

**WATER SUPPLY SYSTEM MANAGEMENT PLAN
FOR
SOUTH KINGSTOWN PUBLIC SERVICES DEPARTMENT
VOLUME 2
EMERGENCY RESPONSE PLAN**



PREPARED FOR:

**TOWN OF SOUTH KINGSTOWN, RI
509 COMMODORE PERRY HIGHWAY
WAKEFIELD, RHODE ISLAND 02879**



PREPARED BY:

**JAMES J. GEREMIA & ASSOCIATES, INC.
272 WEST EXCHANGE ST., SUITE 201
PROVIDENCE, RHODE ISLAND 02903**

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Critical Information

- Organizational Chart and Emergency Response Team Member Contact Information
- Important Telephone Numbers
- List of Critical Valve Closings
- Directions to Key Facilities



Director of Public Services
Richard J. Bourbonnais, II

Administrative Asst.
Elizabeth Ennis

Secretary
Paula Millen

Wastewater Division

ISDS Management

Water Division

Solid Waste Division

Highway Division

Engineering Division

Wastewater Superintendent
Kathy Perez

Onsite Wastewater Specialist
Krystal Furlong

Water Superintendent
Brett Whaley

Recycling Coordinator
Bonnie Blair

Streets & Hwy Superintendent
Scott Brown

Town Engineer
Mark Conboy, PE

Office Clerk II
Melissa Boze

Water Operator
Ken Boiteau

Highway Clerk
Pat Reardon

Asst Superintendent
Robert Corayer

Staff Engineer(s)
Mike Walker

Engineering Aide
Brian Costa

Asst Wastewater Supt
Richard Emery

Pre-Treatment
Pre-Treatment Coord
Krystal Furlong

Operations
Operator II
Shaun Collum

Maintenance
Mechanic II
Peter Brodeur

Electrician
David Siart

Operator I
Jess Whitten
Andrew Eberly
Even Obrien
Adrian Collum

Mechanic I
Jason Murphy
Robert Paquette

WW Worker
Ronald Lavigne
Kevin Stone
Joseph Pena

Crew Foremen
Doug Mack

Mechanic II
Ernest Golding
James White
Steven Babcock
Colby Whaley

EO III
Michael Lavimodiere
Kerry Gorman
EO II
Benjamin Taylor
James Christy
John Abrahamson
Todd Seabold
Brandon McCaffrey
Robert Fonzo
EO I
Thomas McGrath
John Ferrandi
Arborist
Zachary Valliere

Town of South Kingstown
Public Services Department
May 2023

Important Telephone Numbers

NOTE: The PWS will notify RIDOH within 72 hours of any contact change.

TOWN EMERGENCY CONTACT INFORMATION

<u>Name</u>	<u>Telephone</u>
Brett Whaley, Water Superintendent	Cell: (401) 378-2663
Ken Boiteau, Water Operator	Cell: (401) 302-7123
Richard Bourbonnais, Public Services Director	Cell: (401) 255-5304
South Kingstown Police Department	911 or (401) 783-3321
Union Fire District	911 or (401) 783-3321
James Manni, Town Manager	(401) 789-9331 ext. 1201
Matthew Moynihan, Chief of Police/EMA Director	Cell: (401) 255-4866

EMERGENCY RESPONSE TEAM MEMBERS CONTACT INFORMATION

<u>Name</u>		<u>Telephone</u>	
<u>Name</u>	<u>Title</u>	<u>Cell#</u>	<u>Email</u>
Brett Whaley	Water Superintendent	401-378-2663	BWhaley@southkingstownri.gov
Ken Boiteau	Water Operator	401-302-7123	KBoiteau@southkingstownri.gov
Lance Whaley	Licensed Water Operator	401-265-5475	LWhaley@southkingstownri.gov
Richard Bourbonnais	Public Services Director	401-255-5288	RBourbonnais@southkingstownri.gov
James Manni	Town Manager &	401-601-8582	JManni@southkingstownri.gov
Matthew Moynihan	Chief of Poilce/EMA Director	401-255-4866	MMoynihan@southkingstownri.gov
SK Police	Non- Emergency #	401-783-3321	
Scott Brown	Highway Superintendent	401-255-5294	SBrown@southkingstownri.gov
Robert Corayer	Asst. Highway Super.	401-255-5302	RCorayer@southkingstownri.gov

LOCAL FUEL SUPPLIERS

<u>Supplier</u>	<u>Telephone</u>
Deblois Oil	(401) 621-5100
Buckley Heating and Cooling 1632 Kingstown Road, Peace Dale, RI 02879	(401) 789-9711
Johnson's Oil Service P.O. Box 21, Wakefield, RI 02880	(401) 783-7398

Outside Support for Hazardous Materials Incidents

Agency / Entity	Telephone
Department of Environmental Management 235 Promenade St., Providence, RI 02908-5797	
• General	(401) 222-4700
• Office of Waste Management	(401) 222-2797
• Office of Water Resources	(401) 222-3961
• After-Hours (Emergencies)	(401) 222-3070
Department of Health 3 Capitol Hill, Providence, RI 02908	
• General	(401) 222-5960
• Division of Drink Water Quality	(401) 222-6867
Chemtrec	(800) 424-9300

Local Laboratories

Laboratory	Telephone
RI Analytical 41 Illinois Avenue, Warwick, RI 02888	(401) 737-8500
Northeast Environmental Testing Laboratory, Inc. 472 Smith Street, Providence, RI 02908	(401) 454-3400
New England Testing Laboratory 1254 Douglas Avenue, North Providence, RI 02904	(401) 353-3420

Equipment Suppliers

Supplier	Telephone
Everett J. Prescott, Inc. 80 Gilbane Street, Warwick, RI 02886	(401) 738-7611
Ti-Sales, Inc. 36 Hudson Road, Sudbury, MA 01776	(978) 443-2002

Warwick Winwater Works 62 Wyoming Avenue, Warwick, RI 02888	(401) 732-5151
Atlantic Controls P.O. Box 313, Exeter, RI 02822	(401) 294-1560
Stonkus Hydraulic Service and Sales 166 Lakeshore Drive, Blackstone, MA 01504	(508) 883-3105
Kingston Pipe Industries 244 Burlingham Avenue, North Kingstown, RI 02852	(401) 885-5256
Red Hed Mfg. & Supply Co. Albion Road, Rt. 123, Lincoln, RI 02865	(401) 333-1317
Quality Propane 552 Prov – New London Tpk, N. Stonington CT 06359	(860) 495-2538
Putnam Pipe Corporation 32 Selkirk Street, Pawtucket, RI 02860	(401) 725-0140
Borden & Remington Corp. 63 Water Street, Fall River, MA 02721	(508) 675-0096

List of Critical Valve Closings

1. Barrier beach isolation valves at:
 - a. Ocean Ave, Matunuck
 - b. East Matunuck State Beach parking lot valve
2. Valve at the intersection of Green Hill Beach Road and Green Hill Ocean Drive
3. Brownings Beach isolation valve at Card's Pond Road
4. Middlebridge Road isolation valve on west side of Middlebridge Bridge (east side of bridge features a check valve)
5. Succotash Bridge isolation valves on both sides of bridge

Factory Pond Pump Station

Address

142 Green Hill Beach Road
Wakefield, RI 02879
Phone Number: 401-789-9331 ext. 2257

From I-95 South

Take exit 9 to Route 4. Proceed south on Route 4 to Route 1 south. Continue south on Route 1 and exit the Green Hill Beach turn-around (left-hand exit). Follow Route 1 north to the Green Hill Beach exit onto Route 1A south. Turn left south onto Green Hill Beach Road, 1/4 mile on left look for bluestone/asphalt road with chain link fence gate. Drive through gate and follow road to pump station.

From I-95 North

Take exit 3 to Route 138 East. Turn right onto Route 112. Continue on 112 south to Route 1. Take Route 1 south to the first turn-around (left hand exit). Follow Route 1 north to the Green Hill Beach exit onto Route 1A south. Turn left onto Green Hill Beach Road, 1/4 mile on left look for bluestone/asphalt road with chain link fence gate. Drive through gate and follow road to pump station.

Mautucket Tank

Address

18 Mautucket Road
Wakefield, RI 02879
Phone Number: 401-789-9331 ext. 2257

From I-95 South

Take exit 9 to Route 4. Proceed south on Route 4 to Route 1 south. Continue south on Route 1 and exit the Green Hill Beach turn-around) left-hand exit). Follow Route 1 north to the Green Hill Beach exit onto Route 1A south. Take third left onto Mautucket Road. The tank is to the immediate left.

From I-95 North

Take exit 3 to Route 138 East. Turn right onto Route 112. Continue on 112 south to Route 1. Take Route 1 south to the first turn-around (left hand exit). Follow Route 1 north to the Green Hill Beach exit onto Route 1A south. Turn left onto Mautucket Road. The tank is to the immediate left.

Victoria Lane Tank

Address

108 Victoria Lane
Wakefield, RI 02879
Phone Number: 401-789-9331 ext. 2257

From I-95 South

Take exit 9 to Route 4. Proceed south on Route 4 to Route 1 south. Continue south on Route 1 to the Jerusalem/Snug Harbor turnaround (left-hand exit). Follow Route 1 north to the East Matunuck State Beach/Jerusalem/Snug Harbor exit onto Succotash Road. The tank will be about 1/4 mile down on the left.

From I-95 North

Take exit 3 to Route 138 East. Turn right onto Route 112. Continue on 112 south to Route 1. Take Route 1 south to the first turn-around (left hand exit). Follow Route 1 north and take the East Matunuck State Beach/Jerusalem/Snug Harbor exit onto Succotash Road. The tank is about 1/4 mile down on the left.

**Emergency Operations Center
Public Safety Complex
(S. K. Police Department)**

Address

1790 Kingstown Road
Wakefield, RI 02879
Phone Number: (401) 783-3321

From I-95 South

Take exit 9 to Route 4. Proceed south on Route 4 to Route 1 south. Continue south on Route 1 to Route 138 west. Follow Route 138 west to Route 108 (Kingstown Road). Take a left on Route 108 and follow this road to the intersection of Curtis Corner Road and Route 108. The Police Department is located on the northwest corner of this intersection.

From I-95 North

Take exit 3 to Route 138 East. Follow Route 138 east past URI and take a right onto Route 108. Follow this road to the intersection of Curtis Corner Road and Route 108. The Police Department is located on the northwest corner of this intersection.

Union Fire District Matunuck Station

Address

49 Matunuck School House Road
South Kingstown, RI 02879

From I-95 South

Take exit 9 to Route 4. Proceed south on Route 4 to Route 1 south. Continue south on Route 1 to the Matunuck Beach Road turn-around (left hand exit). Follow Route 1 north to the Matunuck Beach Road exit onto Matunuck Beach Road. Take a right onto Matunuck School House Road. The Fire Station is on the right.

From I-95 North

Take exit 3 to Route 138 East. Turn right onto Route 112. Continue on Route 112 south. Take Route 1 south to the first turn-around (left hand exit). Proceed on Route 1 north to the Matunuck Beach Road exit onto Matunuck Beach Road. Take a right onto Matunuck School House Road. The Fire Station is on the right.

Union Fire District Wakefield Station

Address

197 Robinson Street
Wakefield, RI 02879

From I-95 South

Take exit 9 to Route 4. Proceed south on Route 4 to Route 1 south. Continue south on Route 1 to the Peace Dale/Wakefield exit (right hand exit). At the top on the exit take a right onto Main Street. Continue past the intersection with Route 108. Continue on Main Street and take a left onto Robinson Street, which is opposite the Wakefield Branch Fuel Co. Fire Station is on the left approximately 1/10 mile from Main Street.

From I-95 North

Take exit 3 to Route 138 East. Turn right onto Route 112. Continue on Route 112 south to Route 1. Take Route 1 south to the first turn-around (left hand exit). Proceed on Route 1 north to the Wakefield turnaround (left-hand exit). Follow Route 1 south to the Wakefield exit onto Old Post Road. Follow Old Post Road to Main Street. Continue on Main Street to Robinson Street on the right, opposite the Wakefield Branch Fuel Co. Fire station is on the left approximately 1/10 mile from Main Street.

South Kingstown Streets and Highway Division Garage

Address

132 Asa Pond Road
Peace Dale, RI 02883
401-789-9331, ext. 3239

From I-95 South

Take exit 9 to Route 4. Proceed south on Route 4 to Route 1 south. Continue south on Route 1 to Route 138. Take a right onto Route 138 west. Follow Route 138 west to Route 108. Take a left onto Route 108 and follow this road to the intersection of Curtis Corner Road and Route 108. Take a right onto Curtis Corner Road. Take the first left onto Asa Pond Road to the facility at end of road.

From I-95 North

Take exit 3 to Route 138 East. Follow Route 138 east past URI and take a right onto Route 108. Follow Route 108 to Curtis Corner Road. Take a right onto Curtis Corner Road. Take the first left onto Asa Pond Road to the facility at end of road.

University of Rhode Island Athletic Complex

Address

Kingston, Rhode Island 02881

From I-95 South

Take exit 9 to Route 4. Proceed south on Route 4 to Route 1 south. Continue on Route 1 to Route 138. Take a right onto route 138 west and follow past main entrance to URI. Take third right after main entrance into the athletic complex (Keeney gym, Mackal Field House, Tootell gym).

From I-95 North

Take exit 3 to Route 138 East. Follow Route 138 east to URI. After the intersection with Ministerial Road (Route 110) and Route 138, take first left into the athletic complex.

South County Hospital

Address

70 Kenyon Avenue
Wakefield, RI 02879
Phone number: 401-782-8000

From I-95 South

Take exit 9 to Route 4. Proceed south on Route 4 to Route 1 south. Continue south on Route 1 to the Salt Pond Road/South County Hospital exit. Take a right onto Salt Pond Road and follow to Kenyon Road. Take a left onto Kenyon Road and hospital is on the left.

From I-95 North

Take exit 3 to Route 138 East. Turn right onto Route 112. Continue on 112 south to Route 1. Take Route 1 south to the first turnaround (left-hand exit). Follow Route 1 north and take the Salt Pond Road/South County Hospital exit. At end of exit, take a left onto Salt Pond Road. Continue on Salt Pond Road under the highway to Kenyon Road. Take a left on to Kenyon Road and hospital is on the left.

Section 1

System Description

1.1 Introduction

1.1.1 *Plan Summary*

This Emergency Response Plan has been developed by modifying the Town's existing Emergency Management Section of the Town of South Kingstown, Public Services Department, Water Division Water Supply Management Plan. The modifications to this document were conducted to conform with the requirements of the Public Health Security and Bioterrorism Preparedness and Response Act of 2002 (adopted by the State of Rhode Island Water Resources Board) and the Vulnerability Assessment (VA) completed by C&E in March of 2005 and updated by Comprehensive Environmental, Inc., June 2020.

This document is provided as a guide for use in preparing for and responding to water system emergencies. It contains nationally recognized standards of the information recommended by EPA and State of Rhode Island that should be contained in an Emergency Response Plan (ERP). Note that all potential situations may not be identified and is not intended to provide step-by-step instructions for all emergencies. The system operators are ultimately responsible to evaluate the potential vulnerabilities related to their system and determine the appropriate responses. As site-specific needs dictate, this ERP should be modified.

1.1.2 *Purpose*

Natural disasters and damage caused by attacks upon the water system can endanger lives, impact water service and cause property damage. Although the federal government (through the Federal Emergency Management Agency or FEMA) and the state government (Rhode Island Emergency Management Agency or RIEMA) conduct emergency planning, response training, and prevention programs, the localized nature of essential services makes it critical that local governments also participate in emergency planning. Additionally, during an emergency, utility providers continue to have responsibility for service independent of outside assistance.

The objectives and contents of this Emergency Response Plan (ERP) have been developed in accordance with Section 8.08 of the Rules and Procedures for Water Supply System Management Planning (October 1998) as administered and enforced by the Rhode Island Water Resources Board. These regulations establish guidelines for the preparation of ERPs by water suppliers who obtain, transport, purchase, or sell more than fifty million (50,000,000) gallons of water per year. The Town of South Kingstown's public water supply (including the South Shore and Middlebridge systems) falls within this category.

1.1.3 *Existing Emergency Response Plans*

There are several existing emergency plans within the Town. The Public Services Department

developed a Hurricane Preparedness Plan, and the Town of South Kingstown developed an Emergency Plan for Hazardous Materials Spills in December 1988. In 1989, with the assistance of the Town, the RIEMA developed an Emergency Operations Plan (EOP), for the Town of South Kingstown to establish basic response procedures to emergency situations associated with natural disasters and accidents. On February 25, 2019 the Town Council authorized the transmittal of the draft Multi-Hazard Mitigation Plan Update to the R.I. Emergency Management Agency and the Federal Emergency Management Agency. The Town also has an Emergency Preparedness webpage available for residents:

(<https://www.southkingstownri.gov/942/hazard-mitigation-plan-update>)

According to the town-wide EOP, during any disaster or emergency, the State of Rhode Island will provide for the safety and protection of its citizens and resources. In the event of a hazardous materials spill, groundwater contamination, or severe structural damage, the Town of South Kingstown can assume that significant aid from state agencies such as the RIEMA and Department of Environmental Management would be available to avert danger and assist in remediation efforts. Other emergencies such as those brought on by severe weather conditions generally result in more widespread damage affecting more than just one town. The state must prioritize its efforts and South Kingstown must plan responses that coordinate with, but remain independent of, state aid provisions.

The EOP states that preparation for anticipated disasters, including assurance of effective management and delivery of aid to disaster victims, is the responsibility of the Town of South Kingstown. The South Kingstown EOP further states that while the plan outlines the emergency support services available through local government, “disaster coordinators in local departments and agencies with emergency support service roles will have the responsibility for maintaining internal plans, standing operating procedures, and resource data to ensure prompt and effective response to emergencies.”

The Town of South Kingstown EOP details the available emergency personnel and equipment, current procedures, and discusses their adequacy. While the EOP serves as a major resource to the Public Services Department, this document provides greater detail for preparation and response specific to the water supply.

1.2 Water Supply System

The Town of South Kingstown, under the Public Services Department, Water Division, owns and operates two (2) separate water systems – the South Shore and Middlebridge systems.

The South Shore system is comprised of approximately 48 miles of water transmission and distribution mains, hydrants, meters, a booster pump station, two (2) elevated water storage tanks, system interconnection, wells, and appurtenances that serve 2,572 service accounts (e.g. residential, commercial, and governmental) as of spring 2023.

The Middlebridge system is comprised of approximately 3.6 miles of water transmission and distribution main, hydrants, meters, system interconnection, and appurtenances that serve 290 service accounts (e.g. residential) as of spring 2023.

The South Shore transmission and distribution system as a whole consists of approximately 48 miles of water main, ranging in size from 6 to 14 inches, with installation dates from the late 1960s to the present. New and replacement mains consist predominantly of cement-lined ductile iron (DI) pipe with a limited amount of polyvinyl chloride (PVC). The majority of the transmission and distribution system at present is comprised of asbestos-cement (AC) water mains.

In the fall of 2002, the Water Division began purchasing all of its water for the South Shore System on a wholesale basis from neighboring Veolia (formerly SUEZ, United Water RI, Wakefield Water) as a result of ongoing iron discoloration problems associated with the primary Factory Pond groundwater supply well field. Previous to this, the supply to the South Shore area was from three (3) wells located in the southern area of Town. These wells previously provided the sole source of water supply for the South Shore distribution system.

The transition to the Veolia (formerly SUEZ, United Water RI, Wakefield Water) system on a full time basis was completed as of February 2003 via a temporary interconnection with the Town of Narragansett through their Jerusalem portion of the water system. This was accomplished through retrofit of a meter pit through which South Kingstown previously supplied the Jerusalem area of Narragansett. This underground concrete vault, which is located at the Town line off Succotash Road, was retrofit at that time with a booster pump that is designed to boost water from the Veolia (formerly SUEZ, United Water RI, Wakefield Water) system via the Narragansett water system and into the South Kingstown water system.

Subsequent to 2003, the Town and Veolia (formerly SUEZ, United Water RI, Wakefield Water) completed a permanent 12-inch water main and interconnection including a master meter assembly along the southern right of way of U.S. Route 1 near the intersection with Kettle Pond Drive with Veolia (formerly SUEZ, United Water RI, Wakefield Water) distribution system. The interconnection was completed in August 2005. At this time, Veolia (formerly SUEZ, United Water RI, Wakefield Water) continues to be the primary source of water for the South Shore area. It is noted that the Town has in the past and shall continue to rely on Veolia (formerly SUEZ, United Water RI, Wakefield Water) to serve the Middlebridge area of Town. The current interconnection with Veolia (formerly SUEZ, United Water RI, Wakefield Water) (via the Town of Narragansett Jerusalem meter pit), will be maintained for emergency purposes.

The Water Division will continue to exercise and routinely test the existing South Shore Factory Pond wells, which would be available in the event of an emergency or possibly to augment supply during peak demand periods. The Town is also considering a capital improvement project for a water treatment facility at the well field to provide necessary treatment and conditioning of the well supply to render the source water more aesthetically pleasing and palatable to the consumer. At this time, there is no exact date for design and implementation for such a treatment facility.

The Middlebridge distribution system does not own or operate any surface or groundwater resources or water storage facilities. As such, wholesale purchase from Veolia (formerly SUEZ, United Water RI, Wakefield Water) Water constitutes the sole source of supply to this system.

The South Shore water system is a linear type system with primary demand sectors located on the eastern and western sections with 12-inch diameter main connecting the two sections. The system has two zones separated by a booster pumping station but operated on the same hydraulic gradeline. The East Zone is located on the eastern portion of the system and the West Zone is located on the western portion of the system. The interconnection with Veolia is in the northeast corner of the system in the East Zone. The Victoria Lane Tank is located near the interconnection. A booster pumping station which transfers water from the East Zone to the West Zone is located mid-way between the two sections on Cards Pond Road. The Mautucket Road Tank is located in the northwest area of the system in the West Zone.

There is a chlorine booster system located at the Mautucket Road Tank. This system consists of a chlorine day tank and metering pump. A magnetic flow meter was installed on the tank inlet/outlet line in order to flow pace the chemical feed rate. The chemical pump will only start upon detection of a minimum flow. A residual chlorine analyzer is provided and SCADA provisions for alarms to prevent chemical overfeed. A flow control valve was installed at the Cards Pond Booster Pump Station to prevent water from slipping by the pumps and essentially locking out the Mautucket Road Tank at times. The flow control valve is programmed to close when the pumps are off and open before the pumps start.

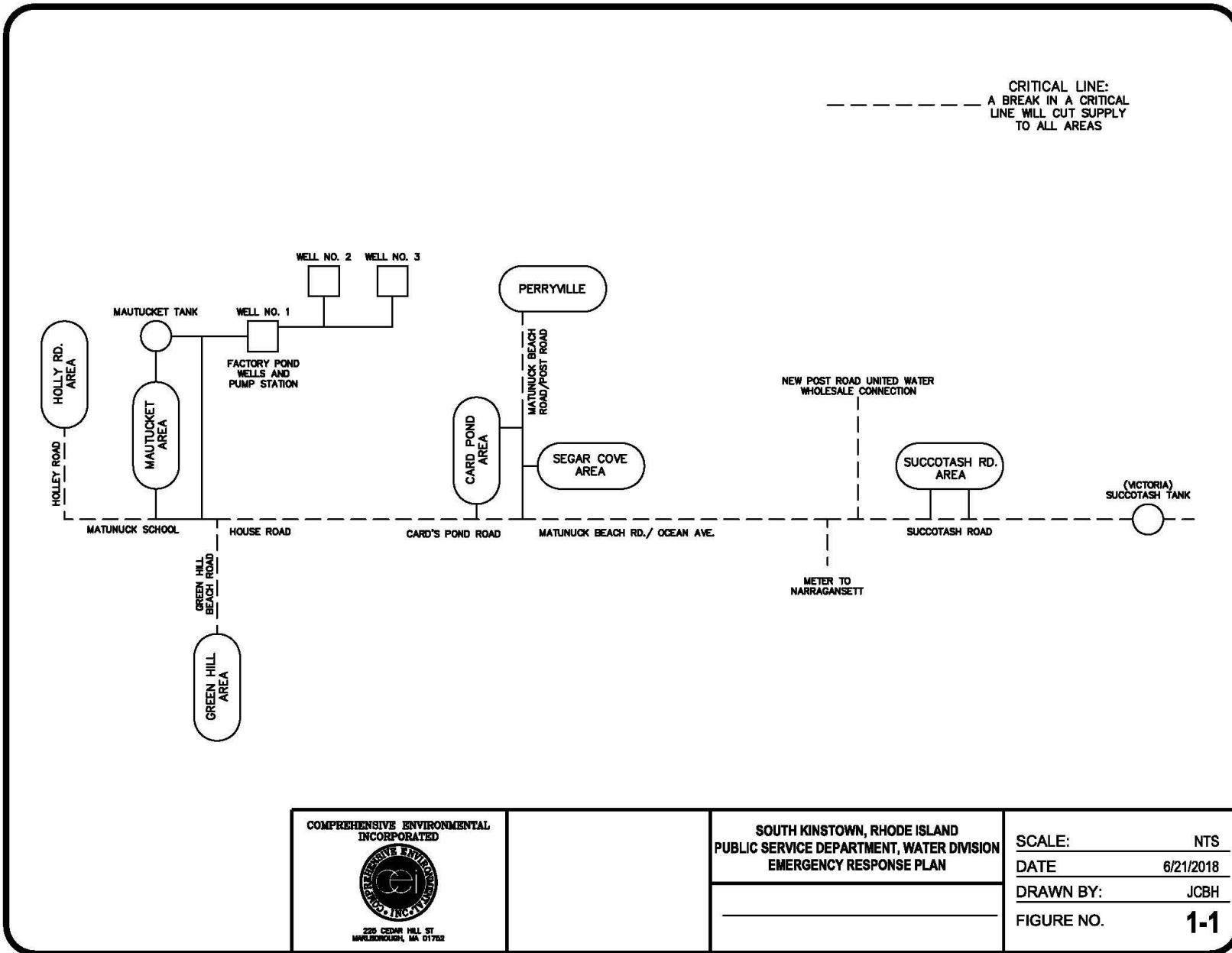
The South Shore and Middlebridge water supply and distribution systems are 100% metered. The South Shore master meter is located at the intersection of US Route 1 and Kettle Pond Drive. The Middlebridge water system has two (2) wholesale water meters. The first wholesale meter is located at the base of Torrey Road and receives all incoming water from Veolia (formerly SUEZ, United Water RI, Wakefield Water). Veolia (formerly SUEZ, United Water RI, Wakefield Water) in turn uses the Middlebridge water system to “wheel” water to their Narragansett water customers. This is accomplished via a second wholesale water meter located on the Narragansett side of Middlebridge Bridge. The Water Division also owns a master meter located downstream of the South Shore wells, which meters 100% of the Town’s water production whenever the well field is in use. Finally, every service connection within the water distribution system is metered at the point of sale, thus providing 100% distribution system metering. **Figure 1-1** shows a schematic of the critical components of the water system.


1.3 Emergency Organization

1.3.1 Town of South Kingstown

Responsibility for town wide emergency response planning falls primarily to the Town Manager. The Town Manager’s emergency operation functions include:

FIGURE 1-1. SCHEMATIC OF CRITICAL COMPONENTS OF SOUTH SHORE WATER SYSTEM



<p>COMPREHENSIVE ENVIRONMENTAL INCORPORATED</p>  <p>225 CEDAR HILL ST MARLBOROUGH, MA 01752</p>		<p>SOUTH KINSTOWN, RHODE ISLAND PUBLIC SERVICE DEPARTMENT, WATER DIVISION EMERGENCY RESPONSE PLAN</p>	<p>SCALE: NTS</p>
			<p>DATE: 6/21/2018</p>
			<p>DRAWN BY: JCBH</p>
			<p>FIGURE NO. 1-1</p>

- Directing the emergency operational response of Town Services.
- Executive control of emergency management during disaster and major emergencies.
- Making emergency policy procedures.
- Declaring a State of Emergency for the Town.
- Implementing the emergency powers of local government.
- Keeping the public and area residents informed of emergency status.
- Requesting outside assistance from other jurisdictions in accordance with mutual aid agreements.

If a state of emergency is declared, the Town Manager and President of the Town Council may also decide to initiate evacuation procedures. Generally, the area of evacuation includes all residences south of Route 1 and a small portion of Perryville located north of US Route 1; this includes the entire South Shore water service area.

Given the absence of major industrial or urban activity within the Town of South Kingstown, and its rural nature, the Town Manager also serves as the Emergency Management Director. Additional responsibilities of South Kingstown's Town Manager under the title of Emergency Management Director include:

- Coordinating the planning and preparedness activities of Town government.
- Analyzing the emergency skills needed by Town forces and arranging necessary training.
- Preparing and maintaining a resource inventory.
- Ensuring the operating capability of the Emergency Operating Center.
- Coordinating all recovery operations.
- Arranging the activation and release of emergency response personnel and providing for continuous staffing of emergency response tasks during emergency conditions.
- Providing for the collection, analysis, and report of information to, from, and between response personnel, State/Federal Government officials, and the public.

Because the South Kingstown Town Manager also assumes the role of Emergency Management Director this ERP will designate both of these positions as the TM/EMD. Under the direction of the TM/EMD, each Town department must develop and administer an emergency response plan that details actions to be taken by that department. This plan should coordinate with other town-wide and state-wide emergency management procedures. Following this plan, the South Kingstown Public Services Department, Water Division will be responsible for the following during an emergency:

- Establish a list of pre-disaster water department activities and inform the TM/EMD of the intended mitigation measures.
- Maintain availability of personnel with emergency assignments.
- Check operability of all departmental emergency power equipment and fuel all vehicles and equipment to 100% capacity.
- Establish a list of Water Department priorities during disaster and post-disaster and keep the TM/EMD informed of these emergencies and the staffing and materials required to complete each task.
- Monitor water quality.

- Inform the TM/EMD of any information which needs to be distributed to the public.
- Respond to emergencies as directed by the TM/EMD.

1.3.2 Public Services Department - Water Division

The Town of South Kingstown water supply systems are operated by the Town Public Services Department - Water Division. (In addition to the Water Division, the Public Services Department includes the Wastewater Division, Solid Waste Division, Engineering Division and Streets and Highway Division.) The Public Services Director has primary responsibility for the water supply. The Water Division employs two full-time personnel, the Water Superintendent and a Water Operator. The full-time Water Division staff are generally responsible for day-to-day system operation and maintenance, meter reading, and record keeping. The Water Division typically uses local contractors for larger tasks such as water main repairs.

The Public Services Department support staff provides services to the Water Division, Wastewater Division, Solid Waste Division and Highway Division. The support staff includes a Town Engineer, Staff Engineer, Administrative Assistant, Engineering Aide, and a secretary.

1.4 Emergency Resources

1.4.1 Town of South Kingstown Central Resources

Operation Center

The Town of South Kingstown has established the Public Safety Complex on Route 108 as the Town's emergency operation center (EOC). In the event of an emergency, the TM/EMD and the President of the Town Council meet at the operation center and evaluate the severity of the situation and/or declare a state of emergency. During a declared state of emergency, at least one of the responsible officials (the TM/EMD; the President of the Town Council; and the Chief of Police) remains at the operation center at all times.

The Public Services Department; Water Division, along with other town departments, is authorized to utilize this operation center during an emergency. This arrangement maximizes interdepartmental communication.

There are no provisions made for prolonged occupation of the operation center, therefore all personnel who plan to utilize the facility should bring essentials (e.g., pillow, blanket, etc.) to the center. Food is generally supplied by nearby South County Hospital when possible.

Public Shelter

During localized emergencies, the South Kingstown High School serves as the primary emergency evacuation shelter for the Town, with the Broad Rock Middle School serving as a back-up facility should the High School be unavailable or at capacity. During regional emergencies, a public emergency shelter is usually established at the University of Rhode Island (URI) Mackal Field House and Keaney Tootel Gymnasium. The shelter is run by URI and the Red Cross.

Emergency Medical Facilities

The primary healthcare facility in South Kingstown is the South County Hospital Inc. located near Route 1. This 100-bed community hospital is non-profit and as such maintains a policy of service to all, regardless of ability to pay. The Town's Emergency Medical Service (EMS) provides ambulance transportation to the South County Hospital.

Secondary treatment facilities in the South Kingstown area include the Treatment Center in North Kingstown and the Health Center of South County, in the Wakefield area of South Kingstown.

A description of the Town's EMS is given in the next section (Police Department). During an emergency the EMS is responsible for establishing and operating emergency medical care centers for essential workers in the hazardous area following the evacuation of the general population.

1.4.2 Police Department

The South Kingstown Police Department operates from the Public Safety Complex on Route 108 in the northeastern area of town. The Police department has 73 full-time (including 53 sworn officers) and nine (9) administrative employees. The Emergency Medical Service, of which there are 17 full-time employees and 24 part-time per diem employees, is under the jurisdiction of the Police Department. The Animal Control division has two (2) full-time and 2 part-time animal control officers.

The Police Department has the following equipment: 15 marked patrol sedans, 9 unmarked detective sedans, 3 utility 4x4 vehicles, 1 pick-up truck, 3 ambulance transport vans, 2 first response vehicles, 1 Homeland Security vehicle and 1 animal control vehicle.

Fire and Rescue Dispatch: The Police Department is responsible for fire and rescue dispatch. The main Police Department houses the Town's fire alarm.

Emergency Medical Service (EMS): The EMS provides primary Advanced Life Support Rescue Transportation in the Town and mutual aid to surrounding communities upon request. The Town owns three (3) Class A-1P rescue vehicles and has acquired a State Department of Health license for primary emergency medical transportation for South Kingstown. Under the supervision of the Chief of Police, the EMS Coordinator directs day-to-day operation.

Emergency Service Unit (ESU): This regional unit has been established to handle situations where regular patrol efforts are exhausted or insufficient (e.g., riots, missing persons, etc.). Eight (8) members of the South Kingstown Police Department comprise the ESU.

As part of the Police Department's Harbor Control Program, the Town also owns a patrol craft and has access to a second patrol craft owned by the Town of Narragansett.

The Police Department is responsible for numerous emergency operations relevant to Water Division activities:

- Provide traffic control/crowd control.
- Evacuate and provide security within designated and restricted areas.
- Provide transportation for Emergency Operation Center staff.
- Provide Emergency Operation Center support.
- Provide communication support.
- Provide medical response support.

1.4.3 Union Fire District

South Kingstown’s Union Fire District is primarily a volunteer organization, employing only a full-time mechanic and the part-time Fire Chief. Paid and volunteer members receive notice of fire calls via individual pagers.

Among the Fire Department’s emergency operation responsibilities, the following are particularly relevant to the Water Division:

- Assist in announcement of warnings to the public through mobile audible warning units.
- Advise decision makers of the risks associated with hazardous materials, as well as recommending use of water, foams, dispersants, or fog for extinguishing, and methods for diluting or neutralizing hazardous materials.
- Provide emergency medical services.
- Provide communications support.
- Assist in chemical decontamination operations.
- Assist in hazardous materials operations (spill containment and clean up).
- Provide Emergency Operation Center support.
- Alert all emergency support services to the dangers associated with technological hazards and fire during emergency operations.

1.4.4 Public Services Department

The Public Services Department is responsible for the administration, planning and design of all public works and Town owned utility enterprise fund programs and projects. Operations include streets and highways, street lighting, tree program, dams, and the wastewater and solid waste enterprise funds, and all associated capital improvement projects.

The Highway Division operates from the Town garage at 132 Asa Pond Road in Wakefield. The garage includes 17,200 square feet of building space on 12 acres of land. The Highway Superintendent reports directly to the Public Services Director. The Highway Division employs 18 people full-time. Five crews are incorporated under the Streets and Highway Division:

- Off-Roads Crew
- On-Roads Crew
- Drainage Crew
- Roadside Mowing and Tree Maintenance Crew
- Traffic Control Crew

All crews combine to provide snow plowing, sanding, etc., during the winter months, and for various other tasks throughout the year.

During declared emergencies, the Engineering and Streets and Highway Divisions assist in the following capacities of particular importance to the Water Division:

- Conduct road and bridge repairs during and following an emergency.
- Mark all emergency routes of travel.
- Provide emergency support equipment and transportation requirements.
- Maintain fuel storage. Provide portable water supply.
- Inspect, designate and demolish hazardous structures.
- Drain flooded areas.
- Protect the water supply from the effects of hazardous materials.
- Assist in restoring vital utilities, facilities, and services.
- Prepare and maintain a resource list that identifies the source, location, and availability of earthmoving equipment and other materials that could be utilized to support emergency operations.

1.5 Emergency Communications

1.5.1 Communications Network

Normally, land-line telephone service is the primary building to building communication link used by the Town. During an emergency, telephone service may be interrupted due either to overloading of, or damage to, the system. Department of Public Services divisions utilize a VHF radio system for vehicle-to-vehicle communication. The Public Services administration building, Highway Garage and Public Safety/ EOC building also have a base station to communicate with Public Services vehicles via the VHF radio band.

Should land lines fail, radio systems then become necessary for direction and control, and recovery operations. South Kingstown maintains local radio systems for routine field operations, and these systems are operable in the event of an emergency. Radio systems available to the Town include:

- South Kingstown Police Radio System, Rte. 1 (800 MHZ)
- South Kingstown Fire Radio System (400 MHZ- UHF)
- South Kingstown Public Works Radio System, Asa Pond Road (VHF)
- Civil Defense State Radio System (CDSTARS) (Emergency Operations Center/Police Dispatch) (800 MHZ)
- Radio Amateur Civil Emergency Service (RACES)
- Emergency Broadcast System (EBS) via State of Rhode Island

The TM/EMD also serves as the Emergency Communications Coordinator and will oversee communications operations and establish a cooperative network among staff and volunteer operators. Departmental directors are to:

- Work with the TM/EMD to ensure that departmental personnel, equipment, and procedures will be compatible during an emergency.
- Provide functional backup to each departmental communication system in the Emergency Operation Center.
- Maintain existing radio communications for field operations.
- Assist in providing alternate means for communications with shelters and identify shortfalls to the TM/EMD.
- Conduct routine testing of the communication system from the Emergency Operation Center.
- Provide for security of communication equipment in the Emergency Operation Center.

1.5.2 Public Information

In emergencies, South Kingstown has multiple available methods for dispensing information to the public: The Emergency Broadcast System (EBS); print and broadcast media; audible sirens in combination with mobile public address units; Code RED system. The community notification system, provided by Code RED, enables the Town to provide essential information quickly in a variety of situations, such as severe weather, fires, floods, unexpected road closures, or evacuation of buildings or neighborhoods. As stated above, all information for dissemination to the public is submitted by Department directors to the TM/EMD, who is responsible for all public announcements.

In the event of evacuation, the media is alerted to the evacuation and an announcement is made through the EBS. Squad cars are dispatched to announce the declaration over loudspeakers and to go door-to-door encouraging residents in those areas to evacuate. The Police Department can only strongly urge residents to evacuate their homes.

Section 2

Emergency Management Procedure

2.1 Selection of Potential Emergencies

The EOP identified a number of potential hazards that, given the geographic location and characteristics of the Town of South Kingstown, could result in casualties and property damage. The list of potential hazards, developed by RIEMA, includes:

- Hurricane/Tropical Storm
- Power Failure
- Winter Storm
- Civil Disorder / Vandalism / Terrorism
- Hazardous Materials Incident (stationary)
- Dam Failure
- Railway Hazardous Materials Incident
- Highway Hazardous Materials Incident
- Flood / Erosion
- Urban Fire
- Wildfire

The potential hazards to the South Shore and Middlebridge Water Systems vary somewhat from those considered for town-wide emergency operations planning. From a water supply standpoint, response to an urban fire would not be significantly different from that to a wildfire. These categories will therefore be combined. The Hazardous Materials Incident (stationary) and the Highway Hazardous Materials Incident categories would be better differentiated as Source and System Contamination Incidents. The Railway Hazardous Materials Incident category may be eliminated because there is zero potential for occurrence affecting the water systems (i.e., no railroads in the service area or vicinity of the source). Although there is a small dam at Factory Pond, its potential for adverse effect on the water system is limited to affecting electrical power at the South Shore system's wells in the event a dam breach occurs and the utility poles in the inundation area are lost. As such, this will be addressed by the Power Failure incident.

This Water Division ERP will provide for reaction to the following water emergencies:

- Pump/Power Failure
- Hurricane/Tropical Storm
- Winter Storm
- Source Contamination
- System Contamination
- Flood / Erosion
- Fire

- Drought
- Civil Disorder / Vandalism / Terrorism

The charts found in each section outline the basic responses to each of these situations, as well as resources available to the Department to implement the plan and preventive measures.

2.2 Pump/Power Failure

Loss of primary electrical power is a relatively common emergency, usually resulting from work in progress on power lines, or damage to a utility pole (e.g., from a storm or car accident). Generally, this loss is only temporary, lasting from a few seconds to a few hours.

Similar in effect to power failure would be a pump failure, due to equipment malfunction or breakdown. **Table 2-1** summarizes the impact of a pump/power failure on the system, and outlines required responses.

2.2.1 Effects on Facilities

From the water supply standpoint, brief interruption in primary power supply does not severely impact the abilities of the South Shore and Middlebridge systems to maintain normal operations and service.

The Water Division's SCADA System is used for the following signalization:

- Victoria Land and Mautucket Road water storage tank levels
- Cards Pond Road booster pump station and flow control valve operation
- Veolia (formerly SUEZ, United Water RI, Wakefield Water) wholesale meter pit altitude valve operation
- Factory Pond SCADA system equipment operation (when in operation)
- Mautucket Road tank chlorination system

In the event power is lost to any of the above facilities, the equipment can be run on hand or supplemented with a portable stand-by generator until such time that permanent electrical service is restored.

The three (3) supply pumps at the Factory Pond wells (when operational), and the pumps at the Card's Pond Booster Station are the only major system components that rely on primary electrical power for day-to-day operation. A propane-fired, direct drive standby engine provides a back-up source of pumping to Well No. 1 only. The direct drive engine must be manually operated.

If primary power is lost, the Water Division's SCADA system alerts the Police Department and Water Division. The SCADA system also alerts these authorities due to various other alarm events (i.e., power outage, intruder, low tank levels, communication failure, booster station high & low temperature, etc.).

Table 2-1. Emergency Response Plan: Pump/Power Failure

Effects of Disaster			Emergency Response		
None	Partial	Total	Type and Extent	Prevention Measures	Post-Disaster
	X		<ul style="list-style-type: none"> pumps lose primary power -- could result from power source (e.g., town-wide power interruption) or local problem (e.g. car accident damages pole) pump failure could result from electrical or mechanical problems, even if power uninterrupted 	<ul style="list-style-type: none"> maintain adequate fuel for emergency generator; exercise generator regularly provide emergency lighting in pump stations establish contacts with pump suppliers, so that needed parts could be supplied quickly 	<ul style="list-style-type: none"> utilize emergency Well No. 1 stand-by engine identify cause of power loss and estimate duration provide adequate fuel for generator; station tanker truck at pump stations if power loss likely to last a few days; alternately, arrange for daily fuel delivery if pump damage occurred, switch to other well; assess damage and initiate repair; evaluate ability of alternate well to meet demand
	X		<ul style="list-style-type: none"> pumps lose primary power lose ability to fill storage tanks 	<ul style="list-style-type: none"> maintain adequate fuel for emergency generator; exercise generator regularly establish contacts with pump suppliers, so that needed parts could be supplied quickly 	<ul style="list-style-type: none"> open pump station by-pass utilize portable emergency generator
X			<ul style="list-style-type: none"> problems with pumps or generator could isolate system from supply delay before restarting well pumping (e.g., starting generator, or switching wells) could result in lower tank levels (less reserve supply) 		<ul style="list-style-type: none"> use stored water to supply system if required (see below under tanks) assess supply-demand situation and need for water restrictions
	X		<ul style="list-style-type: none"> problems with pumps or generator could isolate tank from supply 		<ul style="list-style-type: none"> use stored water to supply system if required monitor tank level
	X		<ul style="list-style-type: none"> problems with pumps or generator could isolate tank from supply 		<ul style="list-style-type: none"> use stored water to supply system if required monitor tank level
	X		<ul style="list-style-type: none"> possible supply cut-off or water shortage if Veolia (formerly SUEZ, United Water RI, Wakefield Water) source affected 		<ul style="list-style-type: none"> coordinate with emergency agencies to provide bottled water or other potable water
	X		<ul style="list-style-type: none"> auxiliary personnel may be unavailable due to non-water emergencies 	<ul style="list-style-type: none"> confirm available personnel with TM/EMD station one crew at pump stations 	<ul style="list-style-type: none"> review needs with TM/EMD

Table 2-1. Emergency Response Plan: Pump/Power Failure

Effects of Disaster			Emergency Response		
None	Partial	Total	Type and Extent	Prevention Measures	Post-Disaster
	X		<ul style="list-style-type: none"> • emergency supplies may be needed by other departments as well 	<ul style="list-style-type: none"> • secure repair equipment/ emergency supplies at storage tanks, pump stations • identify available portable generators • test battery powered lights periodically 	<ul style="list-style-type: none"> • use portable generators, batteried powered lights as needed in the field
	X		<ul style="list-style-type: none"> • phone utilities may be inoperable 	<ul style="list-style-type: none"> • prepare radio communication system in EOC or appropriate location • notify TM/EMD of any information for public announcement • establish contact with Veolia (formerly SUEZ, United Water RI, Wakefield Water) 	<ul style="list-style-type: none"> • utilize radio communications • update information to TM/EMD • publicize water use restrictions, if supply-demand is problem

In the event of mechanical failure of one of the pumps, Well No. 1 would need to be manually switched on. Summertime failure of any of the pumps at either Well No. 2 or Well No. 3, could impact the system's ability to meet demand.

2.2.2 Emergency Response

When a power failure occurs, the Director must contact the National Grid to determine estimated power loss duration. The following list contains local suppliers who provide diesel fuel:

LOCAL FUEL SUPPLIERS

<u>Supplier</u>	<u>Telephone</u>
Deblois Oil	(401) 621-5100
Buckley Heating and Cooling 1632 Kingstown Road, Peace Dale, RI 02879	(855) 505-7670
Johnson's Oil Service P.O. Box 21, Wakefield, RI 02880	(401) 783-7398

Water stored in the Mautucket Road and Victoria Lane tanks may provide a temporary supply or supply augmentation if required.

2.2.3 System Deficiencies

There is one notable system deficiency with respect to pump/power failure. The Cards Pond Road Booster Station does not have emergency power. In the event of a power failure, hydraulic deficiencies may not allow the Mautucket Road Tank to fill to its normal operating range. However, the Water Division's 115/230 V, 9,000 KWH portable generator can be used should the power outage last for a prolonged period of time.

The Public Services Department should maintain a spare parts and equipment list, which could prove helpful if one of the pumps suffered mechanical failure. Copies of such information, including original pump manuals, should be maintained in a well-marked location in the pump stations as well as in the Water Division office.

2.3 Hurricane/Tropical Storm

Hurricanes are among the most severe weather events common to New England. On average, six Atlantic hurricanes occur each year with two making landfall along the Atlantic Coast. A hurricane is defined by the RIEMA as a severe tropical storm with high winds, generally 74 to 220 miles per hour, which spiral around a calm center known as the eye. Wind gusts even

higher than this normal range are possible, and frequently result in the development of tornados. As a hurricane approaches land, it creates a storm surge along the coastline raising the water significantly above high tide levels. Thus, hurricanes can cause damage by wind and/or flooding. The National Weather Service categorizes hurricanes by intensity on a scale of I to V; these classifications are summarized below.

NATIONAL WEATHER SERVICE HURRICANE CATEGORIES

<u>Category</u>	<u>Average Wind Speed</u>	<u>Storm Surge Height</u>
I	74-95 mph	4-5 feet
II	96-110 mph	6-8 feet
III	111-130 mph	9-12 feet
IV	131-155 mph	13-18 feet
V	156 + mph	18 + feet

The lifetimes of hurricanes generally range between eight and twelve days. Through satellite surveillance, meteorologists are able to monitor the formation of a hurricane, and to track the hurricane’s path. Predictions about the time and location of arrival on shore are relatively accurate, although a hurricane may change its path unexpectedly. Along with strong winds and the storm surge, a hurricane generally carries heavy rains. The rains, coupled with the storm surge, may result in flooding in some areas. The severity of flooding is often affected by the timing of tidal patterns coincident with the storm.

Table 2-2 summarizes the impact of a hurricane on the system, and outlines required responses.

2.3.1 Effects on Facilities

A hurricane or severe tropical storm may affect the structural integrity of a water system resulting in loss of supply and possibly subsequent water quality problems. The type of damage produced by such a storm greatly depends on the location of major system components and their operational requirements.

Supply

The Water Division currently relies on Veolia (formerly SUEZ, United Water RI, Wakefield Water) as the primary source of supply. The Town also owns its own supply, the pump stations and the system supply wells are located at Factory Pond, about a mile north of the expected hurricane surge threatened area. The pump stations are above the 100-year flood plain. The primary anticipated effect of a hurricane on the wells and pumps is the loss of primary electrical power. As discussed in Section 2.2, Well No. 1 is equipped with a standby direct drive engine in the event of a power failure. The chart “ERP: Pump/Power Failure” summarizes the responses to power loss. If power loss occurs, this chart should be used in conjunction with the hurricane response plan.

Table 2-2. Emergency Response Plan: Hurricane/Tropical Storm

Component	Effects of Disaster			Emergency Response		
	None	Partial	Total	Type and Extent	Pre-Disaster	Post-Disaster
Wells		X		<ul style="list-style-type: none"> pumps lose primary power 	<ul style="list-style-type: none"> shut off pumps following evacuation 	<ul style="list-style-type: none"> utilize emergency stand-by engine see ERP: POWER FAILURE
South Shore Distribution System		X		<ul style="list-style-type: none"> possible breaks in distribution mains property damage leading to service line breaks possibility of contamination 	<ul style="list-style-type: none"> close valves on mains upstream of East Matunuck Beach and downstream of Succotash Bridge 	<ul style="list-style-type: none"> survey system according to priority list; identify repair needs rehabilitate system according to UD priority list and labor/material availability make temporary emergency connections using fire hose where possible
Mautucket Road Tank		X		<ul style="list-style-type: none"> tank needed as supply if pumps not operating possibility of contamination 	<ul style="list-style-type: none"> fill tank prior to storm 	<ul style="list-style-type: none"> monitor tank water quality asap use stored water to supply system if required closely monitor tank levels
Victoria Lane Tank		X		<ul style="list-style-type: none"> possible isolation from supply (main breaks) tank needed to supply eastern part of system if isolated or pumps not operating possibility of contamination 	<ul style="list-style-type: none"> fill tank prior to storm 	<ul style="list-style-type: none"> monitor tank water quality asap use stored water to supply system if required closely monitor tank level
Booster Station		X		<ul style="list-style-type: none"> pumps lose primary power 	<ul style="list-style-type: none"> shut off pumps following evacuation open & close valves in order to bypass the booster pumping station 	<ul style="list-style-type: none"> open pump station by-pass power up emergency generator see ERP: POWER FAILURE
Middlebridge System		X		<ul style="list-style-type: none"> possible supply cut-off from United Water Company property damage leading to service line breaks 		<ul style="list-style-type: none"> confirm status of water supply from Veolia (formerly SUEZ, United Water RI, Wakefield Water) survey system, develop prioritized repair list rehabilitate system according to UD priority list and labor/material availability

Table 2-2. Emergency Response Plan: Hurricane/Tropical Storm

Component	Effects of Disaster			Emergency Response		
	None	Partial	Total	Type and Extent	Pre-Disaster	Post-Disaster
Personnel		X		<ul style="list-style-type: none"> all available personnel will be participating in emergency procedures auxiliary personnel may be unavailable due to non-water emergencies possible absenteeism due to impaired travel 	<ul style="list-style-type: none"> confirm available personnel with TM/EMD station one crew at pump stations summon remaining personnel to EOC 	<ul style="list-style-type: none"> prioritize tasks and combine efforts review needs with TM/EMD obey safety rules; limit individual work time
Supplies and Transportation		X		<ul style="list-style-type: none"> transportation may be limited due to debris; site inaccessible material availability may be affected due to transportation and/or demand emergency supplies may be needed by other departments as well 	<ul style="list-style-type: none"> secure repair equipment/emergency supplies at storage tanks 	<ul style="list-style-type: none"> inform TM/EMD of access priorities prioritize use of available materials order/obtain additional materials asap
Communications		X		<ul style="list-style-type: none"> all phone utilities may be inoperable 	<ul style="list-style-type: none"> prepare radio communication system in EOC notify TM/EMD of any information for public announcement establish contact with Veolia (formerly SUEZ, United Water RI, Wakefield Water) 	<ul style="list-style-type: none"> utilize radio communications update information to TM/EMD contact state agencies as needed

Distribution

Distribution mains in storm surge threatened areas may be vulnerable to breakage if exposed by winds or tidal surges associated with the storm event. Much of the South Shore and Middlebridge systems lie in storm surge threatened areas. The areas' barrier beaches are especially susceptible to storm surge damage.

Two vulnerable sections of water main exist in the southeast portion of the South Shore distribution system. The first, approximately 6,000 feet long, connects Ocean Avenue at the terminus of Matunuck Beach Road to Succotash Road via a 12-inch main. This main is located primarily within fragile barrier beach areas between Potter Pond and Block Island Sound including East Matunuck Beach. As a result of Hurricane Bob in 1991, a portion of this main was exposed, which emphasizes the vulnerability of the water system to severe weather conditions. The Town installed another loop along the northern end of the system to provide water to the Mautucket Tank should the main along the beach be damaged or taken out of service

The Succotash Road bridge that crosses Potters Pond channel was recently reconstructed by the RIDOT. In conjunction with the bridge replacement project, a new 12" Class 52 ductile iron water main was affixed to the bridge superstructure. Isolation valves on either side of the bridge were also installed to isolate the bridge water main during storm events or in the event it is damaged. Similar to the Succotash Road bridge, RIDOT recently replaced the Middlebridge bridge that crosses Narrow River. In conjunction with the bridge replacement project, a new 12" Class 52 ductile iron water main was affixed to the bridge superstructure. Isolation valves on either side of the bridge were also installed to isolate the bridge water main during storm events or in the event it is damaged.

Also, substantial damage to homes, most likely within the storm surge threatened area, may involve damage or destruction of service connections, resulting in both volume and pressure loss within the system.

Prior to a hurricane predicted to affect South Kingstown, the TM/EMD and Town Council President initiate evacuation procedures. The evacuation area for a hurricane includes all of the South Shore service area with the exception of the Post Road portion north of Route 1. In this event, very little demand on the South Shore system would be anticipated while a hurricane is in progress.

2.3.2 Emergency Response

Emergency Preparation

Prior to a hurricane or tropical storm, all available water service personnel will participate in storm preparation. The Public Services Director will remain at the Emergency Operation Center (EOC) while the Water Superintendent and Water Operator will be utilized for field operations.

During the hurricane, all personnel will report to the EOC where they will remain available for emergency repairs and preparation if such activity is practical.

Water Division vehicles will remain with department personnel at the EOC during a hurricane emergency. Additional equipment and supplies will be available at the Highway Division headquarters on Asa Pond Road. The Highway Division building will be manned during a hurricane and has emergency equipment accessible at all times.

Prior to a hurricane or major storm, there will probably be sufficient time to implement basic measures to minimize disruption to the water system. Once a severe storm/hurricane is predicted, Water Division staff should fill the two storage tanks to maximize stored water in the event that problems arise with the standby engine or the Barrier Beach main becomes compromised. This process takes between 4 to 16 hours depending on the initial water level in the tanks and system demand. Based on the estimated time required to fill the tanks and the predicted arrival of the storm, the department will determine the most effective time to initiate filling of the tanks.

To ensure smooth conversion to the generator if primary power is lost, the Water Division should start all emergency generators during the emergency preparation period.

Assuming the Town initiates an evacuation, the Public Services Director will coordinate with the TM/EMD on evacuation operations. Once evacuation procedures are nearly complete, and after the tanks are filled, the Water Division will close valves at the following locations:

1. Barrier beach isolation valves at:
 - a. Ocean Ave, Matunuck
 - b. East Matunuck State Beach parking lot valve
2. Valve at the corner of Green Hill Beach Road and Green Hill Ocean Drive
3. Brownings Beach isolation valve at Card's Pond Road
4. Middlebridge Road isolation valve on west side of Middlebridge Bridge (note: east side of bridge features a check valve)
5. Succotash Bridge isolation valves on both sides of bridge

These include all valves upstream of the 100-year floodplain and isolation valves for the two bridge crossings, and for vulnerable barrier beach sections.

In the past, all areas served by the South Shore water system have been evacuated prior to the arrival of a major storm or hurricane. In the event that the town does not follow this normal procedure (e.g., the storm is more intense than predicted), all South Shore water customers must be notified of the status of their service in the event of an emergency. Residents in areas that will temporarily lose service must be informed of any such action and measures they must take to store water. Communications should be coordinated through the TM/EMD, who will have local media, such as radio, available for such announcements.

Remediation

The primary responsibility of the Water Division during a hurricane or severe storm is to plan for remediation after the storm has passed. The emergency crew should remain in the EOC until the danger period is over, as determined by the TM/EMD. If information about the water system is received at the EOC from the public or civil defense personnel, the Public Services Director will log each item and develop a written set of priorities. The Public Services Director also will make provisions to survey the system after the storm is over, according to the priorities discussed below.

Once the storm has passed, the Public Services Director will have a specific priority list prepared to distribute to emergency personnel assigned to the Water Division. If there has been no system information available during the storm, tasks should be conducted according to the following priority list:

Task 1

The Department will check major system components using a “windshield survey” in the following order:

- Veolia (formerly SUEZ, United Water RI, Wakefield Water) Wholesale Meter Pit
- Victoria Lane Water Tank
- Succotash Road- Potter’s Pond Bridge Crossing
- East Matunuck/ Matunuck Barrier Beach Water Main
- Matunuck Beach Road
- Matunuck School House Road
- Moonstone Beach Road to Card’s Pond Road
- Card’s Pond Road
- Factory Pond Pump Station and Earthen Dam
- Mautucket Road Water Tank
- Middlebridge Road and Bridge Crossing

This list includes the sections of main considered to be the most vulnerable during a storm event. The crew will report any breakage or other failure to the Director. Wherever possible, the crew will remediate the system “on the spot”. Where immediate repair is inappropriate, the crew will make any inventory of the materials and manpower required to make repairs, and report to the Public Services Director at the EOC. The survey will take into consideration available information on flooding of area streets.

Task 2

While the first crew is inspecting the system facilities, another person(s) should be directed to collect water samples from the pump station (if operating), each storage tank, and several

locations in the distribution systems (locations used for total coliform testing would probably provide a representative distribution). Water samples should be delivered to a nearby laboratory and analyzed for:

- fecal coliform
- total coliform
- chlorides
- sodium
- pH
- turbidity

The analyses are needed to ensure that no system contamination has occurred and should be conducted as soon as possible. Note that 24 hours or longer will be needed for the coliform tests. If any part of the system has been contaminated, steps outlined under System Contamination must be followed, including immediate notification of RIDOH.

Task 3

Once the water quality testing has verified that no system bacterial contamination has occurred, the Water Division will address the water system between Succotash Road to Matunuck Beach area. If the mains in Succotash Road, Ocean Avenue, and Matunuck Beach Road are sound, the crew will open the valves closed prior to the hurricane to allow flow to the Victoria Lane Tank. If portion(s) of these mains are broken, the crew will acquire all available hose from the fire department to connect the nearest two working hydrants on either side of the main break to allow flow to the affected area, unless the Public Services Director determines instead to proceed directly to repair of the break, based on evacuation that has occurred and the estimated time to repair the main and reestablish the Barrier Beach main.

Task 4

The crew will check the remaining distribution mains:

- Kettle Pond Drive
- Gooseberry Road
- Matunuck Beach Road to Route 1
- Green Hill Beach Road
- Mautucket Road
- Holly Road

The crew will follow the same survey/repair/inventory procedure as with the previous mains.

During the surveys, the crew should be in contact with the Public Services Director, who will maintain “inventory required” lists, order needed material/equipment, and establish a repair

schedule based on priority and material/equipment availability. The Director will direct repair activities of the assigned crew via radio according to the priority schedule.

2.3.3 System Deficiencies

The most probable disruption to the South Shore Water System is the possible break of any of the vulnerable sections of water main in the East Matunuck and Matunuck Beach area. Major structural damage would eliminate all water supply to the eastern portion of the water system until it can be repaired, potentially several days or longer. The significance of the loss of supply would depend upon whether the area had been evacuated, and the time and cost of repair.

Several system improvements could contribute to ensuring the supply of water to this area in the event of substantial damage to the existing mains.

As previously mentioned, installation of an 8-inch sub-aqueous water main connecting Galilee to Jerusalem was completed. This new main serves to supply Narragansett via Veolia (formerly SUEZ, United Water RI, Wakefield Water), essentially ending the previous wholesale agreement with South Kingstown. As a result of establishment of this interconnection, the former 12-inch wholesale interconnection between the South Shore distribution system and Narragansett's Jerusalem water system now serves as an emergency interconnection. In addition, in the event of an emergency, water could be supplied to the South Shore from Veolia (formerly SUEZ, United Water RI, Wakefield Water) via Narragansett, utilizing the sub-aqueous pipeline.

A major deficiency was addressed with the completion of a new wholesale connection that will provide a supply back-up to the portion of the system east of Matunuck Beach/Potter Pond (Succotash Road area). This included the completion of a connection, or system loop, between the existing 12-inch main at Matunuck Beach Road and Route 1 and the existing 12-inch main in Succotash Road. The installation of roughly 6,000 feet of new water main along Route 1 and Succotash Road provides the eastern portion of the South Shore system with an alternate connection with the South Shore supply. In the event of a break in the critical distribution mains in the southern portion of the system, flow will continue through this connection, thus continuing to provide water to the eastern portion of the system. The Water Division should evaluate creating more system reliability through looping other critical main sections as well.

South Kingstown could also improve its capability to respond to a hurricane or severe storm by preparing, in advance, information for public distribution and/or public announcement. Alternately, the Water Division could have a flyer with such information available so that it can quickly be printed and distributed in a pre-emergency situation (e.g., hurricane predicted 2-3 days away). Or, such information can be ready for public announcement on emergency radio programming.

In any case, the information should include:

- Keep clean containers readily available to collect water for drinking, cooking, and water for pets.

- Fill bathtub with water for washing.
- Keep ice on-hand for extended food storage. Save ice water for washing.

These preceding measures should be taken as soon as a severe hurricane storm warning is issued, or about 12 hours before a hurricane is predicted to land. (This is intended to give the Water Division adequate time to close valves before weather conditions are difficult.)

2.4 Winter Storm

The winter storm emergency category includes ice storms, blizzards, and extreme cold. According to the National Weather Service, a blizzard is a combination of winds in excess of 35 miles per hour and considerable falling or blowing snow, usually reducing visibility to less than a quarter of a mile. **Table 2-3** summarizes the potential impacts and required responses to a winter storm.

2.4.1 Effects on Facilities

An ice storm or severe winter storm could result in loss of primary electrical power and telephone communications. The tension pressures created by the added weight of ice or wet snow collected on power lines and trees near lines often result in breakage and power failure. High winds associated with a severe winter storm may also damage trees and utility lines causing a power loss. Impaired travel conditions and delayed accessibility frequently results in prolonged power failure and communication disruption. (For information and procedures relating directly to power failure see previous discussion in Section 2.2.)

The most severe direct damage to the water system resulting from a winter storm would be the freezing of system components in the event of severe cold. In South Kingstown, it is unlikely, but possible, that the water tanks could freeze if water is static during an extended cold spell; freezing of pipes (including valves and connections on the storage tanks as well as mains and services) is more likely. Mains that have minimal depth of cover or that are partially exposed have a high risk of freezing during severe cold periods. Pipe freezing has two impacts: first, pipe breakage often occurs from the expansion of water as it turns to ice, and second, freezing of a pipe will cut off water supply to downstream areas.

In the event that any of the critical lines freeze, portions of the system will be isolated from water supply. Specifically, the section of main along Matunuck Beach is covered only by sand and has been exposed by past storms. This segment would be more vulnerable to freezing and breakage. In the Middlebridge system, the interconnection with the Veolia (formerly SUEZ, United Water RI, Wakefield Water), located over the bridge, is probably the most vulnerable segment, although it is insulated and would not be expected to freeze.

Table 2-3. Emergency Response Plan: Winter Storm

Component	Effects of Disaster			Emergency Response		
	None	Partial	Total	Type and Extent	Pre-Disaster	Post-Disaster
Wells		X		<ul style="list-style-type: none"> pumps lose primary power 	<ul style="list-style-type: none"> if service area evacuated, shut off pumps see ERP: POWER FAILURE 	<ul style="list-style-type: none"> utilize emergency stand-by engine see ERP: POWER FAILURE
Booster Station		X		<ul style="list-style-type: none"> pumps lose primary power 	<ul style="list-style-type: none"> if service area evacuated, shut off pumps see ERP: POWER FAILURE 	<ul style="list-style-type: none"> open pump station by-pass utilize portable emergency generator
South Shore Distribution System		X		<ul style="list-style-type: none"> possible breaks in distribution mains property damage leading to service line breaks possibility of structural damage from snow/ice possibility of contamination 	<ul style="list-style-type: none"> keep system valves open maintain demand on system (open selected hydrants if needed) 	<ul style="list-style-type: none"> survey system according to priority list; identify repair needs rehabilitate system according to UD priority list and labor/material availability maintain demand on system make temporary emergency connections using fire hose where possible
Mautucket Road Tank		X		<ul style="list-style-type: none"> potential for partial freezing if prolonged cold possibility of valves freezing 	<ul style="list-style-type: none"> fill tank to half capacity prior to storm; However, Water Division staff need to ensure water is being cycled in the tank 	<ul style="list-style-type: none"> assess damage; conduct repairs use stored water to supply system if required monitor tank level; ensure some fluctuation
Victoria Lane Tank		X		<ul style="list-style-type: none"> possible isolation from supply (main breaks) tank needed to supply eastern part of system if isolated or pumps not operating, possibility of structural damage from snow/ice possibility of contamination 	<ul style="list-style-type: none"> fill tank to half capacity prior to storm; However, Water Division staff need to ensure water is being cycled in the tank 	<ul style="list-style-type: none"> assess damage; conduct repairs use stored water to supply system if required monitor tank level; ensure some fluctuation

Table 2-3. Emergency Response Plan: Winter Storm

Component	Effects of Disaster			Emergency Response		
	None	Partial	Total	Type and Extent	Pre-Disaster	Post-Disaster
Middlebridge System		X		<ul style="list-style-type: none"> • potential for main breaks • property damage could cause service line breaks • possible supply cut-off from Veolia (formerly SUEZ, United Water RI, Wakefield Water) 	<ul style="list-style-type: none"> • keep system valves open • maintain demand on system 	<ul style="list-style-type: none"> • confirm status of water supply from Veolia (formerly SUEZ, United Water RI, Wakefield Water) • survey system, develop prioritized repair list • rehabilitate system according to UD priority list and labor/material availability
Personnel		X		<ul style="list-style-type: none"> • all available personnel will be participating in emergency procedures • auxiliary personnel may be unavailable due to non-water emergencies • possible absenteeism due to impaired travel 	<ul style="list-style-type: none"> • confirm available personnel with TM/EMD • station one crew at pump stations • summon remaining personnel to EOC 	<ul style="list-style-type: none"> • prioritize tasks and combine efforts • review needs with TM/EMD • obey safety rules; limit individual work time
Supplies and Transportation		X		<ul style="list-style-type: none"> • transportation may be limited due to snow, ice, debris; access to facilities may be hampered • material availability may be affected due to transportation and/or demand • emergency supplies may be needed by other departments as well 	<ul style="list-style-type: none"> • secure repair equipment/emergency supplies at storage tanks • place tire chains in utility vehicles 	<ul style="list-style-type: none"> • inform TM/EMD of access priorities (e.g., snowplowing needs) • utilize available 4-wheel drive vehicles • prioritize use of available materials • order/obtain additional materials asap
Communications		X		<ul style="list-style-type: none"> • all phone utilities may be inoperable 	<ul style="list-style-type: none"> • prepare radio communication system in EOC • notify TM/EMD of any information for public announcement • establish contact with Veolia (formerly SUEZ, United Water RI, Wakefield Water) 	<ul style="list-style-type: none"> • utilize radio communications • update information to TM/EMD

2.4.2 Emergency Response

Emergency Preparation

Prior to a severe winter storm, all Water Division personnel will be available to participate in storm preparation activities. If there is a possibility that travel will be impaired during and immediately after the storm, emergency staff must remain at the EOC for the duration of the storm event. A blizzard or severe ice storm would likely require this staffing arrangement. Severe cold periods would usually require around-the-clock staffing.

Water Division vehicles will remain with department personnel at the Emergency Operation Center during a winter storm emergency and additional supplies will be available at the Highway Division headquarters (See Section 1.4 for directions). This building will be manned during a winter storm and emergency equipment will be accessible at all times.

All snow removal and road clearing equipment and Highway Division vehicles will likely be utilized by public works personnel. Arrangements for Highway Division personnel/equipment should be made through the TM/EMD.

Although the effects on the system caused by a winter storm may be similar to those due to a hurricane or tropical storm, preparation for a winter storm is an entirely different process. This is especially true when severely cold weather is expected. The best way to ensure against main or tank freezing is to maintain flow through the system. A stagnant portion of the network will lend itself to freezing. During or prior to a prolonged spell of severe cold, the Water Division must keep the network open as much as possible by opening hydrants if necessary (particularly in areas with small winter populations). If a certain area is prone to frozen service connections, the curb stop may be shut temporarily to isolate damage. Distribution mains however, should remain open. Tanks should be about half-full, to minimize freezing on the inside of the roof, and tank valves should also be open to ensure water level fluctuation.

Generally, Water Division personnel should exercise valves on critical mains during subfreezing temperatures and periodically through the winter to ensure proper operation in the event of a main break. As a preventive measure, all seasonal service connections should be properly drained and closed in the fall.

During a severe winter storm, Water Division personnel should be stationed at the EOC, with one person at the pump station in radio contact with the Water Division. To prepare for possible loss of telephone communications, radio communication systems should be established, and then used as appropriate.

Remediation

After the storm has passed, the Public Services Director will direct available crews to perform the inspections. The Public Services Director should obtain information about the condition of

roads and any apparent water main problems from the Highway Division, whose personnel will be plowing streets and will probably be the best first source of field observations. If Highway personnel encounter a main or service line break, damaged hydrants, or other system damage the Highway Division should notify the Public Services Director via the TM/EMD. Timely response to the situation by Water Division personnel could avert likely damage of public or private property. Based on this information, the Public Services Director will direct crews on the following tasks:

Task 1

The crew will check major system components using a “windshield survey” in the following order:

- Veolia (formerly SUEZ, United Water RI, Wakefield Water) Wholesale Meter Pit
- Victoria Lane Water Tank
- Succotash Road- Potter’s Pond Bridge Crossing
- East Matunuck/ Matunuck Barrier Beach Water Main
- Matunuck Beach Road
- Matunuck School House Road
- Moonstone Beach Road to Card’s Pond Road
- Card’s Pond Road
- Factory Pond Pump Station and Earthen Dam
- Mautucket Road Water Tank
- Middlebridge Road and Bridge Crossing

This list includes the sections of main considered to be the most vulnerable during a storm event. The crew will report any breakage, evidence of tank damage (ice, fallen trees, etc.), or other problems to the Director immediately. Wherever possible, the crew will remediate the system “on the spot”. Where immediate repair is inappropriate, the crew will make any inventory of the materials and manpower required to make repairs, and report to the Public Services Director at the EOC.

Task 2

Based on the damage reports, the Public Services Director shall determine the need for water quality testing. Generally, if there has been a main break, all downstream facilities and several immediately upstream facilities should be tested. If needed, another person(s) will collect water samples from such locations. Water samples should be delivered to a nearby laboratory and analyzed for:

- fecal coliform
- total coliform
- chlorides
- sodium
- pH
- turbidity

The analyses are needed to ensure that no system contamination has occurred and should be conducted as soon as possible.

Task 3

The crew will check the remaining distribution mains:

- Kettle Pond Drive
- Gooseberry Road
- Matunuck Beach Road to Route 1
- Green Hill Beach Road
- Mautucket Road
- Holly Road

The crew will follow the same survey/repair/inventory procedure as with the previous mains.

During the surveys, the crew should be in contact with the Public Services Director, who will maintain “inventory required” lists, order needed material/equipment, and establish a repair schedule based on priority and material/equipment availability. The Director will direct repair activities of the assigned crew via radio according to the priority schedule. As appropriate, the Public Services Director may request assistance, through the TM/EMD, from other departments for such tasks as tree removal, priority plowing of critical streets or access roads to pump station, tanks, etc.

2.4.3 System Deficiencies

The most probable disruption of a winter storm to South Kingstown would be pipe breaks related to freezing, possibly at the most vulnerable exposed pipes, or at the ends of pipes throughout the system with more stagnant flows. There are no system deficiencies in terms of the ability to take the preventive and restorative measures outlined above. Potentially, loss of water service to some areas would be related to such breaks and/or freezing; in particular, the eastern portion of the service area is vulnerable to loss of water supply if either of the pipes at Matunuck Beach or Succotash Bridge break or freeze. The Town also could improve its ability to respond to a winter storm by preparing materials for public distribution in advance, as discussed in Section 2.3.3.

2.5 Source Contamination

This emergency scenario includes any event that results in acute water quality contamination at the source wells. Acute source contamination could occur by a hazardous material incident, movement of a previously undetected plume, an intentional release in an effort to disrupt water system operations or other mechanism. According to the EOP, a hazardous material incident may be defined as “the uncontrolled release of hazardous materials which can cause casualties and damage to the environment.”

(Note: Non-acute source contamination, such as if sodium levels in the wells increased gradually over time, would represent a regulatory and health issue that must be addressed by the Water Division, but does not render the water supply unpotable overnight; therefore, non-

acute contamination is not considered an emergency for purposes of this plan.) **Table 2-4** summarizes the potential impacts and required responses to a source contamination event.

2.5.1 Effects on Facilities

The Water Division currently relies on Veolia (formerly SUEZ, United Water RI, Wakefield Water) as its sole source of potable water supply on an interim wholesale basis. Although the Factory Pond well field is not currently producing potable water, any contamination to the well field will be treated as though the well field is currently active. The effect of a hazardous material spill on the Factory Pond wells would depend greatly upon the location, amount, and type of hazardous release, and the manner and speed with which clean-up and remediation are completed. In recent years, the connection to the Veolia (formerly SUEZ, United Water RI, Wakefield Water) system as the primary source of supply and the relegation of the Town's wells to a backup supply has reduced the immediate critical nature of a release but emergency response to a contamination event would still be necessary. A lower level emergency would involve spill or dumping of a biodegradable substance at some distance from the wells; a higher-level emergency would involve spill of a highly toxic and persistent substance close to the wells. The immediate effect of such an event is to effectively lose the system's water source until the threat and/or extent of contamination is assessed. The worst-case scenario would render both wells contaminated, with remediation either long or questionable. In such a case, the South Shore system would lose its source indefinitely.

2.5.2 Emergency Response

Responsibilities and Resources

Overall, in a source contamination incident at Factory Pond, the primary responsibility for clean up and remediation is placed on the Town of South Kingstown. The state may provide emergency personnel in a support or regulatory capacity. For example, RIDOH would certainly provide input into decisions on reactivating the wells. The TM/EMD will be responsible for determining if emergency equipment and personnel available to the Town are adequate to handle emergency remediation without assistance from an outside party.

The Town of South Kingstown has the following spill response equipment available at the Factory Pond pump station:

- Speedy Dry
- Rakes and shovels
- Rubber gloves, raincoats, and rubber boots
- Industrial first aid kit
- Small loader/tractor with backhoe

The Union Fire District has additional equipment available, as well as trained emergency fire personnel.

Table 2-4. Emergency Response Plan: Source Contamination

Component	Effects of Disaster			Emergency Response		
	None	Partial	Total	Type and Extent	Preventive Measures	Post-Disaster
Wells		X	X	<ul style="list-style-type: none"> source contamination - one or both wells affected (could be caused by accidental spill, migration of pollutants from outside source, or problem with pumps/well casing) 	<ul style="list-style-type: none"> implement procedures for chemical handling in vicinity of pumps 	<ul style="list-style-type: none"> immediately shut off pumps; close trans. main activate emergency interconnection to Narragansett (8" Succotash Road) monitor water quality; assess health risk identify cause of contamination; assess extent and nature (persistence, treatability) develop Plan of Action (see text)
South Shore Distribution System	X	X		<ul style="list-style-type: none"> possibility of contamination in all or part of distribution system, if delay in detection of source problem 		<ul style="list-style-type: none"> monitor water quality at points throughout distribution system see ERP: SYSTEM CONTAMINATION
Mautucket Road Tank	X	X		<ul style="list-style-type: none"> tank needed as supply if wells out of service possibility of contamination 		<ul style="list-style-type: none"> monitor tank water quality asap use stored water to supply system if required after distribution system determined clean closely monitor tank levels
Victoria Lane Tank	X	X		<ul style="list-style-type: none"> tank needed as supply if wells out of service possibility of contamination 		<ul style="list-style-type: none"> monitor tank water quality asap use stored water to supply system if required after distribution system determined clean closely monitor tank level
Middlebridge System			X	<ul style="list-style-type: none"> source contamination if Veolia (formerly SUEZ, United Water RI, Wakefield Water) source or distribution system contamination occurs due to small size of system, contamination throughout distribution system would be likely 		<ul style="list-style-type: none"> confirm status of water supply from Veolia (formerly SUEZ, United Water RI, Wakefield Water) coordinate public announcements with Veolia (formerly SUEZ, United Water RI, Wakefield Water)
Booster Station	X	X		possibility of contamination in all parts of distribution system and storage tanks		<ul style="list-style-type: none"> immediately shut off pumps monitor water quality at booster station

Table 2-4. Emergency Response Plan: Source Contamination

Component	Effects of Disaster			Emergency Response		
	None	Partial	Total	Type and Extent	Preventive Measures	Post-Disaster
Personnel	X			<ul style="list-style-type: none"> all personnel should be available; fire/police may also be required 	<ul style="list-style-type: none"> confirm available personnel with TM/EMD station one crew at pump stations summon remaining personnel to EOC 	<ul style="list-style-type: none"> inform TM/EMD of response needs
Supplies and Transportation	X			<ul style="list-style-type: none"> should be unaffected; specialized supplies for cleanup may need to be purchased 	<ul style="list-style-type: none"> inventory chlorine for distribution system disinfection, and emergency spill equipment 	<ul style="list-style-type: none"> prioritize use of available materials order/obtain additional materials asap
Communications	X			<ul style="list-style-type: none"> should be unaffected 	<ul style="list-style-type: none"> prepare radio communication system in EOC notify TM/EMD of any information for public announcement establish contact with Veolia (formerly SUEZ, United Water RI, Wakefield Water) 	<ul style="list-style-type: none"> inform TM/EMD of all developments inform TM/EMD of public announcement requirements re: public health risk notify DHE, DEP, RIEMA of incident

Response and Remediation

The first respondent to a hazardous material spill in the vicinity of the wells must notify the Public Services Director and the Fire Department immediately with all known information. The respondent shall await support from the Water Division and other emergency personnel.

Substances may be identified by the responder according to coded symbols on containers or vehicles using the Department of Transportation Emergency Response Guidebook. After identification of the substance(s), the respondent will follow the appropriate response guidelines in the Guidebook, as directed by the Fire Chief.

The Public Services Director will notify the TM/EMD, and immediately dispatch a crew to shut down the pumps for both wells and the valve at the entrance to the distribution system, until the contamination can be assessed. The Public Services Director will also provide the first respondent with appropriate support and will notify RIDOH. Also, as part of the first response, in consultation with the Public Services Director, the TM/EMD will call the 24-hour chemical spill emergency line within 1 hour and initiate a ban on water use if necessary, coordinating public announcements. The table at the back of this section lists isolation and evacuation distances for some chemicals to be used to determine whether resident evacuation will be necessary.

The TM/EMD will coordinate with the Public Services Director and Fire Chief to determine whether outside assistance (i.e. private clean up contractor) will be required. Outside support for handling an emergency concerning a hazardous material spill include the following:

OUTSIDE SUPPORT FOR HAZARDOUS MATERIALS INCIDENTS

<u>Agency/Entity</u>	<u>Telephone</u>
Department of Environmental Management:	
General.....	(401) 222-4700
Office of Waste Management	(401) 222-2797
Office of Water Resources	(401) 222-3961
After-Hours (Emergencies).....	(401) 222-3070
 Chemtrec.....	 (800) 424-9300

While emergency personnel, headed by the Fire Department, are responding to the spill, the Public Services Director will direct well water testing by Water Division staff. Several water samples should be collected from each well, and from several points in the distribution system, and delivered to a local laboratory for immediate analysis for the possible contaminants. Local laboratories that can provide water analysis include:

LOCAL LABORATORIES

<u>Laboratory</u>	<u>Telephone</u>
RI Analytical..... 41 Illinois Avenue, Warwick, RI 02888	(401) 737-8500
New England Testing Laboratory..... 59 Greenhill Street, West Warwick, RI 02893	(401) 353-3420

Further response and well remediation will depend upon the type and extent of the source contamination. If the event is a spill, but well testing shows no contamination has occurred, the decision to restart the pumps should be reviewed with RIDOH. If groundwater contamination has occurred at the spill site, pumping of well water could act to attract groundwater from the contaminated area. Also, if there is no apparent contamination in the source, but the pumps remain shut off, the storage tank valves should be opened to provide additional water to the system. If contamination of the wells has already occurred, the extent of distribution system contamination needs to be assessed in more detail with additional sampling.

Throughout this assessment, the Public Services Director will coordinate with the TM/EMD, together with public health officials, to decide on water use restrictions. Announcements to the public outlining water use restrictions will be initiated by the TM/EMD.

If necessary, the Public Services Director, with the assistance of the TM/EMD, will also make provisions for the delivery of an emergency water supply to residents. If the storage tank water is judged to be unsafe, bottled water for short-term emergency use could be trucked to the South Shore and Middlebridge areas for distribution, or consumers could fill their own containers with water from other area suppliers (e.g., Veolia [formerly SUEZ, United Water RI, Wakefield Water]).

2.5.3 System Deficiencies

The new wholesale connection to the Veolia (formerly SUEZ, United Water RI, Wakefield Water) system on Post Road serves as the primary source of supply for the South Shore System and the wells have been relegated to backup status. In addition, the 12-inch interconnection that supplied Narragansett on a daily basis is no longer used for this purpose due to the construction of the Galilee to Jerusalem sub-aqueous pipeline. Therefore, in essence, this interconnection now serves as a backup source of supply between Narragansett and the South Shore distribution system.

Also, the 8-inch sub-aqueous pipeline, which provides Narragansett with water from Veolia (formerly SUEZ, United Water RI, Wakefield Water), could double as an emergency interconnection providing the South Shore distribution system with supply from Veolia via Narragansett.

There are no system deficiencies in relation to source contamination. To improve the Town's response capabilities, all Water Division personnel should be familiar with this plan. Also, personnel in the Fire and Police Department should know the well locations and the procedure for notifying the Public Services Director. Copies of the Department of Transportation Emergency Response Guidebook should be obtained and kept in all Water Division, Fire and Police Department vehicles.

2.6 System Contamination

System contamination may result from an external source or occur inside the system. In the former, there is an unprotected opening in the system (such as a pipe break) through which an external source contributes pollutants. Flow reversal or a sudden drop in water pressure is among the mechanisms that may draw contamination into an opening in the distribution system.

Leaking pipes -- whether due to age, accident, or related to another emergency situation such as freezing -- cross connections, water main breaks, faulty installation and repair are potential means of contaminants entering the distribution system. For example, an existing pipe break may go undetected if there is little water loss associated with it, but a hazardous material spill nearby may infiltrate through the soil and enter the pipe. With any known break or unprotected opening in the system, the Water Division should be aware of the possibility of contamination.

A variety of contaminants may enter the pipe. The most serious would include hazardous materials and chemicals from a spill or previously contaminated soils or groundwater. Microbiological contaminants are also a serious concern. One method for such organisms to enter the distribution system would be a pipe leak or break in or near a river crossing; such a break would likely go undetected, but if flows reverse, it could be possible for river water to enter the pipe. Poorly functioning septic systems, which are prevalent in the South Shore area, could be another source of microbiological pollutants. Of lesser degree would be materials such as salt (from road salting), which do not represent an acute health risk.

System contamination can also occur inside the system. In South Kingstown, internal contamination could occur if bacteria built up on pipe walls and was subsequently disturbed, such as through flushing of lines. This is unlikely but has happened in another community. The Town must continue its aggressive hydrant flushing program during the spring and fall of each year to prevent internal pipe bacteria build-up.

Methods for identifying system contamination are (1) testing for contamination following discovery of a main break, (2) routine distribution system sampling, and (3) customer complaints. Unless it is in conjunction with a known event such as a major pipe break, however, it may not be apparent that system contamination has occurred until it has caused contamination throughout the system. **Table 2-5** summarizes the potential effects and required responses of system contamination.

Table 2-5, Emergency Response Plan: System Contamination

Component	Effects of Disaster			Type and Extent	Emergency Response	
	None	Partial	Total		Preventive Measures	Post-Disaster
Wells	X			<ul style="list-style-type: none"> system contamination could be caused by accidental spill and water main break; backflow or as side effect of source contamination; 		<ul style="list-style-type: none"> operate pumps at high rate to flush system monitor water quality as precaution
South Shore Distribution System	X	X		<ul style="list-style-type: none"> possibility of contamination in all or part of distribution system, depending on source 	<ul style="list-style-type: none"> participate in dig safe programs exercise valves regularly 	<ul style="list-style-type: none"> monitor water quality at points throughout distribution system; determine extent isolate sections if possible assess public health risk conduct controlled system flushing if conventional contaminant chlorinate system if bacteria/microbiological
Mautucket Road Tank		X	X	<ul style="list-style-type: none"> possibility of contamination, depending on location of source and tank valve status 	<ul style="list-style-type: none"> exercise valves regularly 	<ul style="list-style-type: none"> close valves in/out of tank monitor tank water quality asap decontaminate tank water through chlorination or appropriate action
Victoria Lane Tank		X	X	<ul style="list-style-type: none"> possibility of contamination, depending on location of source and tank valve status 	<ul style="list-style-type: none"> exercise valves regularly 	<ul style="list-style-type: none"> close valves in/out of tank monitor tank water quality asap decontaminate tank water through chlorination or appropriate action
Middlebridge System		X	X	<ul style="list-style-type: none"> system contamination could result from spill and infiltration; backflow due to small size of system, contamination throughout distribution system would be likely 		<ul style="list-style-type: none"> confirm status of water supply from Veolia (formerly SUEZ, United Water RI, Wakefield Water) flush system appropriately; chlorinate
Booster Station	X	X		<ul style="list-style-type: none"> possibility of contamination in all or part of distribution system, depending on source 		<ul style="list-style-type: none"> conduct controlled system flushing if conventional contaminant

Component	Effects of Disaster			Emergency Response		
	None	Partial	Total	Type and Extent	Preventive Measures	Post-Disaster
Personnel	X			<ul style="list-style-type: none"> all personnel should be available; fire/police may also be required 	<ul style="list-style-type: none"> train all water division staff in hazardous materials response 	<ul style="list-style-type: none"> inform TM/EMD of response needs assign one person to sampling assign crew to valve closures; then use for decontamination/cleanup
Supplies and Transportation	X			<ul style="list-style-type: none"> should be unaffected; specialized supplies for cleanup may need to be purchased 		<ul style="list-style-type: none"> order any specialized equipment needed
Communications	X			<ul style="list-style-type: none"> should be unaffected 	<ul style="list-style-type: none"> prepare radio communication system in EOC notify TM/EMD of any information for public announcement establish contact with Veolia (formerly SUEZ, United Water RI, Wakefield Water) 	<ul style="list-style-type: none"> inform TM/EMD of all developments inform TM/EMD of public announcement requirements re: public health risk notify DHE, DEP, RIEMA of incident

2.6.1 Effects on Facilities

Contamination in any portion of the water system is likely to result in subsequent contamination of the downstream remainder of the network. Depending upon the contaminant, it may be necessary to implement an immediate ban or restriction on water use.

2.6.2 Emergency Response

South Shore System

The response to system contamination includes several steps. The Public Services Director will coordinate with the Veolia (formerly SUEZ, United Water RI, Wakefield Water) to determine if contamination is present prior to the system interconnection. If results indicate that the problem is stemming from the Veolia (formerly SUEZ, United Water RI, Wakefield Water) system, the Veolia (formerly SUEZ, United Water RI, Wakefield Water) will be responsible for decision-making with regard to water bans or restrictions. The type, extent, and health risk of contamination must be evaluated by testing water throughout the system. The Public Services Director will direct two crews in collecting samples. Samples should be collected at various locations throughout the system, including tanks and the major distribution mains. The samples should be delivered to a nearby laboratory for immediate analysis. Parameters to be analyzed will depend upon the suspected contaminant.

Also, as part of the initial reaction, if the contaminant is either unknown or considered an acute health threat, the Public Services Director must inform the TM/EMD of the need for public announcements, either for “boil water” orders, if microbiological contamination, or for a temporary ban on water use until the problem is assessed. The RIDOH must be notified as soon as possible.

If the contaminant is persistent (e.g., a hazardous material or chemical), known contaminated areas should be isolated by closing valves to minimize the extent of the problem. Tank valves shall be closed immediately to prevent contamination to stored water, and tank water will be tested for contamination that may have already occurred.

If the contaminant is persistent (e.g., a hazardous material or chemical), known contaminated areas should be isolated by closing valves to minimize the extent of the problem. Tank valves shall be closed immediately to prevent contamination to stored water, and tank water will be tested for contamination that may have already occurred.

The Public Services Director will assign one clerk to answering telephone calls from customers and will issue personnel to follow up as appropriate. At a minimum, all complaints should be entered onto a log, noting location, date and time, nature and duration of complaint. Additional follow-up could include field visit/interview at complaint location, testing program, and/or survey of local doctors and hospitals. Also, as more information about the system contamination is developed, any limits on water use should be revised and publicized in coordination with RIDOH and the TM/EMD.

Monitoring procedures shall continue until determined by RIDOH, possibly until either of the following conditions is satisfied:

- The Water Division identified the source of contamination and removes or corrects the factors which allowed the contamination event to occur, and the system tests clean, or;
- The Water Division does not identify the source or contributing factors but has monitored the system at length with negative results suggesting that the event was an isolated occurrence with virtually no possibility of repeating itself.

If the system contamination is a persistent chemical and will be unusable for more than 24 hours, the Public Services Director shall coordinate with the TM/EMD and emergency management agencies to determine the best method of supplying the system customers with potable water. Assuming in-home disinfection of the water (i.e., boiling water) is not an option, the TM/EMD will most likely request assistance from area communities, or state or federal resources to establish a rationed supply to District customers. If tank water has tested negative for contamination, this may be utilized for public distribution.

Further system response depends upon the type of contaminant. If the distribution system is coG1

contaminated with bacteria, treatment with a disinfectant such as chlorine could be effective, if adequate safety measures are implemented. For other contaminants, system flushing might be appropriate, if conducted in a careful manner. The Public Services Director will be responsible for coordination with the RIDOH, particularly on selection of a response.

In conjunction with any response, water testing should be conducted throughout the system to check that the response is working and, before lifting use bans or boil water orders, to ensure that the system is free of contamination.

Middlebridge System

Contamination in the Middlebridge system would be handled in a similar manner. The Public Services Director will coordinate with the Veolia (formerly SUEZ, United Water RI, Wakefield Water) to determine if contamination is present prior to the system interconnection. If results indicate that the problem is stemming from the Veolia (formerly SUEZ, United Water RI, Wakefield Water) system, the Veolia (formerly SUEZ, United Water RI, Wakefield Water) will be responsible for decision-making with regard to water bans or restrictions. The Public Services Director would continue in the role of coordinating with the TM/EMD regarding notifying the public and maintain records on any customer complaints received during the crisis. If the Middlebridge system is rendered without a drinkable water supply (i.e., in-home disinfection is deemed ineffective) the Town of South Kingstown could utilize the South Shore system to supply the area with water on a temporary basis at a determined pick-up location(s). The Matunuck Fire Station may be appropriate for this use.

If contamination in the Middlebridge area is determined to stem from the distribution network itself, the South Kingstown Water Division will be responsible for rehabilitation of the network according to the guidelines discussed previously for the South Shore system. Close

coordination with both the Veolia (formerly SUEZ, United Water RI, Wakefield Water) and the RIDOH will be important in diagnosing and correcting the problem.

2.6.3 System Deficiencies

South Kingstown has no system deficiencies in relation to a system contamination incident. The Water Division could initiate some activities, including a leak detection program, to minimize the likelihood of such an event. The Water Division could also obtain an emergency phone number for one or more of the local laboratories.

2.7 Flood/ Coastal Erosion

Flooding and coastal erosion within South Kingstown has been limited in the past. Coastal flooding associated with a storm surge has involved barrier beaches along Block Island Sound. The resulting erosion impacts infrastructure including water infrastructure. Flash and river rain flooding also has occurred along the banks of Point Judith Pond in the South Shore area and the Pettaquamscutt River in the Middlebridge area.

Table 2-6 summarizes the impacts and responses for a flood and coastal erosion.

2.7.1 Effects on Facilities

The pumps at the system supply wells are located at Factory Pond above the 100-year floodplain. The two distribution system tanks also are outside of the 100-year floodplain.

Several critical mains do lie within the 100-year floodplain or are in areas directly impacted by coastal erosion and storm surges that occur more frequently. A section of Matunuck School House Road as well as southern portions of Matunuck Beach Road, Ocean View Avenue and Succotash Road including the Narragansett meter pit, and Middlebridge Road are within the 100-year floodplain. Flooding of these areas coupled with any leaks or breaks within these areas of the water network could result in saltwater entering the distribution system, or system contamination.

Substantial damage to homes could include destruction of service connections, potentially resulting in volume and pressure loss within the system.

2.7.2 Emergency Response

Emergency Preparation

Prior to a predicted flood, all available water service personnel will participate in storm preparation. The Public Services Director will remain at the EOC while the Water Superintendent and two service persons will be needed for field operations. During the flood all personnel will report to the EOC where they will remain available for emergency repairs unless relieved by the TM/EMD or Public Services Director. The Highway Division headquarters will be manned during a flood so that emergency equipment is accessible at all times.

Table 2-6. Emergency Response Plan: Flood/Erosion

Component	Effects of Disaster			Emergency Response		
	None	Partial	Total	Type and Extent	Pre-Disaster	Post-Disaster
Wells	X			<ul style="list-style-type: none"> • direct impact unlikely, outside of floodplain; • possible effect on electricity-- see ERP: Power 		
South Shore Distribution System		X		<ul style="list-style-type: none"> • possible breaks -- several vulnerable pipes in floodplain, along coastal areas and beaches • possibility of contamination 	<ul style="list-style-type: none"> • close valves on mains upstream of Matunuck Beach and downstream of Succotash Bridge 	<ul style="list-style-type: none"> • survey system according to priority list; identify repair needs
Booster Station				<ul style="list-style-type: none"> • direct impact unlikely, outside of floodplain; • possible effect on electricity -- see ERP: Power 		
Mautucket Road Tank	X			<ul style="list-style-type: none"> • direct impact unlikely, outside of floodplain 	<ul style="list-style-type: none"> • fill tank prior to storm 	
Victoria Lane Tank		X		<ul style="list-style-type: none"> • outside of floodplain 	<ul style="list-style-type: none"> • fill tank prior to storm 	<ul style="list-style-type: none"> • use stored water to supply system if required, esp. eastern portion if cut off by main breaks
Middlebridge System			X	<ul style="list-style-type: none"> • source contamination if Veolia (formerly SUEZ, United Water RI, Wakefield Water) source or distribution system contamination occurs • due to small size of system, contamination throughout distribution system would be likely 		<ul style="list-style-type: none"> • confirm status of water supply from Veolia (formerly SUEZ, United Water RI, Wakefield Water) • coordinate public announcements with Veolia (formerly SUEZ, United Water RI, Wakefield Water)Veolia
Personnel	X			<ul style="list-style-type: none"> • all personnel should be available; fire/police may also be required 	<ul style="list-style-type: none"> • confirm available personnel with TM/EMD station one crew at pump stations summon remaining personnel to EOC 	<ul style="list-style-type: none"> • inform TM/EMD of response needs
Supplies and Transportation	X			<ul style="list-style-type: none"> • should be unaffected; some roads/bridges may be temporarily inaccessible if flooded 	<ul style="list-style-type: none"> • inventory chlorine for distribution system disinfection, and emergency spill equipment 	<ul style="list-style-type: none"> • prioritize use of available materials order/obtain additional materials asap

Table 2-6. Emergency Response Plan: Flood/Erosion						
Component	Effects of Disaster			Type and Extent	Emergency Response	
	None	Partial	Total		Pre-Disaster	Post-Disaster
Communications	X			<ul style="list-style-type: none"> • should be unaffected 	<ul style="list-style-type: none"> • prepare radio communication system in EOC • notify TM/EMD of any information for public announcement • establish contact with United Water Co. 	<ul style="list-style-type: none"> • inform TM/EMD of all developments • inform TM/EMD of public announcement requirements re: public health risk • notify DHE, DEP, RIEMA of incident

Before a major flood, there will probably be sufficient time to implement basic disaster aversion measures. Once flooding is predicted, the Water Division shall fill the two storage tanks to capacity to maximize stored potable water. This process takes 4 to 16 hours depending on the initial water level in the tanks, and system demand.

The Public Services Director will coordinate with the TM/EMD on evacuation operations. Depending upon the anticipated flood severity and the extent of evacuations, the vulnerable mains should be isolated. These include the beach mains in the South Shore system and the Middlebridge Road interconnection in the Middlebridge system (see Critical Valve Closings).

Remediation

The primary responsibility of the Water Division during a flood event is to plan for remediation after the storm has passed. The emergency crew should remain in the operation center until the danger period is over.

As information on system conditions and damage is received at the EOC, the Public Services Director should log each item and develop a written set of priorities. Once the flood waters have receded, the Public Services Director should distribute a specific priority list to emergency personnel assigned to the Water Division. The priority list will include:

Task 1

One crew will check major distribution mains and tanks using a “windshield survey” as follows:

- Succotash Road
- Matunuck Beach Road to Ocean Avenue
- Card’s Pond Road
- Matunuck School House Road from Green Hill Beach Road to Holly Road
- Middlebridge

The crew will immediately report any damage to the Public Services Director via radio. The crew will make an inventory of the materials and manpower required to make repairs, and report to the Public Services Director at the EOC.

Task 2

While the first crew is inspecting the system facilities, another person(s) should be directed to collect water samples from the pump station (if operating), each storage tank, and several locations in the distribution systems (locations used for total coliform testing would probably provide a representative distribution). Water samples should be delivered to a nearby laboratory and analyzed for:

- fecal coliform
- total coliform
- chlorides

- sodium
- pH
- turbidity

The analyses are needed to ensure that no system contamination has occurred and should be conducted as soon as possible. If any part of the system has been contaminated, steps outlined under System Contamination must be followed, including immediate notification of RIDOH.

Task 3

If the isolated mains are sound, the Water Division will open the closed valves in these mains to allow flow. If a portion of any main is broken, the crew will acquire all available hose from the fire department to connect the nearest two working valves around sound pipe to allow some flow to the downstream area.

During the survey the Public Services Director will receive “inventory required” lists and establish a repair schedule based on priority and material/equipment availability.

2.7.3 System Deficiencies

The greatest weaknesses of the South Kingstown water systems with respect to flooding are the vulnerability of the Matunuck Beach Road distribution main and the Middlebridge Road bridge interconnection. Major damage to the Matunuck Beach Road main or a leak could result in system contamination of the South Shore system. Damage to the Middlebridge interconnection would eliminate service to the Middlebridge system, and potable water would be required until it could be repaired.

To reduce the risk of system contamination through infiltration, South Kingstown should consider a leak detection program with pipes in the floodplain having priority for inspection and repair.

2.8 Fire

A fire emergency could involve either a fire at any of the system components (e.g., pump station or tank), or a major fire in the service area that creates excessive system demand. **Table 2-7** summarizes the impacts and responses for a fire.

2.8.1 Effects on Facilities

Fire at any of the key system components - such as an electrical fire at critical facilities - could render that component inoperable for an undetermined length of time. Fire at either of the storage tanks would probably not hinder system performance, although the ability to respond to peak demands and/or system pressures could be affected. A major fire within the service area would have the effect of increasing demand on the system.

Table 2-7. Emergency Response Plan: Fire						
Component	Effects of Disaster			Emergency Response		
	None	Partial	Total	Type and Extent	Prevention Measures	Post-Disaster
Wells	X	X		<ul style="list-style-type: none"> • fire at pump stations could cause damage • major fire in service area could increase demand 	<ul style="list-style-type: none"> • maintain fire detection equipment at pump stations, signal directly to Fire Dept. and Water Division 	<ul style="list-style-type: none"> • Shut off power to stations; observe all safety rules • assess extent of damage and timeframe for repair; make repairs • utilize one well with emergency generator, if feasible; test water quality • in event of high demand for fire in dist. sys., use second well to fill pump trucks, if appropriate
South Shore Distribution System	X			<ul style="list-style-type: none"> • major fire in service area could increase demand 	<ul style="list-style-type: none"> • monitor system pressures on regular basis 	<ul style="list-style-type: none"> • maximize water to fire by closing side streets, portions of system, if necessary
Mautucket Road Tank	X	X		<ul style="list-style-type: none"> • fire at tank could cause damage • major fire in service area could increase demand 	<ul style="list-style-type: none"> • maintain fire detection equipment at tank, signal directly to Fire Dept. and Water Division 	<ul style="list-style-type: none"> • shut off power; assess damage and repair needs; make repairs • if major tank leak occurs, use sand bags to direct water to minimize property damage • open valve to provide additional water to system
Victoria Lane Tank	X	X		<ul style="list-style-type: none"> • fire at tank could cause damage • major fire in service area could increase demand 	<ul style="list-style-type: none"> • see above for Mautucket Rd. tank 	<ul style="list-style-type: none"> • see above for Mautucket Rd. tank
Booster Station	X			<ul style="list-style-type: none"> • fire at booster station is unlikely 	<ul style="list-style-type: none"> • maintain fire detection equipment at pump stations, signal directly to Fire Dept. and Water Division 	<ul style="list-style-type: none"> • shut off power; assess damage and repair
Middlebridge System	X			<ul style="list-style-type: none"> • major fire in service area could increase demand 		<ul style="list-style-type: none"> • confirm availability of excess water from Veolia (formerly SUEZ, United Water RI, Wakefield Water)
Personnel	X			<ul style="list-style-type: none"> • no impact; all personnel should be available 	<ul style="list-style-type: none"> • in event of fire in service area drawing excess demand, station crew at pump station to monitor pump/well performance 	<ul style="list-style-type: none"> • inform TM/EMD of response needs

Table 2-7. Emergency Response Plan: Fire						
Component	Effects of Disaster			Emergency Response		
	None	Partial	Total	Type and Extent	Prevention Measures	Post-Disaster
Supplies and Transportation	X	X		<ul style="list-style-type: none"> • fire at pump station or tank would probably require repair equipment beyond normal inventory 	<ul style="list-style-type: none"> • maintain equipment lists for pump stations and tanks 	<ul style="list-style-type: none"> • prioritize use of available materials • order/obtain additional materials asap
Communications	X			<ul style="list-style-type: none"> • should be unaffected 		<ul style="list-style-type: none"> • inform TM/EMD of all developments • notify DHE, DEP, RIEMA of incident

2.8.2 Emergency Response

Any fire must be reported to the Fire Department immediately. The Fire Department will direct all response. In the case of a fire at a system component, the Public Services Director or designee should report to the scene. In the case of a major fire in the service area, the Public Services Director will coordinate with the Fire Chief to assess adequacy of water supply. The Public Services Director will then direct Water Division crews as required. For example, the tank valves should be opened to increase supply and system pressure.

2.8.3 System Deficiencies

The South Shore and Middlebridge systems are capable of providing adequate firefighting water throughout the service areas. To minimize the likelihood of major fire damage to a system component, fire detection equipment should be maintained at the pump stations and tanks. This equipment should send a signal directly to the Fire Department, and if possible also to the Water Department.

2.9 Drought

Drought is another emergency situation that occurs periodically in New England. Often, drier than average summers result in short-term water shortages, although fall rains may bring reservoirs back to normal levels. **Table 2-8** summarizes the impacts and responses for a drought.

Due to the fact that the Town currently primarily relies upon Veolia (formerly SUEZ, United Water RI, Wakefield Water) for its source of supply, tasks of drought management will mainly fall upon Veolia (formerly SUEZ, United Water RI, Wakefield Water). The Town will need to comply with the State Drought Indices and Phases summarized in Section 2.9.2.

2.9.1 Effects on Facilities

The major impact of a drought on the South Kingstown Water System results in less available water, and thus reduce the ability of the system to meet customer demand. No damage to any system components would be anticipated. The impact of a regional drought on the Middlebridge system would depend upon the ability of Veolia (formerly SUEZ, United Water RI, Wakefield Water) to obtain water from its wholesale supplier and manage its multiple wells as backup supplies.

2.9.2 Emergency Response

Water Division personnel will be aware of a drought situation gradually, as the weather pattern continues, rather than an immediate incident such as a fire. Thus, response to a drought begins well before there is a “problem.”

As general practice, the Water Division must track supply and demand. Keeping track of this relationship is necessary to be able to identify a shortage as it develops, and to better understand well performance. From June through September, the Water Superintendent shall submit weekly reports to the Public Services Director summarizing daily supply and demand and peak hourly demand.

Table 2-8. Emergency Response Plan: Drought

Component	Effects of Disaster			Emergency Response		
	None	Partial	Total	Type and Extent	Prevention Measures	Post-Disaster
Wells		X		<ul style="list-style-type: none"> demand exceeds yield; either or both wells could dry up 	<ul style="list-style-type: none"> monitor well performance; closely track supply-demand, esp. in summer refine safe yield estimates 	<ul style="list-style-type: none"> monitor production of each well; alternate wells each day to provide recharge time if one well fails, use other well implement conservation / water use restrictions acc. to established plan assess ability to meet reduced demand; and need for external sources
Booster Station	X			<ul style="list-style-type: none"> no direct impact on booster pump station 		
South Shore Distribution System	X					
Mautucket Road Tank	X			<ul style="list-style-type: none"> no direct impact on tank 	<ul style="list-style-type: none"> monitor tank levels regularly, esp. during summer establish minimum level for safety (e.g., for fire fighting during water shortage) 	<ul style="list-style-type: none"> use tank during peak day and peak times of day to alleviate demand on wells fill tank at night to store water for use during day
Victoria Lane Tank	X			<ul style="list-style-type: none"> no direct impact on tank 	<ul style="list-style-type: none"> see above for Mautucket Rd. tank 	<ul style="list-style-type: none"> see above for Mautucket Rd. tank
Middlebridge System	X			<ul style="list-style-type: none"> drought would affect Veolia (formerly SUEZ, United Water RI, Wakefield Water) ability to supply Middlebridge 		<ul style="list-style-type: none"> confirm status of water supply from Veolia (formerly SUEZ, United Water RI, Wakefield Water) work with Veolia (formerly SUEZ, United Water RI, Wakefield Water) to implement water use restrictions, provide information to public
Personnel	X			<ul style="list-style-type: none"> no impact; all personnel should be available 	<ul style="list-style-type: none"> personnel should be familiar with water use restrictions 	<ul style="list-style-type: none"> inform TM/EMD of response needs use personnel to assist in public information about water use restrictions
Supplies and Transportation	X			<ul style="list-style-type: none"> should be unaffected 		
Communications	X			<ul style="list-style-type: none"> should be unaffected 		<ul style="list-style-type: none"> inform TM/EMD of all developments notify DHE, DEP, RIEMA of incident

Based on this information and past experience, the Public Services Director is responsible for determining when there is danger of a water shortage, and when a water shortage is occurring. The Public Services Director will direct the Water Division in taking appropriate actions, including:

- Confer with Veolia (formerly SUEZ, United Water RI, Wakefield Water), the Town of Narragansett Water Division and Kingston Water District to determine if a water shortage is regional in nature or limited to the South Shore and/ Middlebridge water system(s)
- Implement utility specific or regional conservation/water use restrictions/ bans
- Use storage tanks during peak times of day to alleviate peak demands; fill tanks at night when demand is lower
- Consider the use of the wells as a back-up source

As these measures are implemented, the Public Services Director will continually re-evaluate the situation, and assess the ability of the system to meet reduced demand.

The Town will be required to comply with the State Drought Indices and Phases contained within the State Guide Plan 721.0 "Rhode Island Water 2030." Five (5) phases are used to categorize the severity of drought including:

- Normal,
- Advisory,
- Watch,
- Warning, and
- Emergency.

Each phase has specific triggers and responses. The Water Resources Board collects data, monitors conditions/indices and convenes the Drought Steering Committee. The Drought Steering Committee reviews the information and indices, advises the Water Resources Board, recommends phase of drought and corresponding actions. The Water Resources Board also coordinates implementation and actions, issues press releases and provides recommendations to the Governor. The Governor declares the phases of drought, issues Executive Orders and Emergency Declarations as required.

The Water Resources Board works with water suppliers to identify and assess applicable regional indicators including sources of supply, static groundwater levels, reservoir levels and other storage and capacity issues. The Water Resources Board works with the National Weather Service, USGS and water suppliers to correlate information for the Drought Steering Committee. Data made available by the National Drought Mitigation Center is used along with the Palmer Drought Index, precipitation data, stream flow levels, ground water levels and reservoir levels.

The Normal, Advisory and Watch drought levels are declared on a State-wide basis. The Warning and Emergency drought levels are declared based on Region. The State includes seven (7) regions and the Town is within the Southeastern Region. Refer to the State Guide Plan 721.0 for the current drought trigger levels and drought mitigation actions.

2.9.3 System Deficiencies

The Water Division has addressed short-term water shortages in the past with no apparent deficiencies. As discussed in the Water Supply Management Plan, the Town has enough supply to meet current and future demands.

To better address water shortages should they occur, South Kingstown could develop specific water use restrictions for the South Shore and Middlebridge systems. Typically, the most useful plans relate trigger levels with different levels of water use restrictions. For example, the first level of restrictions could limit landscaping water use to once per week and prohibit pool filling; the subsequent levels would be more restrictive. Water use restrictions can be either voluntary or mandatory. Some communities have found voluntary programs to be effective when accompanied by aggressive public education efforts. Having a plan outlined before a drought situation helps to minimize conflict over measures and allows Water Division staff to spend time on enforcement and public education, rather than developing the policies.

2.10 Civil Disorder / Vandalism / Terrorism

The term “civil disorder” is used to categorize malicious acts by a group or individual resulting in damage to public and private property. This includes the potential for a specific attack identified in the Vulnerability Assessment prepared in March 2005 for the Water System. The EOP states that “The Town of South Kingstown should examine critical facilities within the community with the intent of setting priorities for the deployment of law enforcement officials if the municipality is ever confronted with a terrorist threat.” **Table 2-9** summarizes possible impacts and responses to a civil disorder.

2.10.1 Effects on Facilities

The effect of civil disorder on the South Shore and Middlebridge water systems would vary greatly depending upon the type and extent of damage to the systems and to the town. There are two broad categories by which civil disorder may be identified. One includes random vandalism resulting in damage to the water system but where the system itself is not targeted.

The other encompasses deliberate activities targeting the system itself. The latter may be more dangerous because there may be no indication of a threat beforehand, and any such activities may go undetected until after they have impacted the systems.

Specific effects on the systems may include any aspect of the emergencies discussed in this ERP. Since acts of terrorism or vandalism cannot be anticipated, system impacts must be assessed as events occur. As the department becomes aware of actions of civil disorder it will be necessary to determine proper response according to these impacts and to handle each situation as a separate emergency.

Table 2-9. Emergency Response Plan: CIVIL DISORDER / VANDALISM / TERRORISM

Component	Effects of Disaster			Emergency Response		
	None	Partial	Total	Type and Extent	Prevention Measures	Post-Disaster
Wells		X		<ul style="list-style-type: none"> possible loss of power possible damage to pumps/mechanical equipment possible well contamination 	<ul style="list-style-type: none"> frequent inspections at pump stations report suspicious activity to UD, police security measures (fences, locks) maintain SCADA Alarms 	<ul style="list-style-type: none"> see ERP: POWER FAILURE see ERP: SOURCE CONTAMINATION
South Shore Distribution System		X		<ul style="list-style-type: none"> possible breaks in distribution mains possibility of contamination possible supply shortage 	<ul style="list-style-type: none"> report suspicious activity to UD, police 	<ul style="list-style-type: none"> survey system according to priority list; identify repair needs rehabilitate system according to UD priority list and labor/material availability make temporary emergency connections using fire hose if necessary
Mautucket Road Tank		X		<ul style="list-style-type: none"> possible isolation from supply (main breaks) possibility of structural damage possibility of contamination 	<ul style="list-style-type: none"> report suspicious activity to UD, police maintain SCADA Alarms 	<ul style="list-style-type: none"> close valve immediately and assess damage; make repairs monitor tank water quality and level use stored water to supply system if required see ERP: SYSTEM CONTAMINATION
Victoria Lane Tank		X		<ul style="list-style-type: none"> possible isolation from supply (main breaks) tank needed to supply eastern part of system, if isolated or pumps not operating possibility of structural damage possibility of contamination 	<ul style="list-style-type: none"> report suspicious activity to UD, police maintain SCADA Alarms 	<ul style="list-style-type: none"> assess damage; conduct repairs use stored water to supply system if required monitor tank water quality and level see ERP: SYSTEM CONTAMINATION

Table 2-9. Emergency Response Plan: CIVIL DISORDER / VANDALISM / TERRORISM

Component	Effects of Disaster			Emergency Response		
	None	Partial	Total	Type and Extent	Prevention Measures	Post-Disaster
Middlebridge System		X		<ul style="list-style-type: none"> • potential for main breaks • possible supply cut-off from Veolia (formerly SUEZ, United Water RI, Wakefield Water)Veolia • possible system contamination 	<ul style="list-style-type: none"> • report suspicious activity to UD, police 	<ul style="list-style-type: none"> • confirm status of water supply from Veolia (formerly SUEZ, United Water RI, Wakefield Water) • see ERP: SOURCE CONTAMINATION • see ERP: SYSTEM CONTAMINATION • make repairs; place temporary connections/ diversions where necessary • coordinate with Veolia (formerly SUEZ, United Water RI, Wakefield Water) and agencies for bottled water distribution
Booster Station		X		<ul style="list-style-type: none"> • possible loss of power • possible damage to pumps • possible well contamination 	<ul style="list-style-type: none"> • frequent inspections at pump stations • report suspicious activity to UD, police • security measures (fences, locks) 	<ul style="list-style-type: none"> • see ERP: POWER FAILURE • see ERP: SOURCE CONTAMINATION
Wholesale Connections		X		<ul style="list-style-type: none"> • loss of supply • damage to mechanical equipment • loss of critical water system data 	<ul style="list-style-type: none"> • frequent inspections at vaults • report suspicious activity to UD, police • security measures (fences, locks) 	<ul style="list-style-type: none"> • assess damage and make repairs • use wells as possible backup source of supply • see alternative supply from Veolia (formerly SUEZ, United Water RI, Wakefield Water)
SCADA System		X		<ul style="list-style-type: none"> • loss of system alarms • increased need for operational manpower • damage to equipment 	<ul style="list-style-type: none"> • frequent inspections at office facility • report suspicious activity to UD, police • security measures (fences, locks) 	<ul style="list-style-type: none"> • assess damage and make repairs • increase manpower to account for manual operation • increase security at all facilities until alarms repaired

Table 2-9. Emergency Response Plan: CIVIL DISORDER / VANDALISM / TERRORISM

Component	Effects of Disaster			Emergency Response		
	None	Partial	Total	Type and Extent	Prevention Measures	Post-Disaster
Water Department Office and Repair Facility		X		<ul style="list-style-type: none"> • damage to equipment • loss of SCADA • loss of critical records 	<ul style="list-style-type: none"> • frequent inspections at office facility • report suspicious activity to UD, police • security measures (fences, locks) • backup critical records in alternative location 	<ul style="list-style-type: none"> • assess damage and make repairs • increase manpower to account for manual operation • increase security at all facilities until alarms repaired
Personnel		X		<ul style="list-style-type: none"> • auxiliary personnel may be unavailable due to non-water emergencies 	<ul style="list-style-type: none"> • confirm available personnel with TM/EMD • station one crew at pump stations 	<ul style="list-style-type: none"> • prioritize tasks and combine efforts • review needs with TM/EMD • provide police protection for workers if necessary; increase overall security • work in teams if security threat persists
Supplies and Transportation		X		<ul style="list-style-type: none"> • transportation could be restricted and/or access to facilities may be hampered • emergency supplies may be needed by other departments as well 	<ul style="list-style-type: none"> • secure repair equipment/ emergency supplies at storage tanks 	<ul style="list-style-type: none"> • inform TM/EMD of access priorities • prioritize use of available materials • order/obtain additional materials asap
Communications		X		<ul style="list-style-type: none"> • phone utilities may be inoperable 	<ul style="list-style-type: none"> • prepare radio communication system in EOC or appropriate place • notify TM/EMD of any information for public announcement • establish contact with Veolia (formerly SUEZ, United Water RI, Wakefield Water) 	<ul style="list-style-type: none"> • utilize radio communications • update information to TM/EMD • publicize status of water supply, especially any restrictions

Deliberate terrorist acts on the water system might include poisoning of the wells, Factory Pond or the storage tanks, or explosion of any of the major system components (pump stations, tanks, etc.). Such actions would necessitate provisions for an alternate source of water to supply the service area.

Random acts of destruction throughout the town would probably result in system damage to some extent. Detonation of explosives in any location may indirectly cause damage to system components and distribution. The extent of system damage might include a service line rupture, destruction of a critical water main or storage tank, or contamination of the supply. A period of heightened awareness may precede an event of civil disorder. There may, however, be little or no warning.

2.10.2 Emergency Response

In the event that the water system is the primary target of a terrorist act, most of the Town's emergency resources will be available for response and system rehabilitation. If damage to the water system is the result of aimless destruction, however, auxiliary resources will likely be required to respond to other emergencies within the jurisdictions of their respective departments. Interdepartmental coordination via the TM/EMD will be of primary importance under these circumstances.

Emergency response to civil disorder involves preparation (when possible), communications, and system remediation. First, during a period of civil unrest, or if warnings have been made, the Water Division must take every precaution to make critical components secure from unauthorized access. The Public Services Director will direct Water Division staff to conduct frequent inspections of the pump station, Factory Pond, both elevated tanks, and windshield surveys along critical routes to reduce the opportunity for sabotage activities aimed directly at the system. Routine inspections should include at a minimum:

- inspection for evidence of forced or unauthorized entry to facilities
- checking and securing all locks to control facilities

The time of inspections should vary from day to day and "spontaneous" inspections should be completed when possible. The Public Services Director will coordinate inspection strategy with the Police Department and the TM/EMD, and request police surveillance.

The Public Services Director must immediately inform the TM/EMD of any public health threat for announcement to consumers. For example, if the supply has been contaminated or poisoned, the TM/EMD must issue public notification to reduce risk of illness (in this example, the response outlined for System Contamination should be followed). As information about the nature and extent of damage is obtained, the Public Services Director will keep the TM/EMD informed, so that accurate and appropriate information is given to the public.

The third component to response is system remediation, including provision of emergency water. If disturbances resulting in supply contamination, source contamination, or damage to pumps, the Public Services Director will follow the responses for that incident presented earlier in this document.

2.10.3 System Deficiencies

The best deterrent against an intentional terrorist act targeting the water system is to make major system components as inaccessible as possible to the public.

The Factory Pond pump station buildings are built of brick and are equipped with heavy gauge steel doors. An 8-foot high chain link fence surrounds each building. Each of the gates and accessways is fastenable by a chain and padlock. Access to Factory Pond from Green Hill Beach Road is secured by a chain link gate with padlock.

The Mautucket Road tank is an elevated spheroid tank located on Mautucket Road. It is not enclosed by any fencing and is less than 200 feet from the nearest dwelling. The access door at the base of the tank is equipped with a padlock and secondary exterior chain link fence with gate.

The Victoria Lane tank is identical in structure to the Mautucket Road tank. A 6-foot chain link fence with padlock surrounds the tank and the access door is also padlocked. A community baseball field complex abuts the tank site.

To minimize the potential for unauthorized entry, intruder alarms have been installed at each of the facilities. In the event of an alarm, both Water Division staff and the Police are notified via the new SCADA system. Also, Water Division staff perform daily security checks at each of these facilities, as previously suggested.

Section 3

Recommendations Summary

3.1 Overview

Overall, the Town of South Kingstown is adequately prepared for most foreseeable emergency scenarios. Armed with a town-wide EOP, and well practiced from various hurricanes over the past few years, the Water Division is capable of responding to these emergency situations. Recent water system improvements have addressed the significant potential effect of these emergencies on the water system, namely a contamination event that renders the wells unusable, or loss of supply to the eastern portion of the South Shore area for an indefinite period of time. The new wholesale connection on Route 1 to the Veolia (formerly SUEZ, United Water RI, Wakefield Water) system serves to better secure a continuous source of supply and greatly lessens the impact of the loss of the Town's wells to an emergency event. The 8-inch sub-aqueous pipeline connecting Galilee to Jerusalem also serves as an emergency source.

The following section summarizes the recommendations developed in Section 2: Emergency Management Procedure.

3.2 Recommendations

1. Water Division Personnel
 - A. Train Water Division staff in emergency response procedure.
 - B. Develop familiarity with town-wide EOP and this plan.
 - C. Hold staff meetings to review emergency response issues and as a refresher for this plan.

2. Improved Prevention
 - A. Follow regular program of exercising and inspecting emergency stand-by engine and portable generators.
 - B. Increase security; add fire alarms, fences, and locks where deficient.

3. Improve System Resources
 - A. As discussed earlier in this document, the major weakness of the South Shore system, the dependence upon a single source has been addressed by the new wholesale connection.

- B. System looping represents an alternative solution to the reliance of the eastern region of the South Shore distribution system on a series of vulnerable mains. By providing additional pipe loops in the distribution network, alternate flow paths are created for the critical mains, thereby reducing their vulnerability.

4. Improved Response Capability

- A. Maintain inventory of repair equipment; at minimum, should have one each 10-inch, 12-inch, and 14-inch sleeves for emergency main repairs. Continue to maintain inventory of hazardous response equipment.
- B. Maintain multiple copies of parts list for wells/pumps.
- C. Develop drought response plan, including specific water conservation measures to be implemented at various trigger levels.
- D. Make sure backup power source for communications system is functional.
- E. Maintain database of water laboratories for after hour coliform bacteria and other contaminant testing. The Water Division already has a Hach Spectrometer and pH meter to be able to test for common contaminants.

5. Communications

- A. Develop contacts with local laboratory, fuel supplier, pump parts supplier, so that these services can be quickly activated in an emergency situation.
- B. Facilitate radio contact with Veolia (formerly SUEZ, United Water RI, Wakefield Water), Kingston Water District and Narragansett Water Division or other means of communication when telephones are unavailable.
- C. Prepare public education materials in advance, so that they are available quickly when and if needed. Materials could be prepared for “How to Prepare for a Hurricane,” “Water Use Restrictions During a Drought,” and other topics. Some ready-made public education materials are available from organizations such as American Water Works Association; or South Kingstown could develop its own fliers or brochures to meet the specific needs and conditions of its customers.

Section 4

Emergency Demand Management

4.1 Introduction

Section 4 is included within the ERP to provide:

- Overview of demands
- Definition of level of service operating tiers
- Level of service analysis for each system component
- Water use curtailment procedures
- Reverse triggers
- Emergency sources

Essentially, each of these topics deals with water quantity emergencies -- how much water could the system provide, in certain situations; what level of service that quantity represents; how the system can control demand; and what emergency sources will be used.

4.2 Demands

4.2.1 *South Shore*

Under normal operations, the average daily demand (based on metered production) of the South Shore system is approximately 0.34 million gallons per day (mgd), based on an average of the past six years. Given the seasonal nature of the water system's population, there is a significant variation in average daily demand when comparing the winter months to the summer months.

The minimum flow required for fire protection would essentially consist of the demand of the fire, assuming adequate water and pressure throughout the system. In accordance with American Water Works Association (AWWA) standards, the storage tanks should supply all of the water needed for fire protection. Storage facility capacity within the South Shore distribution system is approximately 800,000 gallons. Assuming the Veolia (formerly SUEZ, United Water RI, Wakefield Water) wholesale interconnect is capable of supplying the maximum day demand, the system has the ability to provide fire protection at the rate of approximately 3,300 gpm for 4 hours. Since there are no industrial users within the distribution system, this should be ample to combat most fires in the water service area.

The minimum volume of water required for human health and survival, based on 2 gpcd and a service population of approximately 6,742 people, is 13,500 gpd (average of about 9.38 gpm).

4.2.2 Middlebridge

Under normal operations, the average daily demand (based on the system's master meters) of the Middlebridge system is 0.039 mgd, based on an average of the past six years.

The minimum flow required for fire protection would essentially consist of the demand of the fire, assuming adequate water and pressure throughout the system. Since this distribution system does not have any water storage facilities, all fire flows are supplied via the wholesale interconnection to Veolia (formerly SUEZ, United Water RI, Wakefield Water). Drawing the maximum permissible flow, as stipulated in the Agreement, the Middlebridge system could provide fire protection at the rate of 0.175 mgd (0.300 mgd - max. day demand), or 120 gpm for 24 hours or longer.

The minimum flow for human health and survival, based on 2 gpcd and a service population of approximately 689 people, is approximately 1,378 gpd (average of about 0.96 gpm).

4.3 Operating Levels of Service

In this section, various levels of service are defined. These operating levels are intended to serve as a framework for assessing the water quantity issues associated with an emergency.

4.3.1 South Shore

Level 1 - Normal Operations

This level represents normal operations. At this level of service, the system has the capacity to produce and deliver flow that meets current demand, but not below the average daily demand. The system would be considered in normal operations when its capacity is greater than 0.34 mgd.

Level 1A - Emergency Alert Status

This level represents when an emergency is predicted (e.g., storm) or has just occurred, before there is any assessment of damage. (Note: in certain emergency scenarios, shut down of some system components is needed to control/minimize damage, so temporary, localized loss of service may also occur at this level.) This level indicates there may be a change in system status and complements the Water Division's state of readiness.

Level 2 - Peak Use Reductions

At this level of service, the system has the capacity to produce and deliver flow at or above the average daily demand, but below the peak summer demands of about 1.0 mgd. The system would be assigned Level 2 status if its capacity were reduced to a level between 0.34 mgd and 1.0 mgd (the maximum daily demand).

Level 3 - Drought Watch / Severe Reductions

Level 3 represents a more serious condition, when either an emergency situation or a long-term drought is making the system incapable of providing its average daily demand. The system would be assigned to this level when system capacity is less than 0.420 mgd, the average day demand.

Level 4 - System Failure

This level is complete failure, with no capacity to supply or distribute potable water. Level 4 could be assigned to the entire system, or just a portion of the system if a localized emergency were to occur. At this level, the system may be able to continue providing non-potable water for fire protection and sanitation or may be incapable of providing any water. In this situation, the Water Division would seek to provide the minimum water for human health (11,890 gpd) via other means.

4.3.2 Middlebridge

Level 1 - Normal Operations

This level represents normal operations. At this level of service, the system has the capacity to produce and deliver flow that meets current demand but not below the average daily demand. The system would be considered in normal operations when its capacity is between 0.049 mgd and 0.125 mgd depending upon the time of year.

Level 1A - Emergency Alert Status

This level represents when an emergency is predicted (e.g., storm) or has just occurred, before there is any assessment of damage. (Note: in certain emergency scenarios, shut down of some system components is needed to control/minimize damage, so temporary, localized loss of service may also occur at this level.) This level indicates there may be a change in system status and complements the Water Division's state of readiness.

Level 2 - Peak Use Reductions

At this level of service, the system has the capacity to produce and deliver flow at or above the average daily demand, but below the peak summer demands. The system would be assigned Level 2 status if its capacity were between 0.049 mgd and 0.125 mgd (the maximum daily demand).

Level 3 - Drought Watch/Severe Reductions

Level 3 represents a more serious condition, when either an emergency situation or a long-term drought is making the system incapable of providing its average daily demand. The system would be assigned to this level when system capacity is less than 0.049 mgd, the average day demand.

Level 4 - System Failure

This level is complete failure, with no capacity to supply or distribute potable water. At this level, the system may be able to continue providing non-potable water for fire protection and sanitation or may be incapable of providing any water. In this situation, South Kingstown would seek to provide the minimum water for human health (1,400 gpd) by other means.

4.4 Level of Service Analysis for Components and Emergencies

4.4.1 Effect of Emergency on System Components and Remaining Capacity

The following **Table 4-1** links each individual critical system component to each emergency, indicating the impact that each emergency event would most likely have on that particular critical component.

In the South Shore system, the critical components are the Veolia (formerly SUEZ, United Water RI, Wakefield Water) wholesale interconnect, water storage tanks, wellfield (when active), the booster pump station, and the critical vulnerable mains, which provide sole transmission to portions of the system. Of these, the mains are more vulnerable (to breaks) as a result of weather-related emergencies. The presence of three wells (when operating), with separate pumps and with adequate emergency power (Well No. 1 only), significantly reduces the vulnerability of each component.

In the Middlebridge system, the dependence on supply from Veolia (formerly SUEZ, United Water RI, Wakefield Water) and the interconnection itself are both critical components. The Veolia (formerly SUEZ, United Water RI, Wakefield Water) supply has redundancy but should be viewed by South Kingstown as potentially vulnerable since its provision is out of their control. The Middlebridge Road interconnection is also somewhat vulnerable.

4.4.2 Level of Service Tiers for Emergency Scenarios

Based on the previous analyses, this section predicts the likely remaining level of service for each of the defined emergencies.

Pump/Power Failure

In the event of a pump/power failure, the Factory Pond well field (when operational) would be able to produce water via the stand-by direct drive engine at Well No. 1. The Middlebridge system would also most likely remain at normal operations as Veolia (formerly SUEZ, United Water RI, Wakefield Water) implements its ERP, but should be downgraded to Level 2 for preparedness due to the system's dependence on another system. Failure of the booster pump station would only trigger a Level 1A - Emergency Alert, as this station only serves to provide better supply pressure, and therefore is not critical to the provision of average day demands.

TABLE 4-1. EMERGENCY – SEVERITY MATRIX, CRITICAL COMPONENTS

Emergency	Critical Component						
	Factory Pond Wellfield	Factory Pond Pump Station	Card's Pond Rd. Booster Pump Station	Mautucket Storage Tank	Victoria Lane Storage Tank	Critical Transmission Mains	Wholesale Interconnections
Hurricane / Tropical Storm	Min	Min	Min	Sev	Sev	Mod	Sev
Winter Storm	Min	Mod	Mod	Mod	Mod	Min	Min
Source Contamination	Sev	Sev	Sev	Sev	Sev	Sev	Sev
System Contamination	Min	Min	Min	Sev	Sev	Sev	Sev
Flood	Min	Min	Min	Min	Min	Min	Mod
Fire	Min	Sev	Sev	Mod	Mod	Min	Min
Drought	Sev	Mod	Mod	Min	Min	Min	Sev
Civil Disorder / Terrorism	Sev	Sev	Sev	Sev	Sev	Mod	Sev

Legend:

- Sev. Severe Impact on Critical Component
- Mod. Moderate Impact on Critical Component
- Min. Minimum Impact on Critical Component

A hurricane or tropical storm could cause some damage to the water systems. Initially, the storm would indicate a Level 1A - Emergency Alert status. A storm could cause a localized Level 4 in some areas (e.g., if any of the vulnerable critical mains were damaged). Damage to any of the South Shore system's tanks would affect only the ability of the system to meet peaks and would indicate Level 2. For Middlebridge, loss of the Middlebridge Road interconnection could cause Level 4 throughout that system.

Winter Storm

Winter storm impacts would be similar to the hurricane/tropical storm, with increased likelihood of main damage from freezing. For both systems, a winter storm would most likely suggest a Level 1A, unless any vulnerable critical mains are affected, which would be a Level 4.

Source Contamination

A source contamination event would immediately trigger a Level 4 situation localized in either system. However, analysis assessment and response could result in upgrading. Also, the system could continue to provide non-potable water for sanitation.

System Contamination

System contamination would represent Level 4, but could be throughout the system, or could be localized (e.g., from a main break). Also, the system may be able to continue providing non-potable water for sanitation or potable water use with a boil water order.

Flood

As with storms, a flood would suggest Level 1A, but sanitation could also cause a localized Level 4.

Fire

A fire drawing water from the system could cause Level 2, but most likely could be handled by storage and pumping. Fire at the pump station would result in Level 2 unless both were affected, which would result in Level 4. Fire at a storage tank would result in Level 2.

Drought

A drought could cause various operating levels, depending on severity. Until such time that a water filtration plant is designed and constructed, the Water Division's South Shore and Middlebridge water systems rely on Veolia (formerly SUEZ, United Water RI, Wakefield Water) as a sole source of supply. As such, the Water Division works and communicates closely with Veolia (formerly SUEZ, United Water RI, Wakefield Water) during periods of drought to determine what actions (including water usage restrictions) may be appropriate.

Civil Disorder / Vandalism / Terrorism

For the South Shore system, a civil disorder incident would most likely result in either Level 1A or Level 2, or Level 4, if the wells, pumps, or storage tanks were destroyed or vandalized. For the Middlebridge system, civil disorder would either have no impact, or a range between Level 2 and 4 (e.g. depending on the damage to Veolia (formerly SUEZ, United Water RI, Wakefield Water) water supplies).

4.5 Water Use Curtailment

The following demand management actions are indicated for each level of service. These actions cover only use restrictions and are intended to complement other responses as identified in Section 3.

Level 1 - Normal Operations

1. Public education of long-term water conservation and potential drought/emergency use restrictions via annual Water Division newsletter.

Level 1A - Emergency Alert Status

1. Public Services Director will inform Town Manager of system status and shall direct the notification of all Water Division personnel.
2. Public Services Director shall determine the appropriateness of advance warning of use restrictions or service problems, depending on the specific situation. If appropriate, Public Services Director shall direct issuance and advertisement of press release informing customers of situation and recommending advance planning, as appropriate (e.g. fill bath tub with water in advance of hurricane).

Level 2 - Peak Use Reductions

1. Public Services Director shall direct issuance of a press release to newspapers, radio and television declaring:
Request for voluntary reduction in use (all customers)
➤ Ban on outdoor watering during weekends
2. Public Services Director shall coordinate with Town police to verbally reprimand any customers that are observed by police violating ban.

Level 3 - Drought Watch / Severe Reductions

1. Public Services Director shall direct issuance of a press release to newspapers, radio and television declaring:
➤ A reduction in water use (all customers) only for essential health needs
➤ Ban all outdoor water use (lawn, garden, car wash, etc.)
2. Public Services Director shall coordinate with town police to verbally reprimand any customers that are observed by police violating ban.

Level 4 - System Failure

1. Public Services Director will assess the extent of the failure (localized or entire system).
2. If a localized failure, the Public Services Director shall direct issuance of a press release to newspapers, radio and television declaring a reduction in water use by all customers in and adjacent to the affected area.
3. The Public Services Director will initiate immediate contact of priority and major users in and adjacent to the affected area and give notification to curtail water use.
4. The Public Services Director will notify State and Federal agencies for assistance as needed.
5. If the entire system is incapacitated, the Public Services Director shall direct issuance of a press release to newspapers, radio and television declaring a ban on all water use.
6. The Public Services Director will initiate immediate contact of all priority and major users and give notification of water ban.
7. The Public Services Director will notify State and Federal agencies for assistance.

4.6 Reverse Triggers

Reverse triggers are defined by RIDEM-DWSM as indicators for when the operating level can be upgraded, eventually to normal operations. Reverse triggers are identified below:

<i>Emergency Pump/Power Failure</i>	Upgrade to Level 1A once stand-by engine is operating. Upgrade to Level 1 once normal power resumes.
<i>Hurricane/Tropical Storm</i>	Upgrade to Level 1 if post-storm survey shows no damage.
<i>Winter Storm</i>	Upgrade to appropriate level after any damaged components are repaired, water quality tested if needed, and returned to service.
<i>Source Contamination</i>	Upgrade to Level 1 once source is restored or disinfected to satisfaction of RIDOH Division of Drinking Water Quality.
<i>System Contamination</i>	Upgrade once contaminated component or portion of system is restored or disinfected to satisfaction of RIDOH Division of Drinking Water Quality.

<i>Flood</i>	Upgrade to appropriate level after any damaged components are repaired, tested, and returned to service.
<i>Fire</i>	Upgrade to appropriate level after any damaged components are repaired, tested, and returned to service.
<i>Drought</i>	Upgrade to appropriate level based on r guidance from the RI Water Resources Board (RIWRB), RIDEM-Division of Groundwater and RIDOH-Division of Drinking Water Quality. For example, if Veolia (formerly SUEZ, United Water RI, Wakefield Water) well drawdown returns to or above benchmark, upgrade system status to Level 1A. If the Veolia (formerly SUEZ, United Water RI, Wakefield Water) well drawdown depth remains at or above the benchmark for one week, the system should go to Level 1.
<i>Civil Disorder / Vandalism / Terrorism</i>	Upgrade to appropriate level after any damaged components are repaired, tested, and returned to service.

4.7 Emergency Sources of Water

The Town of South Kingstown water systems have several emergency sources of water available.

4.7.1 South Shore

The South Shore system has the following sources, in order of preference:

1. Route 1 Wholesale Connection
2. Jerusalem Wholesale Connection
3. Well No. 2
4. Well No. 3
5. Well No. 1

The wholesale connections are the source for normal operations. The three wells offer a backup source and level of redundancy and inherent protection against some types of emergency incidents (e.g., loss of the wholesale connections). The Water Division can switch between the three wells immediately, though some water quality issues may result in their operation.

South Kingstown presently has a good working relationship with Narragansett and is confident that the two systems could work together in an emergency. Still, South Kingstown will pursue an emergency use agreement with Narragansett to facilitate the implementation of this source in an emergency.

In situations where the system has been contaminated or otherwise severely disabled and the other emergency sources are inadequate to meet minimum human sustenance needs, South Kingstown will coordinate with the Rhode Island Emergency Management Agency (RIEMA) and Rhode Island National Guard (RING). According to the *Water Emergency Response Plan for the State of Rhode Island* (RI Dept. of Administration, Division of Planning, May 1993):

“The RIEMA coordinates the acquisition and transport of trucked water, or other equipment and supplies needed for emergency response...the RIDEMA acts as an intermediary with other agencies, including the Rhode Island National Guard and FEMA.”

Thus, South Kingstown would notify RIEMA by calling (401) 946-9996 (24-hours) and request assistance in providing these emergency sources.

Water stations in neighboring systems include Veolia (formerly SUEZ, United Water RI, Wakefield Water) (in South Kingstown), Kingston Water, North Kingstown, and Narragansett.

As the emergency supply of last resort, South Kingstown will request water stations from the neighboring systems (assuming they are in normal operations mode). The water stations would be similar to what Lincoln provided during the Pawtucket emergency. South Kingstown will pursue agreements with Veolia (formerly SUEZ, United Water RI, Wakefield Water), North Kingstown, and Narragansett to make implementation of such water stations easier if there is an emergency.

4.7.2 Middlebridge

The Middlebridge system has the following sources, in order of preference:

1. Veolia (formerly SUEZ, United Water RI, Wakefield Water) - Middlebridge Road Interconnection

The interconnection with Veolia (formerly SUEZ, United Water RI, Wakefield Water) is the source for normal operations. Note that Veolia controls several wells, thus providing some inherent protection against an emergency.

2. Utilize Veolia (formerly SUEZ, United Water RI, Wakefield Water) - Torrey Road interconnection to receive water from North Kingstown system (via Veolia (formerly SUEZ, United Water RI, Wakefield Water) system in Narragansett).

For emergencies that affect the Veolia (formerly SUEZ, United Water RI, Wakefield Water) source or supply, or a major break or failure of the Middlebridge Road interconnection, the Middlebridge system can obtain water from the Town of North Kingstown. To do this, the Middlebridge Road interconnection would be closed. Then, the flow through the Torrey Road interconnection would reverse, so that it is drawing water from North Kingstown that isolates the eastern part of the system, and does not involve distribution system contamination, and a temporary emergency interconnection with UWRI is the preferred emergency source. A fire hose could connect the two systems, which are approximately 1 mile apart at the closest location.

It is believed that North Kingstown, via the Torrey Road interconnection, could provide full average day demand for the Middlebridge customers (49,200 gpd).

There are no other potential locations or systems for advantageous interconnections with the Middlebridge system.

3. Trucked water with distribution stations in service area and/or
4. Door-to-door bottled water delivery.

In situations where the system has been contaminated or otherwise severely disabled and the other emergency sources are inadequate to meet minimum human sustenance needs, South Kingstown will coordinate with the Rhode Island Emergency Management Agency (RIEMA) and Rhode Island National Guard (RING). According to the *Water Emergency Response Plan for the State of Rhode Island* (RI Dept. of Administration, Division of Planning, May 1993):

*The RIEMA coordinates the acquisition and transport of trucked water, large amounts of bottled water, or other equipment and supplies needed for emergency response...the RIDEMA acts as an intermediary with other agencies, including the Rhode Island National Guard and FEMA.”

Thus, South Kingstown would notify RIEMA by calling (401) 946-9996 (24-hours) and request assistance in providing these emergency sources.

5. Water stations in neighboring systems, including Veolia (formerly SUEZ, United Water RI, Wakefield Water) (in South Kingstown), Kingston Water, North Kingstown, and Narragansett.

As the emergency supply of last resort, South Kingstown will request water stations from the neighboring systems (assuming they are in normal operations mode). The water stations would be similar to what Lincoln provided during the Pawtucket emergency. South Kingstown will pursue agreements with Veolia (formerly SUEZ, United Water RI, Wakefield Water), North Kingstown, and Narragansett to make implementation of such water stations easier if there is an emergency.

4.8 Emergency Public Notification Procedures & Templates

Should an emergency event occur whereby public notification is required by RIDOH, the following protocol shall be followed:

1. The procedures set forth in Section 2 of this plan shall be followed.
2. Should the emergency event require public notification, the following public notification template shall be used in conjunction with communication with the RI Department of Health.
3. Upon completion of the event, the Water Superintendent shall complete the Public Notification form template and submit same to the RIDOH.

TIER 1 TEMPLATES

The pages that follow contain templates for Tier 1 violations and waterborne disease outbreaks, as listed below. Along with each template are instructions, including the required method of delivery and instructions for completing individual sections of the notice. These instructions are designed to supplement Chapter 5, so you may see much of the information repeated here.

Mandatory language on health effects, which must be included exactly as written, is presented in *italics* (141.205(d)).

You must also include the following italicized language in all notices, where applicable (141.205(d)). Use of this language does *not* relieve you of your obligation to take steps reasonably calculated to notify all persons served:

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.

Instructions for Fecal Coliform or *E. Coli* Notice–Template 1-2

Since exceeding the fecal coliform or *E. coli* maximum contaminant level is a Tier 1 violation, you must provide public notice to persons served as soon as practical but within 24 hours after you learn of the violation (141.202(b)). During this time, you must also contact your primacy agency. You should also coordinate with your local health department. You may also have to modify the template if you also have high nitrate levels or other coliform MCL violations. You must use one or more of the following methods to deliver the notice to consumers (141.202(c)):

- Radio
- Television
- Hand or direct delivery
- Posting in conspicuous locations

You may need to use additional methods (e.g., newspaper, delivery of multiple copies to hospitals, clinics, or apartment buildings), since notice must be provided in a manner reasonably calculated to reach all persons served.

The notice on the reverse is appropriate for hand delivery or a newspaper notice. However, you may wish to modify it before using it for a radio or TV notice. If you do, you must still include all required elements and leave the health effects language in italics unchanged. This language is mandatory (141.205(d)). See Chapter 8 for a notice designed for posting. If you post or hand deliver, print your notice on letterhead, if you have it.

Population Served

Make sure it is clear who is served by your water system--you may need to list the areas you serve.

Corrective Action

In your notice, describe corrective actions you are taking. Listed below are some steps commonly taken by water systems with fecal coliform or *E. coli* violations. Use one or more of the following actions, if appropriate, or develop your own:

- We are chlorinating and flushing the water system.
- We are switching to an alternate drinking water source.
- We are increasing sampling for coliform bacteria to determine the source of the contamination.
- We are repairing the wellhead seal.
- We are repairing the storage tank.
- We are restricting water intake from the river/lake/reservoir to prevent additional bacteria from entering the water system and restricting water use to emergencies.

After Issuing the Notice

Send a copy of each type of notice and a certification that you have met all the public notice requirements to your primacy agency within ten days from the time you issue the notice (141.31(d)).

It is recommended that you notify health professionals in the area of the violation. People may call their doctors with questions about how the violation may affect their health, and the doctors should have the information they need to respond appropriately. In addition, health professionals, including dentists, use tap water during their procedures and need to know of contamination so they can use bottled water.

It is a good idea to issue a “problem corrected” notice when the violation is resolved. See Template 1-6.

DRINKING WATER WARNING

[System] water is contaminated with [fecal coliform] or [*E. coli*]

BOIL YOUR WATER BEFORE USING

Fecal coliform [or *E. coli*] bacteria were found in the water supply on [date]. These bacteria can make you sick, and are a particular concern for people with weakened immune systems.

What should I do?

- **DO NOT DRINK THE WATER WITHOUT BOILING IT FIRST.** Bring all water to a boil, let it boil for one minute, and let it cool before using, or use bottled water. Boiled or bottled water should be used for drinking, making ice, brushing teeth, washing dishes, and food preparation **until further notice**. Boiling kills bacteria and other organisms in the water.
- *Fecal coliforms and E. coli are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these wastes can cause diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants, young children, some of the elderly, and people with severely compromised immune systems.*
- The symptoms above are not caused only by organisms in drinking water. If you experience any of these symptoms and they persist, you may want to seek medical advice. People at increased risk should seek advice about drinking water from their health care providers.

What happened? What is being done?

Bacterial contamination can occur when increased run-off enters the drinking water source (for example, following heavy rains). It can also happen due to a break in the distribution system (pipes) or a failure in the water treatment process.

[Describe corrective action.] We will inform you when tests show no bacteria and you no longer need to boil your water. We anticipate resolving the problem within [estimated time frame].

For more information, please contact [name of contact] at [phone number] or [mailing address]. General guidelines on ways to lessen the risk of infection by microbes are available from the EPA Safe Drinking Water Hotline at 1(800) 426-4791.

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.

This notice is being sent to you by [system].

State Water System ID#: _____.

Date distributed: _____

Instructions for Nitrate Notice–Template 1-1

Since exceeding the nitrate maximum contaminant level is a Tier 1 violation, you must provide public notice to persons served as soon as practical but within 24 hours after you learn of the violation (141.202(b)). During this time period you must also contact your primacy agency. You should also coordinate with your local health department. **This template is also applicable to nitrite and total nitrate and nitrite violations.** You must use one or more of the following methods to deliver the notice to consumers (141.202(c)):

- Radio
- Television
- Hand or direct delivery
- Posting in conspicuous locations

You may need to use additional methods (e.g., newspaper, delivery of multiple copies to hospitals, clinics, or apartment buildings), since notice must be provided in a manner reasonably calculated to reach all persons served.

The notice on the reverse is appropriate for hand delivery or a newspaper notice. However, you may wish to modify it before using it for a radio or TV notice. If you do, you must still include all required elements and leave the health effects language in italics unchanged. This language is mandatory (141.205(d)). See Chapter 8 for a notice designed for posting. If you post or hand deliver, print your notice on letterhead, if available.

Alternative Sources of Water

If you are providing alternative sources of water for infants, your notice should say where it can be obtained. Remember that bottled water can also be contaminated. If you are providing bottled water, make sure it meets the standard for nitrates by contacting the bottler and asking for the most recent test results.

Repeat Notices

If this is a repeat notice (as required by your primacy agency), or if your system's nitrate levels fluctuate around the MCL, you may wish to include an explanation similar to the following:

You were initially notified of high nitrate levels on [date]. Since that time we have been monitoring the nitrate concentration every three months. Seasonal fluctuations in nitrate concentrations have been observed, due to nitrates contained in fertilizer. It appears that high nitrates occur during the later summer and fall. Note that prior to [year] we were meeting drinking water standards for nitrate.

Corrective Action

In your notice, describe corrective actions you are taking. The bullet below describes one action commonly taken by water systems with nitrate/nitrite violations. Use this language, if appropriate, or develop your own:

- We are investigating water treatment and other options. These may include drilling a new well, mixing the water with low-nitrate water from another source, or buying water from another water system.

After Issuing the Notice

Make sure to send your primacy agency a copy of each type of notice and a certification that you have met all the public notice requirements within ten days after issuing the notice (141.31(d)). You should also issue a follow-up notice in addition to meeting any repeat notice requirements your primacy agency sets.

You should notify health professionals in the area of the violation. People may call their doctors with questions, and the doctors should have the information they need to respond appropriately. They also need to make sure the water is not provided to infants in their care.

DRINKING WATER WARNING

[System] water has high levels of nitrate –

DO NOT GIVE THE WATER TO INFANTS UNDER 6 MONTHS OLD OR USE IT TO MAKE INFANT FORMULA

Water sample results received [date] showed nitrate levels of [level and units]. This is above the nitrate standard, or maximum contaminant level (MCL), of [state/federal MCL]. Nitrate in drinking water is a serious health concern for infants less than six months old.

What should I do?

- **DO NOT GIVE THE WATER TO INFANTS.** *Infants below the age of six months who drink water containing nitrate in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue baby syndrome.* Blue baby syndrome is indicated by blueness of the skin. Symptoms in infants can develop rapidly, with health deteriorating over a period of days. If symptoms occur, seek medical attention immediately.
- Water, juice, and formula for children under six months of age should not be prepared with tap water. Bottled water or other water low in nitrates should be used for infants until further notice.
- **DO NOT BOIL THE WATER.** Boiling, freezing, filtering, or letting water stand does not reduce the nitrate level. Excessive boiling can make the nitrates more concentrated, because nitrates remain behind when the water evaporates.
- Adults and children older than six months can drink the tap water (nitrate is a concern for infants because they can't process nitrates in the same way adults can). However, if you are pregnant or have specific health concerns, you may wish to consult your doctor.

What happened? What is being done?

Nitrate in drinking water can come from natural, industrial, or agricultural sources (including septic systems and run-off). Levels of nitrate in drinking water can vary throughout the year. We'll let you know when the amount of nitrate is again below the limit.

[Describe corrective action, seasonal fluctuations, and when system expects to return to compliance.]

For more information, please contact [name of contact] at [phone number] or [mailing address].

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.

This notice is being sent to you by [system].

State Water System ID#: _____.

Date distributed: _____

Instructions for Waterborne Disease Outbreak Notice—Template 1-3

Since a waterborne disease outbreak is a Tier 1 situation, you must provide public notice to persons served as soon as practical but within 24 hours after you learn of the situation (141.202(b)). You must also contact your primacy agency during this time. You should coordinate with your local health department as well. **You must issue a public notice if you are experiencing a waterborne emergency other than a waterborne disease outbreak, such as one caused by flooding or treatment failure. In such cases, you may be able to modify this template to apply to your situation.** Check with your primacy agency for more direction. More information on waterborne disease outbreaks and emergencies is available from the Centers for Disease Control and Prevention (www.cdc.gov/health/diseases.htm, 1 (800) 311-3435). For a waterborne disease outbreak or other emergency, you must use one or more of the following methods to deliver the notice to consumers (141.202(c)):

- Radio
- Television
- Hand or direct delivery
- Posting in conspicuous locations

You may need to use additional methods (e.g., newspaper, delivery of multiple copies to hospitals, clinics, or apartment buildings), since notice must be provided in a manner reasonably calculated to reach all persons served. If you post or hand deliver, print your notice on letterhead, if available. The notice on the reverse is appropriate for hand delivery or a newspaper notice. However, you may wish to modify it before using it for a radio, TV notice, or posting.

Describing the Outbreak

If known, list any organisms detected, the number of affected people, any water treatment problems contributing to the waterborne disease outbreak, and any sources of contamination, such as flooding.

Potential Health Effects

No mandatory health effects language exists for waterborne disease outbreaks. You may wish to use the sentence below, if appropriate, or contact your primacy agency or health department. These symptoms are common to many diseases caused by microscopic organisms:

- Symptoms may include nausea, cramps, diarrhea, jaundice, and associated headaches and fatigue.

Population at Risk

Some people who contract waterborne diseases can be affected more severely than others, as described on the reverse page. The specific language on the reverse is not mandatory, but you must provide information on the population at risk. In addition, make sure it is clear who is served by your water system—you may need to list the areas you serve.

Corrective Action

In your notice, describe the corrective actions you are taking. Listed below are some steps commonly taken by water systems with waterborne disease outbreaks. Use one or more of the following actions, if appropriate, or develop your own:

- We are repairing our filtration system.
- We are increasing sampling for disease-causing organisms.

Make sure to send a copy of each type of notice and a statement certifying that you've met all public notification requirements to your primacy agency within ten days after issuing the notice (141.31(d)). It is a good idea to issue a "problem corrected" notice when the waterborne disease outbreak is under control. See Template 1-6.

It is recommended that you notify health professionals in the area of the outbreak. People may call their doctors with questions about how the situation may affect their health, and the doctors should have the information they need to respond appropriately. In addition, health professionals, including dentists, use tap water during their procedures and need to know of contamination so they can use bottled water.

DRINKING WATER WARNING

BOIL YOUR WATER BEFORE USING

Disease-causing organisms have entered [system's] water supply.

These organisms are causing illness in people served by [system]. We learned of a waterborne disease outbreak from [agency] on [date].

What should I do?

- **DO NOT DRINK THE WATER WITHOUT BOILING IT FIRST.** Bring all water to a boil, let it boil for one minute, and let it cool before using, or use bottled water. Boiled or bottled water should be used for drinking, making ice, brushing teeth, washing dishes, and food preparation until further notice. Boiling kills bacteria and other organisms in the water.
- [Describe symptoms of the waterborne disease.] If you experience one or more of these symptoms and they persist, contact your doctor. People with severely compromised immune systems, infants, and some elderly may be at increased risk. These people should seek advice about drinking water from their health care providers.

What happened? What is being done?

[Describe the outbreak, corrective action, and when the outbreak might end.]

We will inform you when you no longer need to boil your water.

For more information, please contact [name of contact] at [phone number] or [mailing address]. General guidelines on ways to lessen the risk of infection by microbes are available from the EPA Safe Drinking Water Hotline at 1(800) 426-4791.

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.

This notice is being sent to you by [system].

State Water System ID#: _____.

Date distributed: _____

Instructions for Notice for Turbidity Single Exceedance as Tier 1–Template 1-4

If your primacy agency has designated this turbidity single exceedance as a Tier 1 violation (141.202(a)), you must provide public notice to persons served within 24 hours after it has been designated Tier 1 (141.202(b)). Turbidity violations are Tier 2 by default, but may frequently be elevated to Tier 1 by your primacy agency. In addition, violations are automatically elevated if you are unable to consult with your primacy agency within 24 hours. **In such cases, you must issue a notice within the next 24 hours.** You may elevate the violation to Tier 1 yourself as well. You should also coordinate with your local health department. One or both agencies should tell you whether to instruct consumers to boil water. You must use one or more of the following methods to deliver the notice to consumers (141.202(c)):

- Radio
- Television
- Hand or direct delivery
- Posting in conspicuous locations

You may need to use additional methods (e.g., newspaper, delivery of multiple copies to hospitals, clinics, or apartment buildings), since notice must be provided in a manner reasonably calculated to reach all persons served. If you post or hand deliver, print your notice on letterhead, if you have it.

The notice on the reverse is appropriate for hand delivery or a newspaper notice. However, you may wish to modify it before using it for a radio or TV notice or posting. If you modify the notice, you must leave the health effects language in italics unchanged. This language is mandatory (141.205(d)).

Population Served

Make sure it is clear who is served by your water system--you may need to list the areas you serve.

Corrective Action

In your notice, describe corrective actions you are taking. Listed below are some steps commonly taken by water systems with turbidity single exceedance. Use one or more of the following actions, if appropriate, or develop your own:

- We are adding chemicals that reduce turbidity.
- We are sampling both untreated and treated water for the presence of coliform bacteria.
- We are monitoring chlorine levels and will adjust them as needed to compensate for filtration problems.
- We are inspecting and cleaning the filters.

Source of the Problem

If you know why the turbidity is high, explain it in your notice. For instance, unusual conditions, such as heavy rains and flooding, can overburden the water plant, and treated water may therefore not meet the standards. In addition, run-off from parts of the watershed could contain increased concentrations of sediment and animal waste.

After Issuing the Notice

Send a copy of each type of notice and a certification that you have met public notice requirements to your primacy agency within ten days after you issue the notice (141.31(d)). It is a good idea to issue a “problem corrected” notice when the violation is resolved. See Template 1-6.

It is recommended that you notify health professionals in the area of the violation. People may call their doctors with questions about how the violation may affect their health, and the doctors should have the information they need to respond appropriately. In addition, health professionals, including dentists, use tap water during their procedures and need to know of potential microbiological contamination so they can use bottled water.

DRINKING WATER WARNING

[system] has high turbidity levels

BOIL YOUR WATER BEFORE USING

We routinely monitor your water for turbidity (cloudiness). This tells us whether we are effectively filtering the water supply. A water sample taken [date] showed turbidity levels of [number] turbidity units. This is above the standard of [standard] turbidity units. Because of these high levels of turbidity, there is an increased chance that the water may contain disease-causing organisms.

What should I do?

- **DO NOT DRINK THE WATER WITHOUT BOILING IT FIRST.** Bring all water to a boil, let it boil for one minute, and let it cool before using, or use bottled water. Boiled or bottled water should be used for drinking, making ice, washing dishes, brushing teeth, and food preparation until further notice.
- *Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses, and parasites, which can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.* People with severely compromised immune systems, infants, and some elderly may be at increased risk. These people should seek advice about drinking water from their health care providers.
- The symptoms above are not caused only by organisms in drinking water. If you experience any of these symptoms and they persist, you may want to seek medical advice.

What happened? What is being done?

[Describe reason for the high turbidity, corrective action, and when the system expects to return to compliance.]

We will inform you when turbidity returns to appropriate levels and when you no longer need to boil your water.

For more information, please contact [name of contact] at [phone number] or [mailing address]. General guidelines on ways to lessen the risk of infection by microbes are available from the EPA Safe Drinking Water Hotline at 1(800) 426-4791.

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.

This notice is being sent to you by [system].

State Water System ID#: _____.

Date distributed: _____

Instructions for Chlorine Dioxide MRDL (Tier 1) Notice—Template 1-5

Since exceeding the chlorine dioxide MRDL when one or more of the samples taken *in the distribution system* on the day after exceeding the MRDL at the entrance of the distribution system or when *required samples are not taken* in the distribution system is a Tier 1 violation, you must provide public notice to persons served as soon as practical but within 24 hours after you learn of the violation (141.202(b)). (Exceeding the chlorine dioxide MRDL *at the entry point to the distribution system only* is a Tier 2 violation; modify this template or Template 2-3 to create a Tier 2 notice.) You must also contact your primacy agency within 24 hours of learning of the violation or situation. You should also coordinate with your local health department. You must use one or more of the following methods to deliver the notice to consumers (141.202(c)):

- Radio
- Television
- Hand or direct delivery
- Posting in conspicuous locations

You may need to use additional methods (e.g., newspaper, delivery of multiple copies to hospitals, clinics, or apartment buildings), since notice must be provided in a manner reasonably calculated to reach all persons served. If you post or hand deliver, print your notice on letterhead, if you have it.

The notice on the reverse is appropriate for hand delivery or a newspaper notice. However, you may wish to modify it before using it for a radio or TV notice. If you do, you must still say where it can be obtained. Remember that bottled water can also be contaminated or be high in chlorine dioxide if the bottler uses municipal water. Make sure the bottled water meets the standard by contacting the bottler and asking for the most recent test results.

Alternative Sources of Water

If you are selling or providing bottled water, your notice should say where it can be obtained. Remember that bottled water can also be contaminated or be high in chlorine dioxide if the bottler uses municipal water. Make sure the bottled water meets the standard by contacting the bottler and asking for the most recent test results.

Population at Risk

The language on the reverse lists “young children” as one of the groups at increased risk. Because the potential health effects of chlorine dioxide are based on tests on laboratory animals, there is no way to determine at exactly what age the water is safe to drink. If your consumers have questions, encourage them to err on the side of caution.

Corrective Action

In your notice, describe corrective actions you are taking. Listed below are some steps commonly taken by water systems with chlorine dioxide violations. Use one or more of the following actions, if appropriate, or develop your own:

- We are resetting the generator to generate the correct amount of chlorine dioxide.
- We are repairing the generator.
- We have already fixed the problem but it will take additional time for the extra chlorine dioxide to be flushed from the distribution system (pipes).

After Issuing the Notice

Make sure to send your primacy agency a copy of each type of notice and a certification that you have met all the public notice requirements within ten days after issuing the notice (141.31(d)). You should also issue a follow-up notice in addition to meeting any repeat notice requirements your primacy agency sets.

It is a good idea to issue a “problem corrected” notice when the violation is resolved. See Template 1-6.

It is recommended that you notify health professionals in the area of the violation. People may call their doctors with questions about how the violation may affect their health, and the doctors should have the information they need to respond appropriately.

DRINKING WATER WARNING

PREGNANT WOMEN AND YOUNG CHILDREN SHOULD NOT DRINK THE WATER

Sampling results received [date] showed chlorine dioxide levels of [level and units]. This is above the standard, or maximum residual disinfectant level (MRDL) of 0.8 milligrams per liter. Chlorine dioxide is used for disinfection, but too much of it over a short period of time may harm the development of children, infants, and fetuses.

What should I do?

- **DO NOT USE THIS WATER IF YOU ARE PREGNANT OR GIVE IT TO YOUNG CHILDREN.** Bottled water should be used until further notice. *Some infants and young children who drink water containing chlorine dioxide in excess of the MRDL could experience nervous system effects. Similar effects may occur in fetuses of pregnant mothers who drink water containing chlorine dioxide in excess of the MRDL. Some people may experience anemia.*

The chlorine dioxide violations reported today include exceedances of the EPA standard within the distribution system which delivers water to consumers. Violations of the chlorine dioxide standard within the distribution system may harm human health based on short-term exposures. Certain groups, including fetuses, infants, and young children, may be especially susceptible to nervous system effects from excessive chlorine dioxide exposure. There are no obvious symptoms, but chlorine dioxide can affect development of the nervous system.

- Water, juice, and formula for young children and for pregnant women should not be prepared with tap water.
- Adults who are not pregnant and older children can drink the tap water because their nervous systems are already developed. However, if you have specific health concerns, you may wish to consult your doctor.

What happened? What is being done?

Chlorine dioxide is used in small amounts every day to kill bacteria and other organisms that may be in your drinking water. A problem occurred with our chlorine dioxide generator, and too much chlorine dioxide was released. [Describe corrective action and when you expect to return to compliance.]

For more information, please contact [name of contact] at [phone number] or [mailing address].

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.

This notice is being sent to you by [system].

State Water System ID#: _____.

Date distributed: _____

Instructions for Tier 1 “Problem Corrected” Notice–Template 1-6

It is a good idea to issue a notice when a serious violation or situation has been resolved. Although EPA regulations do not require such notices, your primacy agency may require you to issue one. You should coordinate with your local health department as well. Below are some recommended methods for a “problem corrected” notice. You should use the same delivery methods you used for the original notice.

- Radio
- Television
- Newspaper
- Hand or direct delivery
- Posting in conspicuous locations

You may wish to use additional methods (e.g., delivery of multiple copies to hospitals, clinics, or apartment buildings) if necessary to reach all persons served. If you post or hand deliver, print your notice on letterhead, if available.

The notice on the reverse is very general and can be used for any violation or situation. However, to help restore consumers’ confidence in the water system, you should modify the notice to fit your situation. Although the public should have seen your initial notice, there may be additional information you learned after the notice was issued. Therefore, you should describe the violation or situation again and discuss how the problem was solved.

DRINKING WATER PROBLEM CORRECTED

Customers of [system] were notified on [date] of a problem with our drinking water and were advised to [describe recommended action]. We are pleased to report that the problem has been corrected and that it is no longer necessary to [describe recommended action]. We apologize for any inconvenience and thank you for your patience.

[Add further details here when appropriate.]

As always, you may contact [contact name] at [phone number] or [mailing address] with any comments or questions.

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.

This notice is being sent to you by [system].

State Water System ID#: _____.

Date distributed: _____

CERTIFICATION OF PUBLIC NOTICE

PWS ID 0000001
Official in Charge
PWS Name
Street Address
Town, RI Zip

Type of Violation
Date Violation Occurred on:

The public water system indicated above hereby affirms that **the required public notice** has been provided to customers in accordance with the delivery requirements and within the required timeline established in the Rules and Regulations Pertaining to Public Drinking Water, Section 16.8 or Section 17.6 entitled Public Notification.

The following dates must be provided for all checked items:

- ___ Consultation with the State on _____.
- ___ Notice distributed by Posting on _____.
- ___ Notice distributed by Hand Delivery on _____.
- ___ Notice distributed by Mail on _____.
- ___ Notice distributed by Newspaper* on _____.
- ___ Notice distributed by Radio and TV on _____.

Signature of Official in Charge: _____

Date: _____

*A copy of the newspaper article and proof of publication date must accompany this certificate. A copy of the public notice must accompany this certificate.