, and Response Reference Guide (2006). North American Electric Reliability Council.
<http://esisac.com/publicdocs/Influenza%20Pandemic%20Reference%20Guide.pdf>.

Introduction to Continuity of Operations (COOP) on-line course (2007). U.S. Department of Homeland Security.
<http://www.training.fema.gov/EMIweb/IS/IS5471st.asp>.

National Strategy for Pandemic Influenza Implementation Plan (May 2006). U.S. Homeland Security Council.

Pandemic Influenza Continuity of Operations Guide & Template for San Francisco City and County Agencies (June 2006). San Francisco Department of Public Health.

Pandemic Influenza - A Guide for Water and Wastewater Plant Owners and Operators. Ohio Environmental Protection Agency (2007).

<http://www.epa.state.oh.us/ddagw/pwswebpg.htm/>.

Pandemic Influenza Preparedness, Response, and Recovery Guide for Critical Infrastructure and Key Resources (Sept. 2006). U.S. Department of Homeland Security.

Pandemic Influenza Best Practices and Model Protocols (April 2007). U.S. Department of Homeland Security.

Pandemic Preparedness Planning Checklist for Utilities and Other Businesses (2007). Public Service Commission of West Virginia.

<http://www.psc.state.wv.us/PanInfo/PSCChecklist200701.pdf>.

Project Approach for Disaster Response, Recovery and Business Continuity Planning for Drinking Water Utilities (2004). Westby, K.& Saldanha, D. Coalfire Systems Inc.

APPENDIX G: Pandemic Influenza Plans Reviewed For This Project

Alameda County (CA) Public Health Department – *Pandemic Influenza Continuity of Operations Guide and Template*, 2006.

Alaska Division of Public Health – *Pandemic Influenza Response Plan*, 2007.

Boston Public Health Commission – *Pandemic Influenza Plan*, 2007.

Combined Health District of Montgomery County - *Public Health Pandemic Influenza Preparedness and Response Plan for Montgomery County, Ohio*, 2006.

Greene County Combined Health District – *Influenza Pandemic Response Plan*, 2006.

Indiana State Department of Health – *Pandemic Influenza Plan*, 2006.

Indian Health Service, U.S. Department of Health and Human Services – *Pandemic Influenza Workbook*, 2006.

King County (WA) Health Department – *Pandemic Influenza Emergency Response Manual*, 2006.

Maine- *Pandemic Influenza Plan*, 2005.

Massachusetts – *Influenza Pandemic Preparedness Plan*, 2006.

Minnesota Department of Public Health (2006). *Pandemic Influenza Plan (Supplement) Technical Section K: Environmental Public Health, version 2.5*, April 2006, p. 233.

Montana Department of Health and Human Services – *Pandemic Influenza Preparedness and Response Plan*.

Monterey County (CA) Health Department – *Pandemic Influenza Response Plan*, 2005.

Nashville/Davidson County Metro Public Health Department – *Pandemic Influenza Response Plan*, 2006.

Ohio Department of Health – *Pandemic Influenza Preparedness and Response Plan (PIPRP)*, 2006.

Ohio Department of Health – *Pandemic Influenza Tool Kit For Ohio Schools*, 2007.

Preble County General Health District – *Pandemic Influenza Preparedness and Response Plan*, 2006.

San Francisco City and County – *Pandemic Influenza Continuity of Operations Guide and Template*, 2006.

Santa Clara County Public Health Department - *Your Guide to Preparing for Pandemic Flu*, 2007.

Security and Prosperity Partnership of North America. - *North American Plan for Avian and Pandemic Influenza*, 2007.

South Carolina – *Pandemic Influenza Plan*, 2006.

Toronto (Canada) – *Pandemic Influenza Plan*, 2006.

University of California, Davis Health System – *Influenza Pandemic Emergency Response and Business Continuity Plan*, 2006.

U.S. Homeland Security Council – *National Strategy for Pandemic Influenza*, 2005.

U.S. Homeland Security Council -*National Strategy for Pandemic Influenza Implementation Plan*, 2006.

World Health Organization – *Global Influenza Preparedness Plan*, 2005.