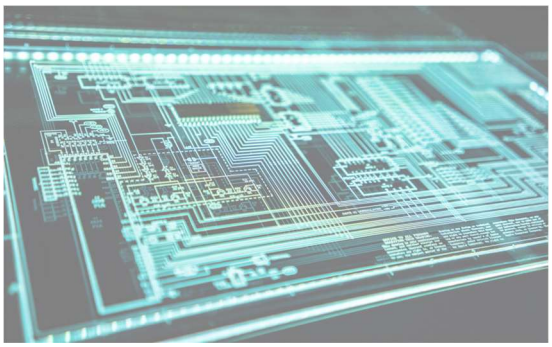

HAMPSTEAD AREA
WATER COMPANY
(PWS 1031010 & 0112080)

RISK & RESILIENCE ASSESSMENT REPORT

HAMPSTEAD AREA
WATER COMPANY, INC

Weston & Sampson

JUNE 2021

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EXECUTIVE SUMMARY

Background

America's Water Infrastructure Act (AWIA) of 2018 (Section 2013) requires drinking water utilities, serving populations greater than 3,300 persons, to conduct and certify Risk and Resiliency Assessments (RRAs), revise Emergency Response Plans (ERPs), and update these documents every five years. The US Environmental Protection Agency (EPA) intends for utilities to identify and manage terror-related, natural hazard and dependency/proximity risks, and the ERPs to provides strategies to enhance response and recovery following an event. The following elements were evaluated as part of this RRA effort:

The risk to the water system infrastructure from malevolent acts and natural hazards

The resilience of the infrastructure, including Supervisory Control and Data Acquisition (SCADA)/cyber resilience

The monitoring practices of the system

The financial infrastructure of the system

The use, storage, or handling of various chemicals by the system

The operation and maintenance of the system

The assessment is required to be finalized and then certified to the Administrator of EPA by June 30, 2021, in the case of systems serving a population between 3,300 to 49,999 people.

Furthermore, the assessment must be reviewed every five years to determine if revisions are required. Upon review, the water system must recertify the RRA or certify a revision to the assessment. The system is also required to update the ERP within six months of each RRA, so that the revised plan includes information and recommendations from the RRA. The ERP update must also be certified to EPA.

Introduction

As part of the ongoing preparedness to remain resilient, the Hampstead Area Water Company conducted an RRA for their water system. The RRA provides an evaluation of vulnerability for the system's critical assets, incorporating risks caused by natural, human-caused hazards and proximity/dependency hazards. This report compiles the results of the RRA, providing the Hampstead Area Water Company with an understanding of which assets are most critical, along with recommendations to improve the resilience of the water system.

The project team used the American Water Works Association (AWWA) standard document to guide the analysis, Risk and Resilience Management of Water and Wastewater Systems, known as the J100 standard. Published in 2013, this standard sets the requirements for all-hazards risk and resilience analysis and management for water utilities and prescribes methods that can be used for addressing these requirements. The standard documents a process for identifying vulnerabilities to man-made threats, natural hazards and provides methods to evaluate the options for mitigating these weaknesses. It is recognized by EPA as a standard guidance tool for the conduct of the RRA to comply with the AWIA mandate.

Goal & Purpose of the Assessment

Hampstead Area Water Company has completed a Risk & Resilience Assessment (RRA) in conformance with the requirements of the America's Water Infrastructure Act of 2018 (AWIA) for their water system. This assessment will provide Hampstead Area Water Company with the following:

- Inventory of water system assets
- Identification of high-criticality assets
- Identification of high-risk threats
- Development of critical Threat-Asset Pairs (TAPs)
- Identification of mitigation measures.

This report defines which Hampstead Area Water Company assets are most critical – those that, if lost or seriously damaged, will impose catastrophic consequences to the Hampstead Area Water Company's financial viability and/or its ability to meet its mission of providing water to the community. It also identify strategies that will help manage these risks in the future and build resilience in the system.

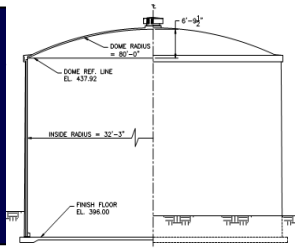
Utility Overview

The Hampstead Area Water Company's (HAWC) water system includes multiple wells in both the Town of Hampstead and the Town of Atkinson. Several of the wells have been taken offline recently due to a new water source that was brought online in the summer of 2020. As a result, those wells were not included in the following evaluation. Each well house provides existing treatment of the raw water with pressure filtration and chlorine disinfection. Recently, secondary disinfection was converted to chloramine disinfection and upgrades were made at each well station that is currently online. The new source of water is an interconnection with Salem at the newly constructed West Side Drive Pump Station which will serve the HAWC water system and the neighboring Plaistow water system in the future. An above ground pump station is planned to be constructed this year for the interconnection with Plaistow. The HAWC system serves approximately 2,800 customers, a population of approximately 7,000 residents, with an average daily consumption of approximately 0.5 MGD. The distribution system includes three (3) water storage tanks and two (2) PRV's. The table below further summarizes the Hampstead Area Water Company's water infrastructure, which is described in more detail in subsequent report sections.

19 Groundwater Wells

9+ Treatment Facilities

3 Water Storage Tanks



4 Booster Pump Stations

Critical Assets and Potential Top Threats

A system inventory of the water system components was developed, and the assets were classified into seven categories to align with the J100 Standard. Critical assets identified for the Hampstead Area Water Company J100 analysis are shown in Table ES-1 below (in no particular order).

Table ES-1: Critical Assets

Asset Category	Asset
Source Water	[redacted]
Constructed Conveyances	[redacted]
Storage	[redacted]
Booster Pump Station	[redacted]

Threat analysis was carried out using the J100 specified threats to highlight which threats are the most applicable and pose the greatest risk to the system. The following threats were found to be of highest concern:


Droughts


Cyberattack


Contamination


Vandalism / Sabotage


Long-Term Power Outage

Threat- Asset Pairs (TAPs)

A series of analytic steps were carried out to define the highest priority threat-asset pairs (TAPs) likely to impact the system the most. Risk scores for the TAPs were developed based on CVT (Consequence-Vulnerability-Threat-Likelihood) Analysis using several industry standards. Figure ES-1 shows high, medium, and low standard impacts to regional systems.

Figure ES-1: Threat-Asset Pairs of Greatest Concern: Asset Level

At the asset scale, [redacted] natural hazards like storms, flooding and droughts, [redacted] could pose the highest risk to the system.

Hampstead Area Water Company Resilience Index

Several metrics adopted by the water industry are used to estimate the Utility Resilience Index (URI) of a Utility. The purpose of the URI is to help the Hampstead Area Water Company (HAWC) to understand what factors can be changed to improve their resilience score. [redacted]

Conduct functional exercises annually on the ERP

Provide key staff with ICS/NIMS 100/200 training

Increase critical staff resilience to 75% or more

Risk and Resilience Assessment

The Small Systems Checklist approach was used to assess the resiliency of the Hampstead Area Water Company. It enables a qualitative assessment to be performed on all assets in the water system. With the Small Systems Checklist, a thorough comprehensive assessment of each threat/asset pair was able to be performed. This will allow the Hampstead Area Water Company to understand the risks associated with each asset, and what mitigation practices could be incorporated to better protect the system.

Bartlet Brook Well Facility

The steps and results for the Hampstead Area Water Company (HAWC) are shown in Table ES-2:

Table ES-2: Steps and Results for the HAWC Small Community Checklist Analysis

Steps	HAWC Results
Step 1: Asset characterization	The project team worked to identify water system assets and group them into EPA categories. Descriptions and characteristics of each asset were compiled, as well as the existing protective measures at each asset.
Step 2: Threat characterization	Malevolent Acts, Natural Hazards, and Dependency/Proximity threats were listed based on the J100 standard and EPA's definitions. The threats were included in the Small Systems Checklist.
Step 3: Consequence analysis	Consequences for each threat were identified as low, moderate, or high based on state data, geographic data, and experience. This step helped to narrow down the threats in each category.
Step 4: Vulnerability analysis	In general, vulnerabilities exist where physical security is not robust, infrastructure is aging and/or needs inspection or repair, or there is not a viable way to detect a threat. Vulnerabilities for each asset were identified.
Step 5: Threat Likelihood analysis	The threats most likely to occur include both human- caused and natural hazards. Certain threats were able to be discounted for several assets.
Step 6: Risk/resilience analysis	All critical assets had at least one high-risk value or medium-risk value from one or more threats. Mitigation measures can lower the risk of the effect these threats can have on the Hampstead Area Water Company mission, thereby increasing resilience.
Step 7: Risk/resilience management	The overall actions to increase water system resilience involve improvements in physical security such as improved fencing, access control, and lighting; policy/ procedures; infrastructure improvements, training, and operational and management controls etc.

Cyber Security Analysis

Utilities may have Process Control System (PCS) and enterprise systems that are physically or logically connected. In addition, many business applications that utilities rely on to support critical day-to-day operations reside within enterprise systems. The AWIA mandate places emphasis on assessing cybersecurity risks to the following:

- Electronic, computer, or other automated systems (including the security of such systems) which are utilized by the Utility
- The monitoring practices of the Utility (including network monitoring)
- The financial infrastructure of the Utility (accounting and financial business systems, such as customer billing and payment systems)
- SCADA Systems

The AWWA cyber security tool was used for this assessment. AWWA's cyber security tool is aligned with revisions to the National Institute of Standards and Technology (NIST) Cybersecurity Framework version 1.1 and requirements in Section 2013 of America's Water Infrastructure Act (AWIA) of 2018. The guidance and assessment tool emphasizes actionable recommendations with the highest priority assigned to those that are expected to provide the greatest impact in the short term.

[redacted]

Table ES-3: Priority 1 Cybersecurity Controls		
Improvement Project	Recommended Controls	Control Status
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]

Mitigation Measures for Resilience

The RRA has provided a unique opportunity to assess multiple aspects of the current state of the Hampstead Area Water Company and the impacts of an "All-Hazard" approach for AWIA compliance. Mitigation measures are important in decreasing risk and minimizing the severity of consequences when a threat occurs. However, threats some threats can rarely be prevented; staff should understand what actions to take should a threat occur. The findings and mitigation measures are as follows:

A review and any necessary revisions to the RRA is required at least every 5 years by the AWIA. The Emergency Response Plan should be updated based on the results and recommendation of the RRA and updated at least every 5 years.

1.0 INTRODUCTION

1.1 America's Water Infrastructure Act (AWIA)

America's Water Infrastructure Act (AWIA) established a national mandate that all community water systems (CWSs) serving more than 3,300 people (a) conduct a risk and resilience assessment (RRA) to identify and manage their most significant risks, and (b) update or revise the utility's emergency response plan (ERP). The AWIA and Environmental Protection Agency (EPA) guidance comprised a broader scope than is typical of ERPs, to include essential projects, protocols, and procedures that could fundamentally enhance a CWS's security and resilience. Specific deadlines were set for each requirement based on the number of people served by the CWS with smaller utilities, such as the Hampstead Area Water Company (HAWC), having June 31, 2021, and December 31, 2021, as the respective deadlines. Top management of CWSs is required to certify to the EPA that they have conducted the RRA and updated their ERP based on the results of the RRA to meet the requirements. To maintain the security of this highly sensitive, confidential information, the utilities are not obligated to submit the actual reports to EPA.

The overall objective of the RRA is to improve the resilience and security of the HAWC water system and the community it serves in a cost-effective way. This assessment evaluated various risks related to the system's critical assets, including:

- Source water, treatment, and chemicals
- Water collection, conveyance, and distribution
- Physical barriers
- Financial infrastructure
- Control systems, Network Architecture, Data flow controls and SCADA
- Operations and maintenance of the system
- Monitoring practices.

This report defines which of HAWC's assets are most critical – those that, if lost or seriously damaged, would impose catastrophic consequences to the Department's system operations, financial viability and/or its ability to meet its mission of providing water to the community. The assets include all significant buildings, treatment plants, reservoirs, stations, cyber systems, and other critical infrastructure.

This report also defines the specific threats that could cause catastrophic consequences for each critical asset, ranging from natural hazards to malevolent attacks to cyber intrusions to breakdowns of supply chain systems and suppliers that HAWC depends upon, such as electric power and chemicals. The approach for the assessment is to invest in identifying and ranking these critical assets and the threats that could cause the utmost losses and are considered worst-case scenarios. The project team evaluated a comprehensive inventory of HAWC's assets considering a carefully selected set of threats defined as having the potential to inflict the worst losses. As part of the evaluation, Weston & Sampson worked with HAWC's management and staff to rank the resulting potentially catastrophic threat-asset pairs (TAPs) relative to preliminary assessments of their likelihood and consequences of occurrence. This ranking established the priorities for all following analyses and planning, although additional TAPs may be added if the subsequent phases show them as critical. This approach focuses where the maximum benefits are likely to be found. As such, it establishes a sound platform for selective, in-depth

analysis of the TAPs with the most potential for risk reduction. The following report describes the RRA analysis in detail, the results of the analysis, and risk mitigation planning.

1.2 Background

Like any other water system, HAWC has experienced emergencies or threats from winter storms, power outages, Nor'easters, droughts, and others. October Snowstorm Alfred, Superstorm Sandy, and Tropical Storm Irene were the most prominent storm events in the past ten years. There have also been several more significant droughts in recent years. Malevolent acts that can threaten an asset's ability to operate normally have been an ongoing concern for water utilities. Power loss is an issue HAWC has had to deal with in the past. The system faces additional issues which could potentially disrupt operation and/or service. Past experiences help demonstrate existing risks to the system, the impact to high-risk assets/infrastructure, and to the critical facilities that are served by the system.

Being prepared for future threat events is an important part of HAWC's program to improve resiliency on a continual basis. HAWC conducted an RRA for its water system to determine the vulnerability of critical assets to natural hazards, human-caused hazards, and proximity/dependency hazards. This final RRA report compiles the results of the analysis and provides the HAWC with an understanding their system's most vulnerable assets along with recommendations to improve the resilience of the water system.

The project team used the EPA Small System Risk and Resilience Assessment Checklist to guide the analysis. The Small Systems Checklist allows for a qualitative comprehensive assessment of the utility's water infrastructure. Various threats are considered in the small systems checklist, including cybersecurity and sabotage. The Department of Homeland Security (DHS) has determined that assessing risks to infrastructure and being prepared can help utilities to effectively mitigate acts of terrorism at water and wastewater facilities (SAFETY Act; Part of the Homeland Security Act, PL 107-296). The SAFETY Act designated that by using the Standard, the CWS has certain liability protection should an act of terrorism occur (https://www.dhs.gov/science-and-technology/safety-act).

1.3 Goal and Purpose of HAWC's Assessment

The overall objective of the RRA was to conduct a risk assessment of HAWC's Water System (PWS 1031010 and 0112080). The assessment identified the Company's critical assets/infrastructure (including treatment plants, pump stations, conveyance network, physical barriers, etc.) and viable threats. The assessment then evaluated options and alternatives to mitigate the risks identified and to improve the resiliency of the system. All findings and options are compiled into Section 6 (Risk Management Strategies) including risk mitigation and management strategies. These findings and recommendations from the RRA will play a vital role in building additional resiliency into HAWC's system and better prepare the system for future threats. The update of the system's ERP will be based on the results of the RRA, interviews with the drinking water staff, an assessment of current practices, and collaboration between HAWC staff and the project team.

1.4 Overview

Historically, natural hazards in New Hampshire have consisted of winter storms, blizzards, hurricanes, earthquakes, etc. These events can cause coastal flooding, storm surge, power outages, widespread wind damage, and inland flooding. Humanmade hazards in the state have included extensive power

failure, cybersecurity threats, and other malevolent acts. The following table shows the likelihood of occurrence for various regional hazards or threat events based on historical data.

Table 1-1: Hazard Likelihood of Occurrence	
Hazard	Likelihood of Occurrence
Flooding and Heavy Rain	High
Dam Failures	Low
Coastal Hazards	High
Tsunami	Low
Hurricanes/Tropical Storms	High
High Winds (Severe Weather)	High
Nor'easter/Snowstorms/Blizzards	High
Earthquake	Low
Landslide	Low
Extreme Temperature	High
Malevolent Acts	Moderate
Cyber Attacks	Moderate
Pandemic	Moderate

The State of New Hampshire Department of Environmental Services (DES) collaborates and leads a variety of statewide emergency planning initiatives, such as the Assessment of Public Water Supplies, completed for HAWC in 2007. These assessments helped to identify any possible sources of contamination and are available online.

2.0 RISK AND RESILIENCE ASSESSMENT

The following section describes the methodology that was followed for the development of this RRA.

2.1 Analysis Approach

Several methodologies are being employed by CWS nationwide to conduct the RRAs. Among them the most prominent ones are: J100 methodology, use of the VSAT tool, Small System Checklist approach, and the use of the PARRE tool. The Small Systems Checklist was chosen as the methodology for assessing the risk and resiliency of HAWC's water system as it gives a detailed qualitative analysis of each asset. The checklist enables water assets to be grouped into categories and analyzed in relation to the malevolent threats and natural hazards described above. In contrast to other methodologies, all water assets in a system can be analyzed instead of only the critical assets.

The Small Systems Checklist incorporates the ANSI/AWWA J100-10 Standard as the basis of the analysis. ANSI/AWWA is the only organization in the water sector that sets standards recognized by the American National Standards Institute. Furthermore, the J100-10 Standard has been designated under the SAFETY Act, thereby reducing certain liabilities for those who apply it. Finally, it is widely accepted by water and wastewater systems and consulting and engineering experts.

Published in 2013, this standard sets the requirements for all-hazards risk and resilience analysis and management for the water sector and prescribes methods that can be used for addressing these requirements. The standard documents a process for identifying vulnerabilities to man-made threats, natural hazards, and dependencies and proximity to hazardous sites and provides methods to evaluate the options for improving these weaknesses in water and wastewater utilities. It is recognized by EPA as a standard guidance tool for the conduct of the RRA to comply with the AWIA mandate.

In addition to the Small Systems Checklist, an assessment of the utility's general resilience and an assessment of the utility's cybersecurity were performed, which are described in detail in Sections 4 and 5, respectively.

2.2 Asset Inventory and Classifying Critical Assets

The project team reviewed several documents specific to HAWC, including the NH DES Assessment of Public Water Sources – Hampstead, HAWC Water Quality Reports, the Atkinson-Hampstead System Overview Map, and the Emergency Plan for the Atkinson & Hampstead "Core" System, along with the federal mandate and available public domain and federally sponsored risk management standards and methods.

A comprehensive inventory of HAWC's physical assets and operation and maintenance processes was developed. Data was obtained from HAWC staff and various sources listed above. It was then reviewed and classified into broader categories to align with the key components of the RRA. For the purpose of this analysis, assets were defined at the level of a functional unit at a specific location, such as a building, a pump station, or a treatment plant.

Each asset was assigned to a functional class or designated as unique or singular. Unique or singular assets are one-off assets that would be analyzed individually and in depth. Treatment plants and major office buildings were all classified as singular assets. Where there are a larger number of assets that

perform the same or very similar functions (e.g., pump stations, wells etc.), an "archetypal" approach was designed. In this case, all the similar assets are listed and examined to see if they comprised a single class of assets or there were two or more subclasses that required separate treatment due to differences in function, technology, setting, etc. The assets were classified into one of the following categories:

- Physical Barriers
- Source Water
- Pipes and Constructed Conveyances
- Pre-treatment and Treatment
- Storage and Distribution Facilities
- Electronic, Computer, or other Automated Systems
- Monitoring Practices
- Financial Infrastructure
- Use, Storage, and Handling of Chemicals
- Operation and Maintenance

2.3 Threat Analysis

The initial source of threat definitions was in response to the question: "What keeps security managers and operations managers up at night?" The objective was to identify the threats that pose the greatest catastrophic, existential risk to HAWC or the community it serves. This focus on the worst of the worst was used because the objective of the project is to recommend major risk reduction options which, under constrained analytic time and resources, are most likely where there are the greatest risks.

The following steps were included as part of the threat analysis:

- Identification of malevolent threats, such as active assailants, workplace violence, terrorism, cyberattack, bomb threat, contamination of the water system, unauthorized entry, etc.
- Identification of natural hazards, such as hurricanes, flooding, ice storms, droughts, etc.
- Identification of dependency and proximity hazards, such as chemical release, power outage, loss of key suppliers, source water contamination, inability/unwillingness of crucial employees to come to work, etc.[1].

2.4 EPA Descriptions of Malevolent Acts[2]

The following table presents EPA definitions and related information for Malevolent Acts. The terminology and descriptions are from the 2019 EPA "Baseline Information on Malevolent Acts for Community Water Systems" report.

[1] American National Standards Institute/American Water Works Association, Risk and Resilience Management of Water and Wastewater Systems, J100-10, updated 2013, AWWA, Denver, CO.
[2] EPA, 2019. "Baseline Information on Malevolent Acts for Community Water Systems."

Table 2-1: EPA Descriptions of Malevolent Acts		
EPA Malevolent Act Category	EPA Definition	EPA Threat Scenarios
Assault on Utility – Physical*	A physical assault on utility infrastructure or staff with the intent of disabling infrastructure and/or terrorizing staff	Aircraft, assailants, boat, vehicle, active shooter, explosive
Contamination of Finished Water – Intentional	An incident where a contaminant is deliberately introduced into the finished water storage or distribution system with the intent of poisoning consumers and/or contaminating infrastructure	Biotoxin, chemical, pathogen, radionuclide
Contamination of Finished Water – Accidental[3]	An incident where contamination of finished water in the storage or distribution system occurs due to an unintentional operational, management, or design failure such as pressure loss, leaking infrastructure, or cross connection	Chemical or pathogen
Theft or Diversion – Physical	Any incident of physical theft or diversion of utility resources, supplies, and infrastructure material	Physical insider or physical outsider
Cyberattack on Business Enterprise Systems	A cyber-attack on utility billing, communications, data management or other information systems, which may disable affected systems and result in the loss of information resources, including personal, financial and other sensitive data, and other economic consequences for the utility	Cyber insider, cyber outsider, criminal group, terrorist, foreign intelligence service
Cyberattack on Process Control Systems	A cyber-attack on utility process control systems, including monitoring, operations, and centralized control. The attack may disable or manipulate utility infrastructure, potentially resulting in loss of service, the contamination of finished water and damage to utility infrastructure	Cyber insider, cyber outsider, criminal group, terrorist, foreign intelligence service
Sabotage – Physical	A malicious physical act that is carried out with the intention of causing adverse impacts on a utility process	Physical insider or physical outsider
Contamination of Source Water – Intentional	An intentional incident of contamination of a drinking water source that could result in contaminated water entering the utility. Applies to surface and groundwater sources (including purchased). The contamination may occur outside the control of the utility.	N/A

[3] Accidental contamination is not a malevolent act. It is included here due to similar potential consequences and because whether a contamination incident is intentional or accidental may not be known during initial response.

Table 2-1: EPA Descriptions of Malevolent Acts		
EPA Malevolent Act Category	EPA Definition	EPA Threat Scenarios
Contamination of Source Water – Accidental[4]	An unintentional incident of contamination of a drinking water source that could result in contaminated water entering the utility. Applies to surface and groundwater sources (including purchased). The contamination may occur outside the control of the utility.	N/A

Table information was adapted from the 2019 EPA "Baseline Information on Malevolent Acts for Community Water Systems" report

** Note: the "assault on utility - physical" category can include unintentional physical damage, whereas the "sabotage – physical" category includes only intentional acts*

2.5 Descriptions of Natural Hazards

Natural hazards pose significant threats to water systems. The following sections describe each natural hazard included in this RRA.

2.5.1 Hurricanes and Nor'easters

Destructive conditions caused by natural hazards can increase vulnerability in system sources and infrastructure. Storm events can cause flooding in low-lying areas, hazardous environmental conditions, long-term power outages, and disruption in water service. Infrastructure design should be developed to withstand the high-speed winds caused by larger category hurricanes and the winter weather associated with Nor'easters.

2.5.2 Earthquakes

Earthquakes can damage infrastructure located both below and above ground. They can also prevent employees and emergency personnel from arriving at an emergency location. High magnitude earthquakes are less likely in this area, but precautions should still be in place for the possibility of occurrence.

2.5.3 Tornados

Tornados can result in structural damage and loss of electric power. Loss of electric power could create a disruption in water service to its customers. Structural damage can also prevent employees and emergency personnel from arriving to an emergency location.

2.5.4 Flooding

Large storm events have the potential to cause flooding of an area, which can result in changes to drinking water quality/quantity. Historically, flooding events have damaged equipment at groundwater

[4] Accidental contamination is not a malevolent act. It is included here due to similar potential consequences and because whether a contamination incident is intentional or accidental may not be known during initial response.

wells, contaminated runoff into surface water supplies, and caused issues with infrastructure, leading to disruption in service to customers.

2.5.5 Ice Storms

Ice storms can result in loss of electric power, water main breaks, a shortage of staff, and more. Loss of electric power could create a disruption in water service to its customers. Historically, it is not uncommon to go up to a week or more without electric power service while the system is sustained by backup generators. Water main breaks are a threat related to ice storms and have taken place in HAWC in the past.

2.5.6 Droughts

Drought events directly affect drinking water supply and quality. Droughts have the potential to reduce water availability and increasing the occurrence of harmful algal blooms in surface water sources. Several droughts have been observed in recent years and have caused water suppliers to evaluate their systems and plan for future conditions. Additional interconnections may be possible to help create source redundancy for the parts of the system that currently rely on limited sources.

2.5.7 Pandemic

Water system personnel can be negatively impacted by a pandemic. Ideally, emergency backup procedures or personal can intervene if regular operations staff become ill. A review of water quality and personnel can aid in HAWC's preparedness for this potential hazard. Cross-training staff and maintaining updated training information will provide adequate support in this area if a pandemic occurs.

2.5.8 Power Outages as a Result of Natural Hazards

Loss of electric power could create a disruption in water service to customers. Historically, it is not uncommon to go up to a week or more without electric power service while the system is sustained by backup generators. The backup generators are typically designed to generate enough standby power for the system to operate until power is fully restored to the region.

2.5.9 Proximity and Dependency Hazards

The EPA considers dependency and proximity threats to be among the important threats to analyze in risk and resilience assessments. Utilities often depend on other towns or companies to receive water, chemicals, equipment, etc. Being dependent poses a threat should that town or company fail to serve the utility. Utilities can also be dependent on customers for income, and employees to keep the utility running.

Proximity threats arise when a utility is located near a hazardous area. For example, if a water system is located in or near an area known to deal with hazardous materials or is known to be contaminated with chemicals such as PFAS, that water system could experience consequences.

2.5.10 Fires

Water treatment facilities often contain chemicals and other flammable materials, putting them at risk of fires.

3.0 SMALL SYSTEMS CHECKLIST

The following sections describe HAWC characteristics and the various threats that may impact its water system.

3.1 HAWC's Water System and Assets

The Hampstead Area Water Company operates a larger number of wells in both the Town of Hampstead and the Town of Atkinson. A portion of the wells are planned to be abandoned in the near future and were not included in the following evaluation. Each well house treats the raw water with pressure filtration and chlorine disinfection. There is an existing interconnection with Salem at the West Side Drive Pump Station. An above ground pump station is planned to be constructed this year for the interconnection with Plaistow. The system serves approximately 2,800 customers, a population of approximately 7,000 residents, with an average daily consumption of about 0.5 MGD. The table below further summarizes HAWC's water infrastructure, which is described in more detail in subsequent report sections.

Based on information received from HAWC, an inventory of the water infrastructure and details of the attributes (tank capacity, reservoir capacities etc.) was developed based on the EPA defined categories. The next step was to identify high risk assets based on system operations, historical events, and discussions with HAWC based on operational and engineering experience. Table 3-1 summarizes HAWC's water infrastructure. The most critical assets that would impact system operations and financial structure were identified, and are bolded in the table below. Top critical assets include wells, treatment facilities, water storage tanks, and pump stations.

Table 3-1: HAWC Water Infrastructure

Category	Infrastructure
Physical Barriers	[redacted]
Source Water	[redacted]
Pipes and Constructed Conveyances, Water Collection, and Intake	[redacted]
Pretreatment and Treatment	[redacted]
Storage and Distribution Facilities	[redacted]

Table 3-1: HAWC Water Infrastructure	
Category	Infrastructure
	[redacted]
Electronic, Computer, or other Automated systems	[redacted]
Monitoring Practices	[redacted]
Financial Infrastructure	[redacted]
Use, Storage, and Handling of Chemicals	[redacted]
Operation and Maintenance	[redacted]

3.2 Physical Barriers

According to the EPA, this category encompasses physical security in place throughout the water system. Possible examples include fencing, bollards, and perimeter walls; gates and facility entrances; intrusion detection sensors and alarms; access control systems (e.g., locks, card reader systems); and hardened doors, security grilles, and equipment cages. HAWC's physical barriers that are outlined in Table 3-1 above.

3.2.1 Malevolent Acts

Table 3-2 outlines the malevolent acts that may affect the water system's physical barriers.

Table 3-2: Physical Barriers (Malevolent Acts)[5]	
Malevolent Acts	Brief Description of Impacts
☒ Assault on Utility – Physical	[redacted]
☐ Contamination of Finished Water – Intentional	Not applicable for the physical barriers category.
☐ Contamination of Finished Water – Accidental[6]	Not applicable for the physical barriers category.
☐ Theft or Diversion – Physical	Not applicable for the physical barriers category.

[5] In a risk assessment, physical barriers are usually treated as countermeasures, which reduce the risk of a threat to an asset, rather than being treated as assets. However, under AWIA, a CWS must assess the risks to and resilience of physical barriers.

[6] Accidental contamination is not a malevolent act. It is included here due to similar potential consequences and because whether a contamination incident is intentional or accidental may not be known during initial response.

Table 3-2: Physical Barriers (Malevolent Acts)[5]	
Malevolent Acts	Brief Description of Impacts
☐ Cyberattack on Business Enterprise Systems	Not applicable for the physical barriers category.
☐ Cyberattack on Process Control Systems	Not applicable for the physical barriers category.
☒ Sabotage – Physical	[redacted]
☐ Contamination of Source Water – Intentional	Not applicable for the physical barriers category.
☐ Contamination of Source Water – Accidental[7]	Not applicable for the physical barriers category.
☐ Other(s), enter below:	None identified.

[7] Accidental contamination is not a malevolent act. It is included here due to similar potential consequences and because whether a contamination incident is intentional or accidental may not be known during initial response.

3.2.2 Natural Hazards

Table 3-3 outlines the natural hazards that could potentially impact the water system's physical barriers.

Table 3-3: Physical Barriers (Natural Hazards)[8]	
Natural Hazards	**Brief Description of Impacts**
☒ Hurricane	Hurricanes as far inland as Hampstead or Atkinson may be rare, but similar weather conditions are possible and could cause damage. High sustained winds are more common, posing a serious threat to facilities surrounded by trees. Potential Risks: - Damage to fences and other physical barriers from fallen trees. - Fallen trees restricting access to remote facilities. Existing Countermeasures: - Tree clearing around facilities when overgrown.
☐ Flood	Not anticipated as a risk to physical barriers.
☐ Earthquake	Not anticipated as a risk to physical barriers.
☒ Tornado	The high wind risk associated with a tornado event is covered in the above *Hurricane* category. Hail is often associated with tornados, but is more likely to cause damage to the facility itself rather than the physical barriers.
☒ Ice storm	Snow/Ice storms are not likely to cause damage to physical barriers, but similarly to hurricanes, there is a concern for damage to physical barriers from fallen trees. For potential risks and existing countermeasures, see the *Hurricane* category above. In addition, the following risks were identified: Potential Risks: - Possible frozen locks on gates restricting access to the site by personnel. Existing Countermeasures: - Tools available to help either thaw or cut the lock to allow access to the site.
☐ Fire	Not anticipated as a risk to physical barriers.
☐ Other(s), enter below:	None identified.

[8] In a risk assessment, physical barriers are usually treated as countermeasures, which reduce the risk of a threat to an asset, rather than analyzed as assets themselves. However, under AWIA, a CWS must assess the risks to and resilience of physical barriers.

3.3 Source Water

According to the EPA, this category encompasses all sources that supply water to a water system. Possible examples include rivers, streams, lakes, source water reservoirs, groundwater, and purchased water. A number of HAWC's groundwater wells are planned to be abandoned and are, therefore, not included in this evaluation. The groundwater wells to remain active and in use include:

- Angle Pond Well Field (2)
- Bartlett Brook Well Field (3)
- Cranberry Meadows Well
- Granite Village Well
- Kent Farm Well
- Village Green Wells (2)
- Settlers Ridge (Pope Road) Well Field (2)
- Midpoint Well Field (3)
- Page Farm Well

3.3.1 Malevolent Acts

Table 3-4 outlines the malevolent acts that could potentially impact the source water.

Table 3-4: Source Water (Malevolent Acts)

Malevolent Acts	Brief Description of Impacts
☒ Assault on Utility – Physical	[redacted]
☐ Contamination of Finished Water – Intentional	Not applicable for the source water category.

Table 3-4: Source Water (Malevolent Acts)	
Malevolent Acts	**Brief Description of Impacts**
☐ Contamination of Finished Water – Accidental[9]	Not applicable for the source water category.
☐ Theft or Diversion – Physical	Not identified as a potential threat for the source water category.
☐ Cyberattack on Business Enterprise Systems	Not applicable for the source water category.
☐ Cyberattack on Process Control Systems	[redacted]
☒ Sabotage – Physical	[redacted]
☒ Contamination of Source Water – Intentional	[redacted]

[9] Accidental contamination is not a malevolent act. It is included here due to similar potential consequences and because whether a contamination incident is intentional or accidental may not be known during initial response.

Table 3-4: Source Water (Malevolent Acts)	
Malevolent Acts	Brief Description of Impacts
☒ Contamination of Source Water – Accidental[10]	[redacted]
☐ Other(s), enter below:	None identified.

3.3.2 Natural Hazards

Table 3-5 outlines the natural hazards that could potentially impact the source water.

Table 3-5: Source Water (Natural Hazards)	
Natural Hazards	Brief Description of Impacts
☒ Hurricane	As unlikely as a hurricane is, it poses several threats to the ground water wells. Flooding has not been observed in recent history in the well areas but would not be a significant threat to the wells located inside the buildings. Flood waters could delay access to facilities or cause damage to exposed electrical infrastructure. Power loss to the well pumps is the more serious threat that may affect well operation. Potential Risks: - Flood water fouls the wells and damage electrical equipment, causing a disruption in operation. - Flood waters delay access to facilities. - Isolated power outages disrupt operation of the well facilities. Existing Countermeasures: - Currently have several portable generators. - The Westside Drive Booster Pump Station has a backup generator in place and would be able to supply the system while several wells are offline. - All well houses have drainage.
☒ Flood	There has not been a known flooding issue in the system before. However, the possibility for future flooding still exists. The potential risks and existing countermeasures associated with flooding are covered in the above *Hurricane* category.

[10] Accidental contamination is not a malevolent act. It is included here due to similar potential consequences and because whether a contamination incident is intentional or accidental may not be known during initial response.

Table 3-5: Source Water (Natural Hazards)	
Natural Hazards	**Brief Description of Impacts**
☒ Earthquake	Earthquakes, while unlikely, have the potential to cause changes in groundwater levels. This may affect water withdrawal from the well and possibly disrupt service. Potential Risks: - Earthquake event which disturbs the aquifer, affecting well withdrawal. Existing Countermeasures: - The Westside Drive Booster Pump Station can provide water to the system if the wells are offline.
☒ Tornado	A tornado might be a threat to the wells largely for the same reason a hurricane might be, for cause of a power outage. See the *Hurricane* category above for the potential risks and existing countermeasures related to a power outage.
☒ Ice storm	See the *Hurricane* category above for the potential risks and existing countermeasures related to a power outage.
☐ Fire	Not anticipated as a risk to source water.
☒ Other(s), enter below: Drought	Drought restrictions can limit withdrawal from the wells. Water supply from the Westside Drive Booster Pump Station can be used to offset the higher summer demands. Potential Risks: - Drought conditions restricting withdrawal from the wells. Existing Countermeasures: - The Westside Drive Booster Pump Station can provide water to the system if the wells are offline.

3.4 Pipes and Constructed Conveyances, Water Collection, and Intake

According to the EPA, this category encompasses the infrastructure that collects and transports water from a source water to treatment or distribution facilities. Possible examples include holding facilities, intake structures and associated pumps and pipes, aqueducts, and other conveyances. HAWC's two PRV's fall under this category.

3.4.1 Malevolent Acts

Table 3-6 outlines the malevolent acts that could potentially impact pipes and constructed conveyances, water collection, and intake.

Table 3-6: Pipes and Constructed Conveyances, Water Collection, and Intake (Malevolent Acts)

Malevolent Acts	Brief Description of Impacts
☒ Assault on Utility – Physical	[redacted]
☐ Contamination of Finished Water – Intentional	Not considered a likely threat for the pipes and constructed conveyances category.
☐ Contamination of Finished Water – Accidental[11]	Not considered a likely threat for the pipes and constructed conveyances category.
☐ Theft or Diversion – Physical	Not considered a likely threat for the pipes and constructed conveyances category.
☐ Cyberattack on Business Enterprise Systems	Not considered a likely threat for the pipes and constructed conveyances category.
☐ Cyberattack on Process Control Systems	Not considered a likely threat for the pipes and constructed conveyances category.

[11] Accidental contamination is not a malevolent act. It is included here due to similar potential consequences and because whether a contamination incident is intentional or accidental may not be known during initial response.

Table 3-6: Pipes and Constructed Conveyances, Water Collection, and Intake (Malevolent Acts)	
Malevolent Acts	Brief Description of Impacts
☒ Sabotage – Physical	[redacted]
☐ Contamination of Source Water – Intentional	Not considered a likely threat for the pipes and constructed conveyances category.
☐ Contamination of Source Water – Accidental[12]	Not considered a likely threat for the pipes and constructed conveyances category.
☐ Other(s), enter below:	None identified.

3.4.2 Natural Hazards

Table 3-7 outlines the natural hazards that could potentially impact the assets in this category.

Table 3-7: Pipes and Constructed Conveyances, Water Collection, and Intake (Natural Hazards)	
Natural Hazards	Brief Description of Impacts
☐ Hurricane	Not anticipated as a risk to pipes and constructed conveyances.
☐ Flood	Not anticipated as a risk to pipes and constructed conveyances.
☒ Earthquake	Earthquakes pose a risk to any underground infrastructure. Structural damage may prevent entrance to the vaults/facilities and lead to costly infrastructure repairs/replacement. Potential Risks: - Structural damage to vaults/facilities that house the PRVs, leading to costly repairs.
☐ Tornado	Not anticipated as a risk to pipes and constructed conveyances.

[12] Accidental contamination is not a malevolent act. It is included here due to similar potential consequences and because whether a contamination incident is intentional or accidental may not be known during initial response.

Table 3-7: Pipes and Constructed Conveyances, Water Collection, and Intake (Natural Hazards)	
Natural Hazards	Brief Description of Impacts
☐ Ice storm	Not anticipated as a risk to pipes and constructed conveyances.
☐ Fire	Not anticipated as a risk to pipes and constructed conveyances.
☐ Other(s), enter below:	None identified.

3.5 Pretreatment and Treatment

According to the EPA, infrastructure in this category Encompasses all unit processes that a water system uses to ensure water meets regulatory public health and aesthetic standards prior to distribution to customers. Possible examples include sedimentation, filtration, disinfection, and chemical treatment. For the risk assessment, individual treatment processes at a facility may be grouped together and analyzed as a single asset if they have a similar risk profile.

3.5.1 Malevolent Acts

Table 3-8 outlines the malevolent acts that could potentially impact the treatment facilities.

Table 3-8: Pretreatment and Treatment (Malevolent Acts)

Malevolent Acts	Brief Description of Impacts
☒ Assault on Utility – Physical	[redacted]
☐ Contamination of Finished Water – Intentional	Not applicable for the pretreatment and treatment category.
☐ Contamination of Finished Water – Accidental[13]	Not applicable for the pretreatment and treatment category.
☐ Theft or Diversion – Physical	Not applicable for the pretreatment and treatment category.
☐ Cyberattack on Business Enterprise Systems	Not applicable for the pretreatment and treatment category.

[13] Accidental contamination is not a malevolent act. It is included here due to similar potential consequences and because whether a contamination incident is intentional or accidental may not be known during initial response.

Table 3-8: Pretreatment and Treatment (Malevolent Acts)	
Malevolent Acts	Brief Description of Impacts
☒ Cyberattack on Process Control Systems	[redacted]
☒ Sabotage – Physical	[redacted]
☐ Contamination of Source Water – Intentional	[redacted]
☐ Contamination of Source Water – Accidental[14]	Not applicable for the pretreatment and treatment category.
☐ Other(s), enter below:	None identified.

[14] Accidental contamination is not a malevolent act. It is included here due to similar potential consequences and because whether a contamination incident is intentional or accidental may not be known during initial response.

3.5.2 Natural Hazards

Table 3-9 outlines the natural hazards that could potentially impact the treatment facilities.

Table 3-9: Pretreatment and Treatment (Natural Hazards)	
Natural Hazards	**Brief Description of Impacts**
☒ Hurricane	While hurricanes are unlikely to cause significant damage as far inland as Hampstead and Atkinson, damage from high sustained winds and flooding have the potential to be significant and cause damage. Potential Risks: - High sustained winds causing roof damage. - Flooding in the station, possibly contaminating the wells, mixing with chemicals, or causing electrical damage.
☒ Flood	Flooding in the treatment facilities is considered very unlikely. However, it may be possible under the right circumstances. Possible risks and existing countermeasures for flooding in the treatment facilities are covered in the above *Hurricane* category.
☒ Earthquake	Earthquakes, while rare, have the potential to cause structural damage to the treatment buildings. Potential Risks: - Structural damage to buildings. Existing Countermeasures: - Buildings and foundations should have been designed and constructed according to appropriate code for earthquakes in the region.
☒ Tornado	The threat to the treatment facilities associate with tornados is damage due to high winds. Reference the *Hurricane* category above for similar potential risks and existing countermeasures.
☒ Ice storm	Ice and snowstorms can cause power outages and make access to the treatment facilities difficult. Potential Risks: - Communication interruptions. - Larger storm accumulation which delays access to treatment facilities. Existing Countermeasures: - The Westside Drive Booster Pump Station, office, Smith Mountain Tank, Atkinson Tank, and the Meditation Lane Lift Station have backup power generation. - HAWC owns a few portable generators.

Table 3-9: Pretreatment and Treatment (Natural Hazards)	
Natural Hazards	Brief Description of Impacts
☒ Fire	Fire is a top concern for any treatment facility. While HAWC has not had an issue with fire at a treatment facility in the past, there have been many instances in other water systems where a fire has caused extensive damage to treatment facilities. Construction on a treatment facility after fire damage can cause the facility to be offline for an extended period of time and can be costly for the utility. Potential Risks: - Damage to the facility and/or equipment which causes extended disruption in service and significant financial impacts. Existing Countermeasures: - Fire alarms in the treatment facilities. - Some facilities have auto-dialers on smoke alarms. - Only compatible chemicals are stored in close proximity. - The Westside Drive Booster Pump Station can supply the system if the wells are offline.
☐ Other(s), enter below:	None identified.

3.6 Storage and Distribution Facilities

According to the EPA, this category encompasses all infrastructure used to store water after treatment, maintain water quality, and distribute water to customers. Possible examples include residual disinfection, pumps, tanks, reservoirs, valves, pipes, and meters. HAWC's infrastructure that falls into this category includes:

- [redacted]

Critical infrastructure in this category includes:

- [redacted]

[redacted]

3.6.1 Malevolent Acts

Table 3-10 outlines the malevolent acts that could potentially impact the storage and distribution facilities.

Table 3-10: Storage and Distribution Facilities (Malevolent Acts)

Malevolent Acts	Brief Description of Impacts
☒ Assault on Utility – Physical	[redacted]

Table 3-10: Storage and Distribution Facilities (Malevolent Acts)	
Malevolent Acts	Brief Description of Impacts
☒ Contamination of Finished Water – Intentional	[redacted]
☐ Contamination of Finished Water – Accidental[15]	Not applicable for the storage and distribution facilities category.
☒ Theft or Diversion – Physical	[redacted]
☐ Cyberattack on Business Enterprise Systems	Not applicable for the storage and distribution facilities category.
☒ Cyberattack on Process Control Systems	[redacted]

[15] Accidental contamination is not a malevolent act. It is included here due to similar potential consequences and because whether a contamination incident is intentional or accidental may not be known during initial response.

Table 3-10: Storage and Distribution Facilities (Malevolent Acts)	
Malevolent Acts	Brief Description of Impacts
☒ Sabotage – Physical	[redacted]
☐ Contamination of Source Water – Intentional	Not applicable for the storage and distribution facilities category.
☐ Contamination of Source Water – Accidental[16]	Not applicable for the storage and distribution facilities category.
☐ Other(s), enter below:	None identified.

3.6.2 Natural Hazards

Table 3-11 outlines the natural hazards that could potentially impact the storage and distribution facilities.

Table 3-11: Storage and Distribution Facilities (Natural Hazards)	
Natural Hazards	Brief Description of Impacts
☒ Hurricane	Impacts to the storage and distribution facilities would be similar to those for the treatment facilities, listed in Table 3-9, with some slight differences. Potential Risks: - High sustained winds causing roof damage. - Flooding to underground vaults or pump stations which cause electrical damage. - Interruption to above-ground communications.
☒ Flood	Flooding is not likely, but concerns are covered in the *Hurricane* category above.
☒ Earthquake	Similar to the potential risks and existing countermeasures identified in Table 3-9, any earthquake that is possible for the area could potentially cause structural damage to buildings, tanks, or structures. All structures should have been designed according to code for any possible earthquakes, but the risk for structural damage is still present.
☒ Tornado	Possible risks and existing countermeasures associate with tornadoes are covered through the high sustained winds as noted in the *Hurricane* category above.

[16] Accidental contamination is not a malevolent act. It is included here due to similar potential consequences and because whether a contamination incident is intentional or accidental may not be known during initial response.

Table 3-11: Storage and Distribution Facilities (Natural Hazards)	
Natural Hazards	Brief Description of Impacts
☒ Ice storm	Snow and ice storms are very common in New England and are typically responded to quickly. The greatest associated risk would be restricted access to the remote facilities. Potential Risks: - Prolonged site access restricted by staff as they attempt to clear the area of snow/ice. - Disruption in communications or access (frozen locks) due to ice build-up. - Frozen locks.
☒ Fire	Fire is always a risk to buildings that can cause expensive damage. See Table 3-9 for potential risks and existing countermeasures associate with fire damage.
☒ Other(s), enter below: Lightning	Hampstead Tank had been hit by lightning periodically over the first few years it was in service. Efforts were made to ground the system to prevent damage to the electrical equipment. While the tanks are concrete and the known instance has been resolved for the foreseeable future, lightning strikes are still a risk to water storage tanks. Potential Risks: - Physical damage and scorching. - Damage to electrical equipment. Existing Countermeasures: - Grounded the Hampstead Tank.

3.7 Electronic, Computer, or Other Automated Systems

According to the EPA, this category encompasses all treatment and distribution process control systems, business enterprise information technology (IT) and communications systems (other than financial), and the processes used to secure such systems. Possible examples include the sensors, controls, monitors and other interfaces, plus related IT hardware and software and communications, used to control water collection, treatment, and distribution. Also includes IT hardware, software, and communications used in business enterprise operations. The assessment must account for the security of these systems (e.g., cybersecurity, information security). HAWC's infrastructure that falls under this category is the SCADA system and autodialers.

3.7.1 Malevolent Acts

For more details on cybersecurity, refer to Section 5 of this report.

Table 3-12: Electronic, Computer, or Other Automated Systems (Malevolent Acts)

Malevolent Acts	Brief Description of Impacts
☒ Assault on Utility – Physical	[redacted]
☐ Contamination of Finished Water – Intentional	Not applicable for the Electric, Computer, or Other Automated Systems category.
☐ Contamination of Finished Water – Accidental[17]	Not applicable for the Electric, Computer, or Other Automated Systems category.
☐ Theft or Diversion – Physical	Not applicable for the Electric, Computer, or Other Automated Systems category.
☐ Cyberattack on Business Enterprise Systems	Not applicable for the Electric, Computer, or Other Automated Systems category.

[17] Accidental contamination is not a malevolent act. It is included here due to similar potential consequences and because whether a contamination incident is intentional or accidental may not be known during initial response.

Table 3-12: Electronic, Computer, or Other Automated Systems (Malevolent Acts)	
Malevolent Acts	**Brief Description of Impacts**
☒ Cyberattack on Process Control Systems	[redacted]
☒ Sabotage – Physical	[redacted]
☐ Contamination of Source Water – Intentional	Not applicable for the Electric, Computer, or Other Automated Systems category.
☐ Contamination of Source Water – Accidental[18]	Not applicable for the Electric, Computer, or Other Automated Systems category.
☐ Other(s), enter below:	None identified.

[18] Accidental contamination is not a malevolent act. It is included here due to similar potential consequences and because whether a contamination incident is intentional or accidental may not be known during initial response.

3.7.2 Natural Hazards

For more details on cybersecurity, refer to Section 5 of this report.

Table 3-13: Electronic, Computer, or Other Automated Systems (Natural Hazards)	
Natural Hazards	**Brief Description of Impacts**
☒ Hurricane	[redacted]
☒ Flood	The potential risks and existing countermeasures associated with flooding are covered in the above *Hurricane* category.
☐ Earthquake	Not anticipated as a risk to electronic, computer, or other automated systems.
☒ Tornado	Possible risks and existing countermeasures associate with tornadoes are covered through the high sustained winds as noted in the *Hurricane* category above.
☒ Ice storm	Ice and snowstorms very typically cause isolated power outages. The potential risks and existing countermeasures associated with power outages are covered in the *Hurricane* category above.
☒ Fire	Potential risks and existing countermeasures associated with building fires align with those identified in Table 3-9.
☒ Other(s), enter below: Lightning	Lightning strikes may be rare for the existing infrastructure, but have the potential to cause serious damage to electrical equipment. <u>Potential Risks:</u> - Damage electrical equipment that is beyond repair and expensive to replace.

3.8 Monitoring Practices

According to the EPA, infrastructure in this category encompasses the processes and practices used to monitor source water and finished water quality, along with any monitoring systems not captured in other asset categories. Possible examples include sensors, laboratory resources, sampling capabilities, and data management equipment and systems. Examples are contamination warning systems for the source water or distribution system. HAWC's monitoring practices include sampling, process alarms, and a backflow prevention program.

3.8.1 Malevolent Acts

Table 3-14 outlines the malevolent acts that could potentially impact the monitoring practices.

Table 3-14: Monitoring Practices (Malevolent Acts)[19]

Malevolent Acts	Brief Description of Impacts
☒ Assault on Utility – Physical	[redacted]
☒ Contamination of Finished Water – Intentional	[redacted]

[19] Monitoring associated with physical security should be addressed under *Physical Barriers;* monitoring associated with process controls and cybersecurity should be addressed under *Electronic, computer or other automated systems*; monitoring associated with financial systems should be addressed under *Financial Infrastructure*.

Table 3-14: Monitoring Practices (Malevolent Acts)[19]	
Malevolent Acts	Brief Description of Impacts
☐ Contamination of Finished Water – Accidental[20]	Not applicable for the Monitoring Practices category.
☐ Theft or Diversion – Physical	Not applicable for the Monitoring Practices category.
☐ Cyberattack on Business Enterprise Systems	Not applicable for the Monitoring Practices category.
☒ Cyberattack on Process Control Systems	[redacted]
☒ Sabotage – Physical	[redacted]
☐ Contamination of Source Water – Intentional	Not applicable for the Monitoring Practices category.
☐ Contamination of Source Water – Accidental[21]	Not applicable for the Monitoring Practices category.
☐ Other(s), enter below:	None identified.

[20] Accidental contamination is not a malevolent act. It is included here due to similar potential consequences and because whether a contamination incident is intentional or accidental may not be known during initial response.
[21] Accidental contamination is not a malevolent act. It is included here due to similar potential consequences and because whether a contamination incident is intentional or accidental may not be known during initial response.

3.8.2 Natural Hazards

Table 3-15 outlines the natural hazards that could potentially impact the system's monitoring practices.

Table 3-15: Monitoring Practices (Natural Hazards)

Natural Hazards	Brief Description of Impacts
☒ Hurricane	A hurricane can very easily interrupt the staff's ability to perform the monitoring practices. Potential Risks: - Harsh weather which prevent normal monitoring practices. Existing Countermeasures: - Process alarms are protected in the treatment facility buildings.
☒ Flood	Flooding in the community may not be very likely, but it could pose potential risks to normal system operation. The biggest threat may be preventing staff from reaching certain system components isolated by the flooding. Flood waters may not infiltrate/drain from the area for an extended period of time. Potential Risks: - Isolated flooding restricting access to assets.
☒ Earthquake	Potential risks associated with earthquakes is structural damage. In this case, damage to the piping, hydrants, or gate valves. Potential Risks: - Structural damage to piping, hydrants, or gate valves preventing normal operation. Existing Countermeasures: - Regular inspection of hydrants and valves.
☒ Tornado	Potential risks and existing countermeasures associated with a tornado are covered in the *Hurricane* category above.
☒ Ice storm	Ice and snowstorms also have the potential to restrict access to hydrants or valves. The potential risks would be similar to those previously mentioned in the above *Flood* category.
☒ Fire	Not anticipated as a risk to monitoring practices.
☐ Other(s), enter below:	None identified.

3.9 Financial Infrastructure

According to the EPA, assets in this category encompass equipment and systems used to operate and manage utility finances. Possible examples include billing, payment, and accounting systems, along with third parties used for these services. This asset category is not intended to address the financial "health" of the water utility (e.g., credit rating, debt-to-equity ratios). HAWC's billing software falls under this category.

3.9.1 Malevolent Acts

For more details on cybersecurity, refer to Section 5 of this report.

Table 3-16: Financial Infrastructure (Malevolent Acts)

Malevolent Acts	Brief Description of Impacts
☐ Assault on Utility – Physical	Not applicable for the Financial Infrastructure category.
☐ Contamination of Finished Water – Intentional	Not applicable for the Financial Infrastructure category.
☐ Contamination of Finished Water – Accidental[22]	Not applicable for the Financial Infrastructure category.
☒ Theft or Diversion – Physical	[redacted]
☒ Cyberattack on Business Enterprise Systems	[redacted]
☐ Cyberattack on Process Control Systems	Not applicable for the Financial Infrastructure category.
☐ Sabotage – Physical	Not applicable for the Financial Infrastructure category.
☐ Contamination of Source Water – Intentional	Not applicable for the Financial Infrastructure category.

[22] Accidental contamination is not a malevolent act. It is included here due to similar potential consequences and because whether a contamination incident is intentional or accidental may not be known during initial response.

Table 3-16: Financial Infrastructure (Malevolent Acts)	
Malevolent Acts	Brief Description of Impacts
☐ Contamination of Source Water – Accidental[23]	Not applicable for the Financial Infrastructure category.
☐ Other(s), enter below:	Not applicable for the Financial Infrastructure category.

3.9.2 Natural Hazards

For more details on cybersecurity, refer to Section 5 of this report.

Table 3-17: Financial Infrastructure (Natural Hazards)	
Natural Hazards	Brief Description of Impacts
☐ Hurricane	Not anticipated as a risk to monitoring practices.
☐ Flood	Not anticipated as a risk to monitoring practices.
☐ Earthquake	Not anticipated as a risk to monitoring practices.
☐ Tornado	Not anticipated as a risk to monitoring practices.
☐ Ice storm	Not anticipated as a risk to monitoring practices.
☐ Fire	Not anticipated as a risk to monitoring practices.
☐ Other(s), enter below:	None identified.

[23] Accidental contamination is not a malevolent act. It is included here due to similar potential consequences and because whether a contamination incident is intentional or accidental may not be known during initial response.

3.10 The Use, Storage, or Handing of Chemicals

According to the EPA, this category encompasses the chemicals and associated storage facilities and handling practices used for chemical disinfection and treatment. Assessments under this asset category should focus on the risk of uncontrolled release of a potentially dangerous chemical like chlorine where applicable. The treatment facilities utilize sodium hypochlorite and ammonia sulfate at the Westside Drive Booster Pump Station and all well facilities, while caustic soda is added at the Westside Drive Booster Pump Station, Village Green Well Station, Midpoint Well Station, and Settlers Ridge (Pope Road) Well Station. There is also an SOP for chemical deliveries and a spill response plan is in place.

3.10.1 Malevolent Acts

Table 3-18 outlines the malevolent acts that could potentially impact facilities and handling practices for chemicals.

Table 3-18: The Use, Storage, or Handing of Chemicals (Malevolent Acts)

Malevolent Acts	Brief Description of Impacts
☐ Assault on Utility – Physical	Not applicable for the Use, Storage, or Handling of Chemicals category.
☐ Contamination of Finished Water – Intentional	Not applicable for the Use, Storage, or Handling of Chemicals category.
☐ Contamination of Finished Water – Accidental[24]	Not applicable for the Use, Storage, or Handling of Chemicals category.
☐ Theft or Diversion – Physical	Not applicable for the Use, Storage, or Handling of Chemicals category.
☐ Cyberattack on Business Enterprise Systems	Not applicable for the Use, Storage, or Handling of Chemicals category.
☒ Cyberattack on Process Control Systems	[redacted]

[24] Accidental contamination is not a malevolent act. It is included here due to similar potential consequences and because whether a contamination incident is intentional or accidental may not be known during initial response.

Table 3-18: The Use, Storage, or Handing of Chemicals (Malevolent Acts)	
Malevolent Acts	Brief Description of Impacts
☒ Sabotage – Physical	[redacted]
☐ Contamination of Source Water – Intentional	Not applicable for the Use, Storage, or Handling of Chemicals category.
☒ Contamination of Source Water – Accidental[25]	[redacted]
☐ Other(s), enter below:	None identified.

[25] Accidental contamination is not a malevolent act. It is included here due to similar potential consequences and because whether a contamination incident is intentional or accidental may not be known during initial response.

3.10.2 Natural Hazards

Table 3-19 outlines the natural hazards that could potentially impact facilities and handling practices for chemicals.

Table 3-19: The Use, Storage, or Handing of Chemicals (Natural Hazards)	
Natural Hazards	**Brief Description of Impacts**
☒ Hurricane	Any damage to the treatment facilities could potentially contaminate the chemicals or result in spills. The potential risks are similar to those in Table 3-9. Existing Countermeasures: - Secondary containment and alarms alerting operators of spills are in place.
☒ Flood	Flooding could potentially contaminate the chemicals, but the bigger concern is that the chemicals would contaminate the flood waters. Potential Risks: - Contamination of chemicals with flood water, making them unusable and expensive to dispose of. - Contamination of the flood water with chemicals, creating an environmental concern. Existing Countermeasures: - Secondary containment comprised of non-permeable material.
☐ Earthquake	Not anticipated as a risk to Use, Storage, or Handling of Chemicals.
☒ Tornado	Damage associate with extreme weather is covered in the *Hurricane* category above.
☐ Ice storm	Not anticipated as a risk to Use, Storage, or Handling of Chemicals.
☒ Fire	Certain chemicals are at risk of exploding when exposed to extreme heat and/or fire. The other concern is that when burned, the chemical would produce hazardous fumes. Potential Risks: - Hazardous fumes caused by chemicals during a fire at a facility. - Explosion of chemicals upon exposure to flame. Existing Countermeasures: - Local fire department has been made aware of what chemicals are stored in the facilities and where they are kept.
☐ Other(s), enter below:	None identified.

3.11 The Operation and Maintenance of the System

According to the EPA, this category encompasses critical processes required for operation and maintenance of the water system that are not captured under other asset categories. Possible examples include equipment, supplies, and key personnel. Assessments may focus on the risk to operations associated with dependency threats like loss of utilities (e.g., power outage), loss of suppliers (e.g., interruption in chemical delivery), and loss of key employees (e.g., disease outbreak or employee displacement). HAWC's processes and equipment for operations and maintenance include certified operators and spare equipment.

3.11.1 Malevolent Acts

Table 3-20 outlines the malevolent acts that could potentially impact the HAWC's processes and equipment for operations and maintenance.

Table 3-20: The Operation and Maintenance of the System (Malevolent Acts)

Malevolent Acts	Brief Description of Impacts
☐ Assault on Utility – Physical	Not applicable for the Operation and Maintenance of the System category.
☐ Contamination of Finished Water – Intentional	Not applicable for the Operation and Maintenance of the System category.
☒ Contamination of Finished Water – Accidental[26]	[redacted]
☐ Theft or Diversion – Physical	Not applicable for the Operation and Maintenance of the System category.
☐ Cyberattack on Business Enterprise Systems	Not applicable for the Operation and Maintenance of the System category.
☐ Cyberattack on Process Control Systems	Not applicable for the Operation and Maintenance of the System category.
☐ Sabotage – Physical	Not applicable for the Operation and Maintenance of the System category.
☐ Contamination of Source Water – Intentional	Not applicable for the Operation and Maintenance of the System category.

[26] Accidental contamination is not a malevolent act. It is included here due to similar potential consequences and because whether a contamination incident is intentional or accidental may not be known during initial response.

Table 3-20: The Operation and Maintenance of the System (Malevolent Acts)	
Malevolent Acts	Brief Description of Impacts
☐ Contamination of Source Water – Accidental[27]	Not applicable for the Operation and Maintenance of the System category.
☒ Other(s), enter below:	None identified.

3.11.2 Natural Hazards

Table 3-21 outlines the natural hazards that could potentially impact the HAWC's processes and equipment for operations and maintenance.

Table 3-21: The Operation and Maintenance of the System (Natural Hazards)	
Natural Hazards	Brief Description of Impacts
☐ Hurricane	Not anticipated as a risk to Operation and Maintenance of the System.
☐ Flood	Not anticipated as a risk to Operation and Maintenance of the System.
☐ Earthquake	Not anticipated as a risk to Operation and Maintenance of the System.
☐ Tornado	Not anticipated as a risk to Operation and Maintenance of the System.
☐ Ice storm	Not anticipated as a risk to Operation and Maintenance of the System.
☐ Fire	Not anticipated as a risk to Operation and Maintenance of the System.
☐ Other(s), enter below:	None identified.

[27] Accidental contamination is not a malevolent act. It is included here due to similar potential consequences and because whether a contamination incident is intentional or accidental may not be known during initial response.

4.0 UTILITY RESILIENCE INDEX EVALUATION

The URI is a nationally recognized matrix used to develop an all-hazard resiliency index to evaluate the level of preparedness within water sector utilities. The index is dependent on individual utility data to establish the baseline, and the indicators used are derived from data that are regularly available to a utility manager. When the indicator data are aggregated and normalized, the index provides a functional representation of a utility's current state of resilience. The all-hazard utility resilience index is critical to facilitating the rapid assessment of potential gaps in a utility's capacity to respond and recover quickly from an incident. The Utility Resiliency Index (URI) supports decision management for resource allocation to mitigate and/or enhance observed deficiencies.

The twelve indicators are broadly classified into two classes:

1. Operational – these indicators reflect the tactical capacity of the utility to react quickly and/or cope with various incidents that have the potential to disrupt services.
2. Financial – these indicators reflect the fiscal capacity of the utility to react quickly and/or cope with various incidents that have the potential to disrupt revenue and costs.

In all 12 instances, each selected indicator includes five (5) criteria that generally represent a graduated level of performance. Each element is then measured on a scale ranging from 1 to 5, where 1 represents poor or low resilience and 5 represents high resilience. If applied to the first operational indicator on emergency response planning (O1), the measure would vary as follows: a utility with no emergency response plan would report a one (1) to reflect poor or low resilience; if a utility has conducted a functional exercise of the emergency response plan it would report a five (5). The criteria of each indicator serve to elevate and raise awareness of the varying levels of action and/or capabilities that support or influence the overall system level resilience of a utility. In addition, this adds a level of granularity to the URI that identifies where opportunities may exist for improvement should a utility rate low within any given indicator. It is fully recognized that in some instances, especially the financial indicators, that the utility has no direct control or opportunity to change the rating. However, that does not necessarily diminish the indicators value in terms of building awareness of factors that influence the overall resilience of the utility.

The index establishes a baseline using indicators from individual utility data and compares them to criteria derived from the national database for water utilities. Aggregation and normalization of the indicator data provides a functional representation of a utility's current state of resilience. This all-hazard utility resilience index is critical to evaluate potential gaps in a utility's ability to respond and recover quickly from an incident or emergency event. The URI will aid in guiding HAWC's decisions for resource allocation to mitigate observed deficiencies. Table 4-1 shows the URI analysis that was performed for HAWC and is followed by some of the recommended measures that can be adopted to further increase resiliency.

Table 4-1: Utility Resilience Index	
URI Indicator	Status
1. Emergency Response Plan (ERP)	Resource type assets/teams defined and inventoried
2. National Incident Management System (NIMS) Compliance	No ICS/NIMS training completed or NIMS compliance unknown
3. Mutual Aid and Assistance (MAA)	Local-Local (with adjacent city / town)
4. Emergency Power for Critical Operations (EPCO)	Greater than or equal to 73 hours of backup power
5. Minimum Daily Demand / Treatment (MDDT)	Greater than or equal to 73 hours
6. Critical Parts and Equipment (CPE)	3 days to less than 7 days
7. Critical staff resilience (CSR)	Greater than 25 to 50%
8. Business Continuity Plan (BCP)	N/A
9. Utility Bond Rating (UBR)	N/A
10. Government Accounting Standards Board (GASB) Assessment	Less than 20% assessed or unknown
11. Unemployment[28]	<=5% National Average
12. Median Household Income (MH)[29]	10% or more below State Median

[redacted]

[28] Unemployment was based on 2019 data from U.S. Bureau of Labor Statistics.
[29] Household income was based on 2019 data from U.S. Census Bureau.

5.0 CYBERSECURITY ANALYSIS

National intelligence agencies report cybersecurity as the top threat facing critical infrastructure. AWIA requires all community water systems serving populations of 3,300 or more to conduct and certify completion of a risk and resilience assessment and an emergency response plan. The new requirement for assessing cybersecurity risks focuses on the following:

- Electronic, computer, or other automated systems and their security.
- Monitoring practices of the system (network monitoring).
- The financial infrastructure of the system (accounting and financial business systems operated by a utility, such as customer billing and payment systems).
- SCADA Systems.

Utilities may have PCS and enterprise systems that are physically or logically connected. In addition, many business applications that utilities rely on to support critical day-to-day operations reside within enterprise systems. To account for this, enterprise systems are explicitly included in the AWIA requirements for the risk and resilience assessment (RRA) and emergency response plan (ERP).

The described assessment utilized the AWWA cyber security tool. AWWA's cyber security tool is aligned with revisions to the National Institute of Standards and Technology (NIST) Cybersecurity Framework version 1.1 and requirements outlined in Section 2013 of America's Water Infrastructure Act (AWIA) of 2018. The tool provides a simplified user interface that generates a prioritized list of recommended controls based on responses to 22 use-case questions regarding application various technologies. The user does not provide any security sensitive information nor does AWWA retain any user information.

The guidance and assessment tool assigns highest priority to factors that are expected to provide the greatest impact in shorter periods of time and emphasizes actionable recommendations. The assessment tool provides users with a clear approach to assess the implementation status of applicable controls. The tool also considers needs for system improvements and progress documentation. AWWA's Cybersecurity Guidance and Assessment Tool has been recognized by the USEPA, DHS, NIST and several states for aiding water systems in evaluating cybersecurity risks.

To complete a full assessment of electronic, computer, automated systems, and financial infrastructure, a cybersecurity assessment was performed. The following sections describe the results of the cybersecurity analysis.

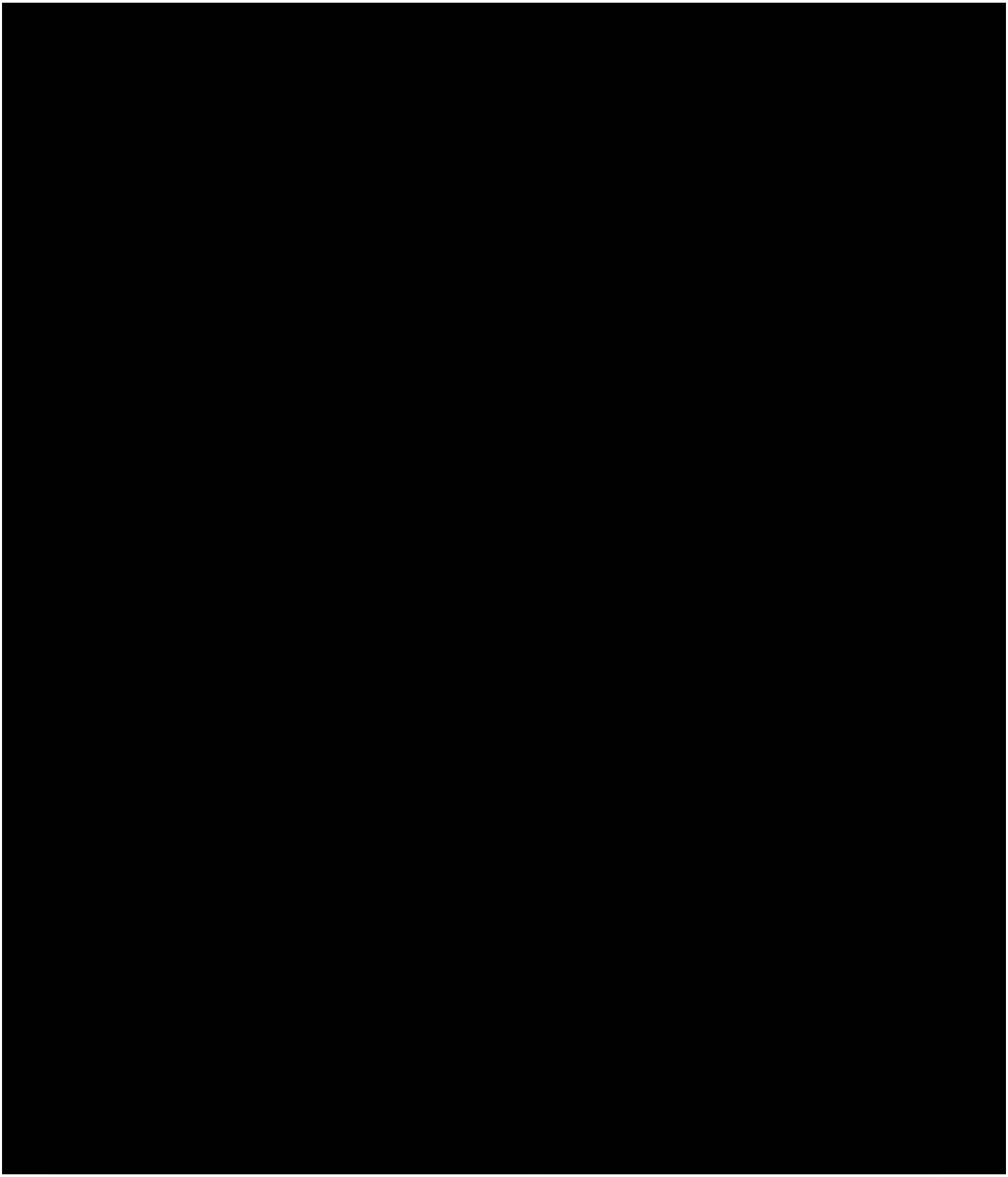
5.1 AWWA Self-Assessment Tools Analysis

The first step in completing the AWWA tool for the cybersecurity assessment is a questionnaire. HAWC and Lewis Builders staff answered a set of questions on the policies, procedures and use of their PCS and enterprise systems, which were then input in the web application. The AWWA Assessment Tool automatically maps the utility's PCS, enterprise system configuration and practices to the recommended control measures. The questions used in the tool are outlined in Table 5-1 below.

Table 5-1: AWWA Tool Questions	
Indicator	Answer
[redacted]	[redacted]

Security controls were identified for the system based on the above analysis. A security control is a measure to support effective cyber defense. Most of the controls are measures designed to reduce risk. The controls were developed from industry standards which were correlated, integrated, and enhanced. [redacted]. Several of the priority 1 items are currently being addressed with recent improvements.

Table 5-2: Cybersecurity Controls					
Improvement Project	Recommended Controls	Additional Details/Examples	Priority	Control Status	Control References
Server and [redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]



6.0 RISK MANAGEMENT STRATEGIES

Water systems must be able to detect, respond to, and recover from malevolent acts, natural hazards, and cyberattacks. Historically, HAWC has operated efficiently during emergency events and have provided quality service without major disruptions to their customers. The facilities have been built and operated with a holistic perspective that considers risks to the system. [redacted].

RRAs are meant to address uncertainty in the evolving public safety and security environment. The assessment also aids in decision making with an improved understanding of relevant risks (e.g., likelihood, impact). The proposed resilience measures outlined below could affect organizational objectives, effectiveness of existing risk response measures, effectiveness of potential future risk response measures, and an understanding of the inherent uncertainties in all key aspects of the risk and resilience assessment process.

6.1 Risk & Resilience Mitigation Measures

Mitigation measures are imperative in decreasing risk and minimizing the severity of consequences when a threat occurs. The RRA has provided a unique opportunity to assess multiple aspects of the current state of water systems and the impacts of an "All-Hazard" approach for AWIA compliance. Mitigation measures are important in decreasing risk and minimizing the severity of consequences when a threat occurs. However, threats are rarely prevented; staff should understand what actions to take should a threat occur. Table 11 outlines potential countermeasures that HAWC could implement.

Table 6-1: Countermeasures

Countermeasures	Brief Description of Risk Reduction or Increased Resilience
1. [redacted]	[redacted]
[redacted]	[redacted]

Table 6-1: Countermeasures	
Countermeasures	Brief Description of Risk Reduction or Increased Resilience
3. [redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]

6.2 Develop an Emergency Response Plan

The revision of the ERP is critical to the resilience of HAWC's system. The ERP is the next step after completing the RRA and will establish actions to enhance response and recovery during and following a threat occurrence or emergency. The results of this RRA can be used to update the ERP and provide guidance to support HAWC's other efforts like Risk Mitigation Plans, Capital Improvement Plans, and long-range planning.

7.0 REFERENCES

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HAMPSTEAD AREA
WATER COMPANY, INC
54 SAWYER AVENUE, ATKINSON, NH 03811
TEL: 603.362.4299 FAX: 603.362.4936
www.hampsteadwater.com

Public Water System

EMERGENCY PLAN

For the

ATKINSON & HAMPSTEAD "CORE" SYSTEM

Last Updated November 18, 2021

ATKINSON & HAMPSTEAD CORE SYSTEM
EMERGENCY ACTION PLAN

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Schedule of Attachments

SYSTEM IDENTIFICATION - Section 1

System EPA Number	**1031010 & 0112080**		
System Name	**ATKINSON & HAMPSTEAD "Core" System / Hampstead Area Water System**		
System Address	**54 Sawyer Avenue**		
Town	**Atkinson, NH**		
Source ID/Type/Description/Well Yield	**See Attachment B**		gpm **See Attachment B**
Source ID/Type/Description/Well Yield	**See Attachment B**		gpm **See Attachment B**
Source ID/Type/Description/Well Yield	**See Attachment B**		gpm **See Attachment B**
Source ID/Type/Description/Well Yield	**See Attachment B**		gpm **See Attachment B**
Population Served/# Service Connections	# of people **6,795**	# of connections **2,718**	
Name, Title, E-mail and Phone Number of person responsible for maintaining this emergency plan.	name and title: **Stephen Fournier** Operations Manager	Phone: 603-362-1916 E-Mail: sfournier@hampsteadwater.com	

CHAIN – OF – COMMAND – Section 2 [*See Attachment D*]

Hampstead Area Water company, Inc. (HAWC) General Manager (GM) President and Vice President

The General Manager (GM), President, and Vice President (VP) are the first to be notified of an Emergency. The President and VP will direct the GM to commence Emergency efforts, including initiation of System or area-wide water conservation measures, Boil Order, and/or other appropriate actions. The GM and Operations Manager (OM) will also mobilize equipment and labor support, as necessary, and if needed, from the company's emergency contractor, Lewis Builders Development, Inc. (LBDI).

HAWC Operations Manager (OM)

The Operations Manager (OM) has general responsibility for managing a water *Emergency* at any, or all, of the HAWC sub-systems. The OM is a certified water system operator Distribution 2 and Treatment 1. Under normal circumstances, the OM will be the first person notified in the case of an Emergency or serious problem within the water system after the GM, VP and President.

If a non-critical problem occurs in the water system, the OM will either personally attend to the problem, or mobilize the necessary support staff and/or equipment to undertake necessary repairs or intervention.

If there is a serious water Emergency, such as contamination of a water source or disablement of an active water system, the OM will immediately notify the GM, and all

personnel on the Chain of Command. ***[See Attachment D]***

1. If a water *Emergency* occurs, the OM (or his appointee) will also immediately notify local, and state emergency agencies, as appropriate, including police, fire, ambulance, local Health Officer, and NHDES Water Supply Engineering Bureau.

2. If necessary, the OM will instruct the Assistant Water Operators (AWOs) to implement and direct the "system user" notification procedures. The Sampling Agent will be aided in this effort by HAWC daytime office staff.

3. In the case of an Emergency, the OM will contact the contractor specified in the service / repair notification list below for deployment of equipment.

Assistant Water Operators (AWO)

The AWOs are licensed Water System Operators, whose responsibility it is to perform a variety of delegated operation & maintenance tasks during normal system operations, and act as a sampling agent in the event of an Emergency.

1. Under Emergency conditions, the AWO will continue to perform as directed by the OM. But, as appropriate, under system Emergency conditions, he will also be responsible for performing specific water samples and delivering them to the designated laboratory.

Project Engineer (PE)

The PE is responsible for developing well siting reports for proposed new bedrock water sources, general waterworks technical consultation, and also for providing necessary liaison with State and Federal agencies.

1. In an Emergency environment, the PE will provide general technical support for the Emergency response. And they will act as liaison with State and federal agencies, as needed.

Office Staff and Equipment Resources

During normal business hours the Atkinson offices of HAWC and LBDI have several trained (and cross-trained) staff to respond to Emergency calls from water customers and/or municipal police and fire departments. During normal business hours, problem and Emergency calls arrive at the office, where the staff has immediate radio, internet, and/or cell phone access to the GM, OM, the AWO and/or other HAWC resources.

HAWC has an emergency contractor, LBDI. In the event of an emergency requiring heavy equipment and operators, LBDI is available with little or no delay.

Technical Resources

HAWC has a SCADA system in place that monitors many stations in the Atkinson & Hampstead system (Angle Pond Woods, Atkinson Tank, Bartlett Brook, Cranberry Meadows, Granite Village, Kent Farm, Sawyer Tank, Main St Pressure Reducing Station

Meditation Ln, Midpoint, Page Farm, Pope Road, Jameson Ridge, Smith Mtn. Tank, Village Green, and Westside Dr. The stations with SCADA are set up with Win-911 which interprets the stations status and alerts the Operations staff in the event of an alarm at a station.

The stations that do not currently have SCADA installed are equipped with alarms monitored by Pulsar Alarm Systems that monitor various station conditions. These alarms are also forwarded to the on-call operator. All stations equipped with Pulsar alarms are equipped with door entry alarms.

EMERGENCY NOTIFICATION PROCEDURES – Section 3

Hours of operation

HAWC Provides 24 hour seven days a week emergency response for all Customers. All water customers may contact HAWC at any time of day or night, to report problems or emergencies. The following message is printed on all water bills:

" 24-hour Emergency Service Available 603-362-4299 "

Any type of Water System Emergency or problem call, that occurs during normal business hours (8:00 A.M. to 4:30 P.M.), will be answered by a full-time office employee assigned to answer HAWC phone calls and greet clients and visitors. In response to a report of any type of Emergency or serious problem, that office employee will immediately contact the GM and OM Either the OM or GM will then notify VP and President.

If an Emergency or problem call occurs after normal business hours, or on a weekend or holiday, the call is automatically routed to an answering service. The answering service operates during all off – business hours and follows a detailed list of instructions in the event of an emergency. **[See *Attachment* A]**

HAWC On-Call Operator

A rotation system is in place for the HAWC on-call operator. At the start of each month, the answering service receives an updated calendar which shows the on-call operators for the upcoming month. However, there is also a standard Chain of Command (including names and home phone, cell phone so that if the designated on-call operator does not immediately respond, the next alternate on-call operator or HAWC representative is contacted. The answering service has instructions to continue this process until a responsible party is reached, and can respond.

If a customer, or local Police or Fire department, or other party calls to report any type of system malfunction or problem, or other system Emergency, our on-call operator will respond immediately, in accordance with the relative severity of the reported condition. The on-call operator will assess the problem and, either remedy the situation directly, or phone for support personnel and/or equipment, as required.

In case a serious *Emergency* or disaster occurs, which requires mobilization of our Emergency response team, the Chain of Command would go into effect.
[See Attachment D]

Boil Orders – Section 3A [*See Attachment G]*

A boil order shall be issued as soon as possible, but no later than 24 hours after the water system learns that a water sample has shown the presence of fecal coliform or E. coli bacteria. The boil order shall remain in effect until a minimum of two consecutive sets of samples show the absence of total, fecal, and E. coli bacteria; the source of the contamination has been identified and corrected; and DES notifies the system owner that the boil order may be lifted. Proof of public notice of the boil order, as described below, shall be completed and sent to DES within 10 days of issuing the boil order notice.

Forms of Delivery

HAWC will use, at a minimum, one or more of the following methods to notify water customers of a Boil Order:

1. Reverse 911 Call system – HAWC will use this system to rapidly notify its customers through their phone number on record in the event of an Emergency

2. Immediately furnish a copy of the notice to radio and television stations that broadcast to the area served by the public water system;

3. Post the notice in conspicuous locations throughout the area served by the water system

4. Door-to-door delivery of notice; or

5. Publication of the notice for three consecutive days in a daily newspaper of general circulation that serves the area of the water system.

6. Post on the Company's website, www.hampsteadwater.com.

Local Notification List Atkinson		**Local Notification List Hampstead**	
FIRE (day/night)	**603-362-5611**	FIRE (day/night)	**603-329-6006**
POLICE (day/night)	**603-362-4001**	POLICE (day/night)	**603-329-5700**
Ambulance service (day/night)	**603-362-5611**	Ambulance service (day/night)	**603-329-6006**
Local Emergency Management Office (day/night) **NH Dept. of Safety Emergency Mgmt**	**603-271-2231**	Local Emergency Management Office (day/night) **NH Dept. of Safety Emergency Mgmt**	**603-271-2231**
Local Health Officer (day/night) **Michael Dorman**	**603-819-8657**	Local Health Officer (day/night) **Kristopher Emerson**	**603-329-4100 Ext.116**
Local Newspaper (day/night) **Eagle Tribune** **Union Leader**	 **978-946-2000** **603-668-4321**	Local Newspaper (day/ night) **Eagle Tribune** **Union Leader**	 **978-946-2000** **603-668-4321**
City/Town Officials (day/night): **Selectmen**	 **603-362-5266**	City/Town Officials (day/night): **Selectmen**	 **603-329-4100**
Local Radio Station (day/night) **WOKQ**	 **603-749-9750**	Local Radio Station (day/night) **WOKQ**	 **603-749-9750**
Power Company (day/night) **Unitil** **PSNH**	 **800-582-7276** **800-662-7764**	Power Company (day/night) **Until** **PSNH**	 **800-582-7276** **800-662-7764**

SCADA Contact (day/night) **Wilson Controls** **603-422-5271** Pulsar Alarm 888-478-5727	SCADA Contact (day/night) **Wilson Controls** **603-422-5271** **Pulsar Alarm Systems** 888-478-5727
Local TV Station (day/night) **WMUR** **603-669-9999**	Local TV Station (day/night) **WMUR** **603-669-9999**

State Notification List

State Police	**603-223-4381**
Drinking Water and Groundwater Bureau	**271-2513 or 271-3503**
Bureau of Emergency Management	**271-2231 or 1-800-852-3792**
Health and Human Services	**271-4496**
Dig Safe	**1-888-DIG-SAFE**

Service/Repair Notification List

Electrician (day) **Sweet Electric 603-378-2120**	Electrician (night) Sweet **Electric 603-378-2120**
Plumber (day) **Richard Bibeau 603-548-5143**	Plumber (night) **Richard Bibeau 603-548-5143**
Pump Specialist (day) **Richard Bibeau 603-548-5143**	Pump Specialist (night) **Richard Bibeau 603-548-5143**
Contractor (day) **Lewis Builders Development, Inc. 603-362-5333**	Contractor (night) **Lewis Builders Development, Inc. 603-362-5333**
Hydrogeologic Consultant (day) **EGGI 603-271-4425**	Hydrogeologic Consultant (night) **EGGI 603-271-4425**
Equipment Rental (day) **Lewis Builders Development, Inc. 603-362-5333**	Equipment Rental (night) **Lewis Builders Development, Inc. 603-362-5333**
Laboratory (day) **Nelson Analytical 603-622-0200**	Laboratory (night) **Nelson Analytical 603-622-0200**

Critical Users – Section 3B

The Atkinson & Hampstead core system has eleven critical users **(See table below).** During emergencies causing interruption of service, the GM and OM are responsible for providing priority notification to the Atkinson & Hampstead System Critical Users. Priority notification will be provided to these customers. If the GM or OM cannot reach these Critical Users by telephone, then in person contact will be attempted at the facilities.

Atkinson Fire Department	**603-362-5611**
Atkinson Library	**603-362-5234**
Atkinson Community Center	**603-362-5531**
Atkinson Municipal Offices – 19 Academy Ave.	**603-362-5266**
Atkinson Academy – 17 Academy Ave.	**603-362-5521**
Hampstead Congregational Church – 61 Main St.	**603-329-6985**
St. Anne Parish – 26 & 99 Emerson Ave.	**603-329-5886**
Hampstead Elementary School – 21 Emerson Ave.	**603-329-6326**
Hampstead Fire Department – 226 East Main St.Rt 121A	**603-329-6006**
Hannaford Grocery – 205 Sandown Rd.	**603-329-0182**

East Hampstead Union Church – 229 Main St.	**603-378-0683**
Hampstead Municipal Offices – 11 Main St.	**603-329-5011**
Hampstead Village Pre-School – 185 Brown Hill Rd.	**603-382-3696**

Mutual Aid – Section 3C
HAWC does not have any formal mutual aid in place.

SYSTEM COMPONENTS – Section 4 ***[See Attachment B]***

System Equipment & Chemicals – Section 4A

[See Attachment B]

System Plan – Section 4B

HAWC operators maintain a secure distribution map book of all Atkinson & Hampstead components. There is also a map book at the office and all maps are in digital format on the HAWC secure servers. In addition to this the OM and AWO's have tablets with wireless internet to access the map books, email, and SCADA system while in the field. ***See Attachment C*** for the Atkinson & Hampstead as-built book.

System Demand – Section 4C

[See Attachment E]

ALTERNATE WATER SOURCE – Section 5
Bulk and/or Bottled Water – Section 5A
As part of our overall Emergency Response capability, HAWC has access to an approved bulk water hauler. With this hauler HAWC can transport water to any of its individual systems that may have an Emergency need.

The HAWC's Atkinson & Hampstead "Core" System currently includes a number of separate active bedrock supply wells and numerous atmospheric bulk water storage tanks, including a 500,000 gallon atmospheric tank in Hampstead, and a 400,000+ gallon system storage tank and a 1 million gallon tank in Atkinson. Bulk water will be readily available if an "out-of-water" Emergency arises in any one of our component systems. **See *Attachment* B** for information regarding HAWC's Atkinson & Hampstead "Core" System wells and atmospheric storage tanks.

Bulk Storage
The 1 Million gallon Atkinson tank is located next to the Page Farm development off Winslow Drive, and the 400,000 gallon Atkinson system storage tank is located at 54 Sawyer Rd. There is also a 500,000 gallon system storage tank on top of Smith Mountain, off the end of Freedom Hill Road in Hampstead.

Since all our Atkinson & Hampstead "Core" water systems adjoin paved roadways in southeastern New Hampshire, it is reasonable to assume that road access will be available for Emergency use of our bulk water tank truck. Under normal circumstances, allowing time

for disinfecting and filling the tank truck, Emergency water could be delivered anywhere within our Atkinson & Hampstead “Core” System within about two hours. The company has plowing capability in severe winter conditions and if necessary or for a catastrophic situation, the company can mobilize equipment and labor support from the company’s emergency contractor, Lewis Builders Development, Inc. (LBDI) to assist our water tank truck to gain access

Once an Emergency water tank truck arrives at a location, the nature of the crisis will dictate how water is delivered to our customers. If possible, water from the tank truck will be transferred into the local system bulk storage tank. That would allow normal system operation to continue, albeit under “Emergency” “controlled” conditions. However, if for any reason, transferring water into the system is determined to be impractical or inappropriate, customers will be able to fill their own portable water containers at a disclosed location. Customers would be notified via the company website and reverse 911.

WATER SUPPLY TREATMENT

***Attachment* B** shows the pumping/treatment stations that provide treatment.

Since most stations feed chlorine, they could easily be adjusted to respond to a bacteria emergency with no modification to the station. However, if other contaminants were discovered, such as VOCs, temporary supplemental treatment could be implemented. For example, an actual emergency incident might involve mobilizing a portable, skid mounted air stripping tower, or a granular activated carbon (GAC) filter column.

Since most of the HAWC bedrock wells are relatively low volume supply sources (40 GPM or less), temporary piping and electrical arrangements can be easily implemented to accommodate temporary supplemental treatment. HAWC, and/or our contractor (LBD) typically have many of the usual water system repair and replacement materials and supplies in stock. Otherwise, because of our extensive inventory needs, we also have close business ties with a variety of major equipment and material vendors and suppliers.

See the table below for a list of vendors and suppliers:

Pump Supplier **R.E. Prescott 800-479-4320**
General Water Works Supplier **Ti-Sales 800-225-4616**
General Water Works Supplier **EJP 800-EJP-24HR**
General Water Works Supplier **Core and Main. 603-263-7350**
Excavation Contractor – Lewis Builders – **603-362-5333**
Pipe Supplier / Equipment Rental **East Coast Lumber 603-329-7532**
Generator Rental **Rent-a-Tool Revere, MA 781-289-3800**
Generator Rental **Power up Generator - Auburn, NH 603-657-9080**

Generator Rental **MB Equipment – Plaistow, NH 603-382-5031**

Interconnections with Adjacent Water Systems – Section 5B

HAWC interconnected the Atkinson and Hampstead "Core" systems in 2009. A connection, between the major systems, greatly enhanced the flexibility and reliability of both systems.

HAWC is part of the Southern New Hampshire Regional Water Project which connects the Core system to Manchester, Londonderry, Derry, Windham and Salem to move water to Plaistow. This allows for up to 173 gallons per minute of continuous supply and 1,000 gallons per minute in an emergency.

New Source / Reactivation – Section 5C

HAWC continually seeks to secure and develop new source supplies. See Attachment B for the source list.

Alternate Power Supply – Section 6

The HAWC office has a generator to power the office in the event of a power outage. The Hampstead core system currently has two locations with Standby generators in the event of a power outage, Westside Dr Booster Station and Meditation Ln Booster Station. However, during previous outages HAWC has rented generators from LBDI and other contractors to provide emergency power during electrical outages ***See Attachment F*** for a list of all HAWC electrical services in Atkinson & Hampstead.

WATER USE RESTRICTIONS / CONSERVATION – Section 7

HAWC implements an Even / Odd watering schedule all year round in the Atkinson & Hampstead system. During severe summer drought conditions, HAWC has imposed Water Bans in portions of our system. This was done to insure an adequate supply for all our customers. Notification is usually via first class mail, bill inserts, posting on the company website, and reverse 911. In any type of emergency, we could impose a similar Water Ban, to temporarily reduce daily productions needs.

As part of our normal Customer Information and Relations program, we send a Water Conservation Supplement to our customers once a year. Our Conservation message is made part of our annual Water Quality Report to customers. We also use our website and billings to reach out to customers regarding conservation.

RETURN TO NORMAL OPERATION – Section 8

The decision to return to normal system operation is made by the HAWC GM, President and/or VP. The President and/or VP will make this decision based on input from the DES and HAWC staff. Some examples are below:

In the case of a typical seasonal water shortage, customers are usually notified by mail. Our mailing explains that water use is restricted for a specified period of time. The chosen time period is based on HAWC historical experience. Instructions to customers include the caveat that the period for restrictions will be extended if it becomes necessary. Among other

reasons, this approach was selected to minimize the mailing costs associated with water restrictions.

In the case of a non-typical, disaster situation, after the need for restricted or controlled water use had passed, customers would be notified by mail and/or other forms of information media. Every effort will be made to help customers transition from such a situation back to normal.

Risk & Resilience Assessment (optional) – Section 9

HAWC did prepare a formal Risk & Resilience Assessment, ***see attachment H***. Below, there are some common emergencies and how the company proceeds with each one from start to finish listed below.

Water Main Break

- Notify GM and OM of Hampstead Area Water Company.
- Notify Dig Safe and file emergency ticket.
- Notify DES, and fire department.
- Call Water System Operators to respond and contractor to excavate.

Note: Water System Operator's stocks the necessary supplies to address a water main break – sleeves, etc. The HAWC Contractor has the necessary labor and equipment to repair if needed. The majority of the Atkinson & Hampstead Core system is comprised of SDR 21 PVC and C909 PVC water main.

- Notify affected customers, DES, Fire and Police Departments by reverse 911system that system will be out of service.
- Close appropriate gate valves in street to isolate break.
- Following repair of break, the appropriate flushing device will be used to flush that portion of the system.
- Customers, DES, Fire and Police Departments will be notified by phone tree that system is back in service.

Loss of Power

- Notify GM and OM of Hampstead Area Water Company.
- Notify DES of Emergency that causes water outage within 24 Hours.
- Notify Critical Users that causes water outage
- Electrical providers will be contacted and an estimate obtained for restoration of service.

• Emergency backup generators will immediately be dispatched to the largest and most appropriate sources without power and at the Sawyer Ave Tank booster station.

• If the estimated time to restore service is more than 2 days, customers will be notified, and conservation of use will be requested.

• Following restoration of service, subscribers will be notified by phone that conservation of use restriction is lifted.

Loss of Supply

• Loss of supply will result in a low tank alarm being transmitted to the HAWC office via a SCADA alarm or Pulsar alarm message depending on system resources. This alarm will prompt the company to determine reason for loss.

• Notify Company GM and OM

• Notify DES of Emergency within 24 Hours.

• Notify Critical Users.

• Certified operator (Water System Operators) will be notified to correct the problem.

• If the problem is due to loss of a well(s) or pump(s), the appropriate contractors will be notified to replace pump or address the well problem by addressing the well fields capacity.

• If the problem is due to piping or wiring, Water System Operators will correct the problem - with outside assistance if necessary.

• If the estimated time to restore service is more than 2 days, customers will be notified to conserve water as necessary per the emergency.

• Following restoration of service, customers will be notified that the conservation of use restriction is lifted.

Loss of Storage Capability

• Notify GM, President, VP, and OM of the company.

• Notify DES of Emergency within 24 Hours.

• Notify Critical Users.

• Loss of one tank will not impair the system.

• Should many tanks become unusable, they will be isolated and removed from service to be repaired. Valves will be positioned so the wells can pump directly into the mains.

• Customers will be notified, and conservation of use requested.

• Following restoration of service, customers will be notified that the conservation of use restriction is lifted.

PLAN READINESS AND TRAINING – Section 10

1. The OM will update the plan as necessary but at a minimum annually.

2. The most recent copy of the Emergency Plan will be kept in the OM's truck.. The plan will also be on file and kept in the HAWC main office and is available electronically by the President, VP, GM, OM, and ASO's

3. The cover of our plan is clearly labeled to make it easy to find.

4. In all cases, earlier plans will be disposed of properly after receipt of a newer plan.

Any new HAWC staff will be trained on all aspects of our emergency plan

SIGNATURES – Section 11

The owner and operator of the system must sign and date below.

Other system representatives who assisted in the completion of this plan are recommended to sign and date below. The signatures attest that all information provided is true and accurate and that both the owner and primary operator have read and understand this plan.

Owner Signature	Date 12/1/21
General Manager 	Date 12/1/21
Operations Manager 	Date 12/1/21

ATTACHMENT A

24-HR ON-CALL NOTIFICATION PROCEDURES

HAMPSTEAD AREA
WATER COMPANY, INC
54 SAWYER AVENUE, ATKINSON, NH 03811
TEL: 603.362.4299 FAX: 603.362.4936
www.hampsteadwater.com

After-Hours Emergency Service Procedures

Please note: This is a monthly service provided by Atkinson Resort & Country Club; it is billed to Hampstead Area Water Company, Inc. (HAWC) and considered part of the Guest Services responsibility.

Hampstead Area Water Company, Inc. (HAWC) background:

HAWC is a privately owned public utility, servicing customers since 1977. HAWC is regulated by the NH Public Utilities Commission (NHPUC) as well as the NH Department of Environmental Services (NHDES).

HAWC currently owns and operates 23 community water systems located in 13 communities throughout southern New Hampshire serving 4,059 customers. In the event of an emergency or water related issue HAWC has on-call certified water operators that are able to diagnose and make any necessary repairs in a timely manner.

HAWC's Normal Business Hours are:

Monday through Friday 7:00 am-4:30 pm

Emergency services are provided:

Overnight - 4:30 pm to 7:00 am Monday through Friday

Weekends - 4:30 pm Friday through 7:00 am Monday

Holidays - New Years Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Christmas Day

Locations of HAWC water systems:

Atkinson (Bryant Woods, Carriage Chase Estates, Centerview, Cogswell Farm, Dearborn Ridge, Heritage Estates, Jameson Ridge, Page Farm, Sawmill Ridge, Settlers Ridge, The Commons at Village Dr & Wellington Circle, Walnut Ridge, Atkinson Heights)

Hampstead & East Hampstead - (Angle Pond Woods, Bartlett Brook, Bricketts Mill, Catherine Estates, Colby Corners, Cranberry Meadows, Eastwood Place, Emerson Village, Granite Village, Four Seasons, Irongate Village, Kent Farm, Merryfield Estates, Putnam Place, Squire Ridge/Scott Dr, Steeple Chase, Tanglewood, Village Green, Woodland Pond & Winchester Heights)

Chester (Oakhill)

Danville (Colby Pond, Caleb Commons)

East Kingston (Cricket Hill/Maplevale)

Fremont (Blackrocks Village, Cornerstone)

Kingston (Lamplighter, Coopers Grove & Kings Landing)

Newton (Sargent Woods)

Nottingham (Camelot Court)

Plaistow (Rainbow Ridge, Little River Village & Snows Brook)

Salem (Lancaster Farm)

Sandown (Autumn Hills, Cornerstone Estates, Fairfield, Little Mill Woods, Stoneford Estates, Waterford Village Estates & Wells Village, Kelly Green)

Strafford (Bow Lake Estates)

All calls are to be answered *"Emergency Service, how may I help you?"*

All calls that are forwarded to the emergency service are deemed an emergency by the caller. However, after

you take a description of the issue, if it is not an apparent emergency (i.e. discolored water, water main break, no water, or low pressure), please ask the caller to call back during normal business hours and log the call. If the caller insists that it is an emergency, please notify the person on-call.

Types of Emergencies to Contact the On-Call Person:

No Water

Abnormally Low Water Pressure

(Customer has electricity & no known power outage at well house)

Water Quality (i.e. discolored - brown, yellow, pink, "foamy")

Water Leak in Service Line (Located underground)

Dig Safe Calls

Alarm Calls

Water Main Breaks

Water Bubbling from the Ground/Road

If the caller states there is no electricity please ask if they have notified their electric provider. If not, please suggest they notify their Electric Provider and notify The On-Call Person.

DO NOT contact the On-Call person for NON-Emergency issues such as the following:

Billing/Payment questions, Past Due Reminder Letters, Disconnection Notices, New Account Set-Up, Service Applications, Ending Service, Final Meter Readings, Website questions..etc.

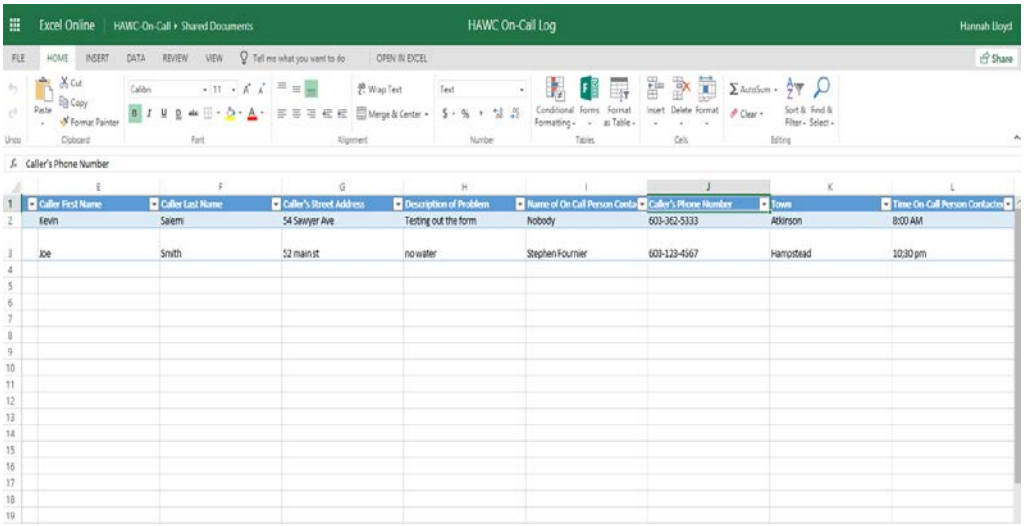
Please inform the caller they must contact HAWC office at 362-4299 during normal business hours or direct them to our website www.hampsteadwater.com

All calls or emails received by ARCC Emergency Service are to be logged on the HAWC Emergency Call Log.

On Call Log

See below example.

Link: https://lewisbuilders1.sharepoint.com/:x:/s/HAWC-On-Call/EYJGMm0ugZREuZL1lHIkVtcBMFcYYycHUtsURkuFVn4DPQ?rtime=Wk1Ug0aS2Ug

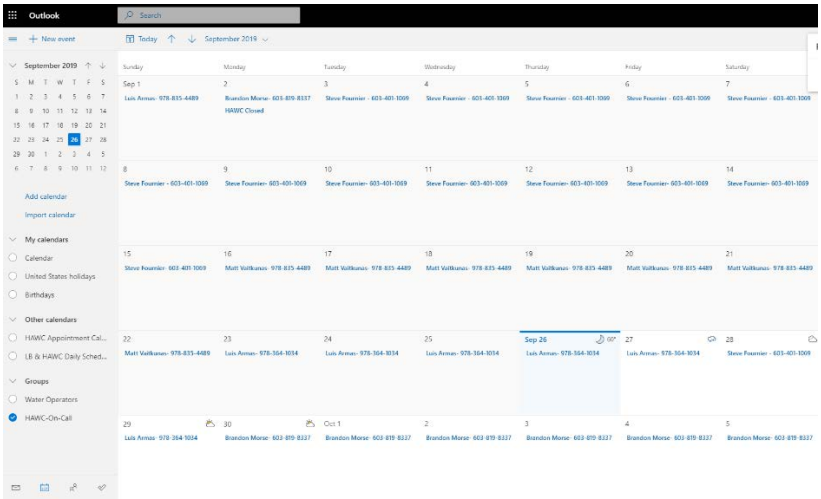


On-Call Schedule:

HAWC provides an On-Call schedule each month. This can be found on the HAWC On Call Calendar in Outlook.

Link: https://hampsteadwater.sharepoint.com/sites/HAWCOnCallCalendar/Lists/HAWC%20On%20Call%20Calendar/calendar.aspx

See below example.



****INTERNAL USE ONLY – DO NOT PROVIDE ANY PHONE NUMBERS TO CALLERS****

On-Call Contacts:

Verify "On-Call Schedule" prior to contacting

Don Gowans (c) [redacted] **Email:** DGowans@hampsteadwater.com

Jeff Cote (c) [redacted] **Email:** JCote@hampsteadwater.com

Brandon Morse (c) [redacted] **Email:** Bmorse@hampsteadwater.com

Vincent Brown (c [redacted] **Email:** VBrown@hampsteadwater.com

Chad Johnson (c) [redacted] **Email:** CJohnson@hampsteadwater.com

If On-Call person does not answer the phone call you must leave a message requesting, they contact you.

If On-Call person does not call back within 10 minutes of your first call/message, retry calling.

If still unable to reach the On-Call person, please follow the same procedure to contact the next On Call person (go in order down the HAWC On Call Contact List).

Example: Luis is listed on the schedule as being On-Call. An emergency call comes in, attempts are made to contact Luis to no avail; the next step would be to attempt to contact the next On-Call person, Steve. If the alternate contact, Steve, is non-responsive, call the next On Call person, Rich. If he is non-responsive, call using the "HAWC Personnel Contact List".

HAWC On Call Contact List:

Employee Name	Cell:	Email:
1. Person On Call		
2. Stephen Fournier	[redacted]	Sfournier@hampsteadwater.com

If neither of the On-Call people are responsive use the list below to contact a HAWC employee, moving down the list until you physically speak to someone.

HAWC Personnel Contact List:

Employee Name:	Cell:	Home:	Email
1. Charlie Lanza	[redacted]		charlie@hampsteadwater.com
2. Rich Bibeau	[redacted]		rbibeau@hampsteadwater.com

3. Harold Morse	[redacted]	[redacted]	**Harold@lewisbuilders.com**
4. Chris Lewis Morse	[redacted]	[redacted]	**Chris@AtkinsonCC.com**
5. Rick Dube	[redacted]	[redacted]	**Rick@lewisbuilders.com**
6. Jonathan Morse	[redacted]		**JMorse@Lewisbuilders.com**
7. Dan Lewis	[redacted]	[redacted]	**Danlewis@lewisbuilders.com**

If you mistakenly contact the wrong on-call person please note this on the call log next to the call, as HAWC will need to reimburse them for the call even if it is an error.

An email should be sent to the person contacted and also to both Steve and Rich with the information from the call.

Please obtain the following information:

Customer Calls:

- Name of Caller (Company if applicable)
- Street Address
- Town
- Phone Number
- Description of Problem

**If multiple customers from the same area call with an identical problem, call the On-Call Person each time until told otherwise by the On-Call Person. *

Well House/Water Alarm Calls:

(From Alarm Company - Centra-Larm/Pulsar)

The Alarm Company Operator will tell you info about a well house/water system which you will need to relay to the On-Call Person and record on the call sheet.

Please obtain the following information from the Alarm Co:

- Operator Name and Number
- Location of Well House
- Description of Problem (Type of Alarm)

Example:

Alarm Co:

"This is operator number 5, John Doe, from Centra-Larm calling to inform you of a Critical Low Water alarm we're receiving from Bryant Woods. Can I have your name please?"

Emergency Service:

State "Your Name"

(If necessary, inform them you are authorized to accept the info and that they will not be receiving a return call back from the on- call person.)

**If you receive multiple calls for the same Well House/Water System and/or Alarm Type call the On-Call Person each for each Alarm Call until told otherwise or until you are authorized to place the call on hold by the On-Call Person. **

Burglar Alarm Calls:

(From Alarm Company - Centra-Larm/Pulsar):

The Alarm Company Operator will tell you info about a well house/water system which you will need to relay to the On-Call Person and record on the call sheet.

Please obtain the following info from the Alarm Company Operator:

- Operator Number
- Location of Well House
- Description of Problem (Type of Alarm)

The Alarm Company Operator may ask if you are okay due to the burglary alarm. Once you have answered they will ask you for the password.

Password = [redacted]

They may ask you if you would like them to notify the Police - ***DO NOT NOTIFY THE POLICE!!*** Immediately contact the On-Call Person. The On-Call person should give further instructions for any necessary action you may need to take.

Voice Automated Alarm Calls from SCADA System:

SCADA is HAWC's in-house computerized well house alarm monitoring system. When a problem occurs you will receive a phone call from the SCADA system.

- You will be asked to enter an access code - Press **111#**.
- You will hear an automated message informing you of the problem. For example:

"*Waterford PS Low Water Tank PSI Alarm*"

- If you are unable to understand the message press * to replay the message as many times as needed.
- The same information is simultaneously sent to the Guest Services e-mail account.
- Record the information on the call sheet.
- Acknowledge the alarm by pressing **111#**
- Notify **the On-Call Person** of the alarm.
- Continue to notify the **On-Call Person on** repeat alarms unless they tell you to no longer to do so.

Please note: During an Emergency when overwhelming call volume from the SCADA system occurs, the Guest Services Rep may contact the on-call person to request the alarm system be disabled.

Calls from Emergency Dig Safe:

These calls are from the national Dig Safe Call Center. State laws require anyone who digs to notify utility companies before starting. Dig Safe System, Inc. is a communication network, assisting excavators, contractors and property owners in complying with state law by notifying the appropriate utilities before digging.

Please obtain the following information from the Dig Safe Representative:

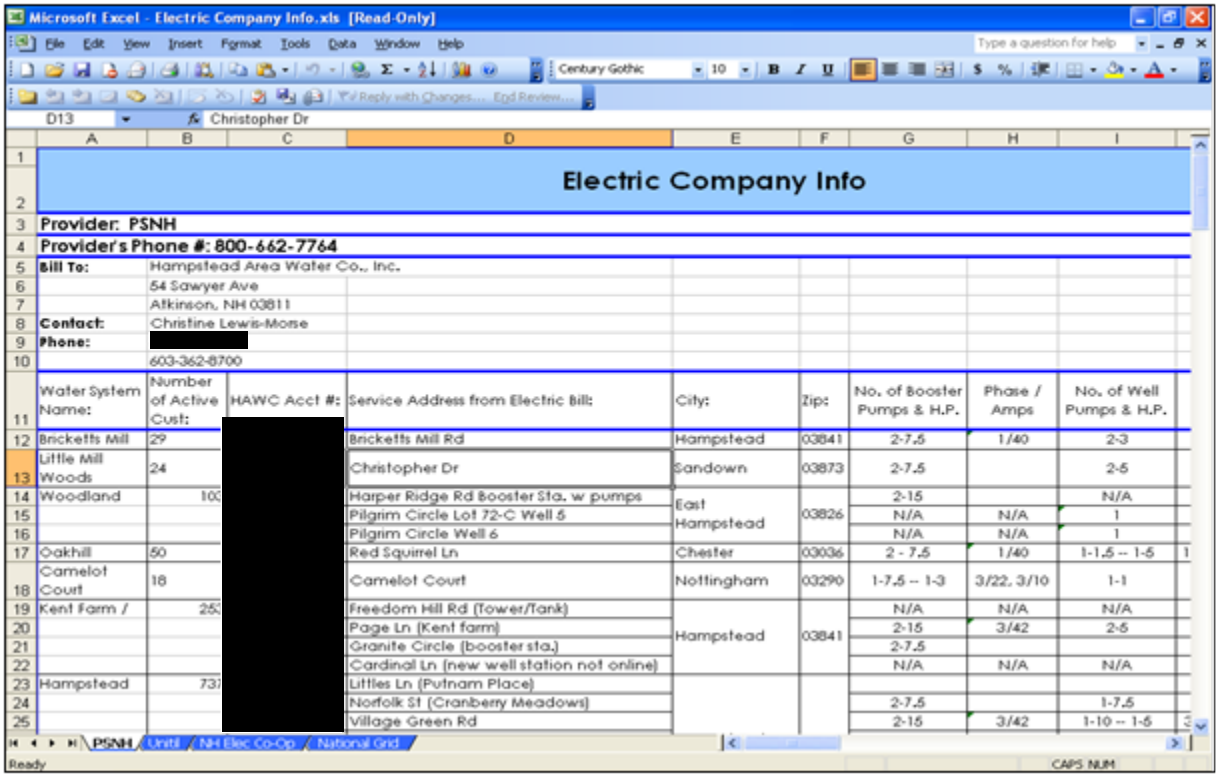
- **Company doing work:** (i.e. FairPoint, Verizon, Eversource, etc[KP3] [SF4] .)
- **Contact at Company/Title If Applicable:** (i.e. John Doe/Manager)
- **Contact Phone Number:** (i.e. office phone 603-555-1212/cell phone 603-555-1313)
- **Address/Location of work:** (i.e. 23 Main Street, Atkinson, NH)
- **Nature of work to be done:** (i.e. replace telephone pole, emergency water repair, emergency electric repair)
- **Pole Number** (if applicable): (i.e. Pole # 751/214)

Once this information is obtained log the information on the HAWC On-Call Log, contact the On-Call Person.

Well House Electrical Power Outages:

These calls can be from the Alarm Company, the SCADA system, or the On-Call Person.

The On-Call Person may request that you report the outage directly to the Electric Company. If you are requested to report an electrical outage, follow these instructions:



Microsoft Excel - Electric Company Info.xls [Read-Only]

Electric Company Info

Provider: PSNH

Provider's Phone #: 800-662-7764

Bill To: Hampstead Area Water Co., Inc.
54 Sawyer Ave
Atkinson, NH 03811
Contact: Christine Lewis-Morse
Phone: [redacted]
603-362-8700

Water System Name:	Number of Active Cust:	HAWC Acct #:	Service Address from Electric Bill:	City:	Zip:	No. of Booster Pumps & H.P.	Phase / Amps	No. of Well Pumps & H.P.
Bricketts Mill	29	[redacted]	Bricketts Mill Rd	Hampstead	03841	2-7.5	1/40	2-3
Little Mill Woods	24		Christopher Dr	Sandown	03873	2-7.5		2-5
Woodland	10		Harper Ridge Rd Booster Sta. w pumps	East Hampstead	03826	2-15		N/A
			Pilgrim Circle Lot 72-C Well 5			N/A	N/A	1
			Pilgrim Circle Well 6			N/A	N/A	1
Oakhill	50		Red Squirrel Ln	Chester	03036	2 - 7.5	1/40	1-1.5 -- 1-5
Camelot Court	18		Camelot Court	Nottingham	03290	1-7.5 -- 1-3	3/22, 3/10	1-1
Kent Farm /	25		Freedom Hill Rd (Tower/Tank)	Hampstead	03841	N/A	N/A	N/A
			Page Ln (Kent farm)			2-15	3/42	2-5
			Granite Circle (booster sta.)			2-7.5		
			Cardinal Ln (new well station not online)			N/A	N/A	N/A
Hampstead	73		Littles Ln (Putnam Place)					
			Norfolk St (Cranberry Meadows)			2-7.5		1-7.5
			Village Green Rd			2-15	3/42	1-10 -- 1-5

PSNH | Unitil | NH Elec Co-Op | National Grid

Ready CAPS NUM

- On the "Electric Company Info" sheet locate the "Water System Name".

(i.e. column "A" on each worksheet contains the water system name. You will need to look at each worksheet until you locate the appropriate water system name.)

- Verify "Service Address from Electric Bill" with On-Call Person.
- Call the Electric Company that provides the power service.
- You will be connected to an automated system.
- Connect to a live operator and inform them you are calling on behalf of Hampstead Area Water Company.
- When reporting an outage be sure to inform the Electric Company that you are calling for a Well House that supplies water to residential homes as. If the outage is in Atkinson and/or Hampstead, please note that the power is for the water service for residential homes and commercial properties. In addition, please inform the Electric Company operator that HAWC provides Public Fire Protection for the town.
- Get the contact information (First and Last Name, Operator Number, and any additional info) and from the representative you've spoken with: record the info on the "Electrical

Outage Tracking" located: Microsoft Outlook/Public Folders/All Public Folders/HAWC Emergency Procedures

Emergency Management Plans

The Emergency Management Plans are action steps the ARCC Emergency Service may be required follow should a source of drinking water become contaminated or if any other component of the storage or distribution system becomes damaged or is at risk. In the event of an emergency the ARCC Emergency Service may use the plans for quick access to contact info and phone numbers.

Do not use any of the Emergency Management Plans unless instructed to do so by Charlie Lanza, Stephen Fournier, Harold Morse, Chris Lewis Morse, Rich Bibeau, or John Sullivan.

There are 3 Emergency Management Plans. One plan for Atkinson, one plan for Hampstead and one plan for all other towns (Satellite Systems). Each contains the positions and phone numbers of responsible persons to contact in the event of an emergency.

If necessary to use the plans please refer to the following:

Microsoft Outlook/Public Folders/All Public Folders/HAWC Emergency Procedures
EMERGENCY PLAN for the ATKINSON "CORE" SYSTEM

EMERGENCY PLAN for the HAMPSTEAD "CORE" SYSTEM

EMERGENCY PLAN for the "SATELLITE" SYSTEMS (any water system not connected to the Atkinson or Hampstead "Core" system.)

ATTACHMENT B

SYSTEM COMPONENT LIST

Potable Water Supply Wells - Hampstead Area Water Company

12/13/2021 11:58

Bedrock Well Name	EPA I.D. #	Area Served	Date Installed/ Re-Drilled	Date Pump (Re) Installed	Drilled Depth (Ft.)	Pump Depth (Ft.)	Installed Capacity (GPM)	Installed Pump End	Drop Pipe Size (in)	Monitoring Tube Y/N	Approved Pumping Rate (GPM)	E S T	Motor HP	Phase & Amps	VFD Y/N	Location (Street Access)
Bryant Woods #1	0112080-**01**	Atkinson	Jul. 93'	6/2/2011, 3/9/20	472	340	30		2" PVC	Y	39.5		5	3/22	**N**	Bryant Woods Road
Bryant Woods #3	0112080-**03**	Atkinson	Nov. 87'	03/19/20	500	400	15		1 1/4" PVC	Y	22		2	3/6.8	**N**	Bryant Woods Road
Bryant Woods #4	0112080-**04**	Atkinson	Feb. 89'	5/2011, 7/16/15, 4/15/19	550	340	35	20	1 1/4" PVC	Y	22		3	3/16	**N**	Bryant Woods Road
*Bryant Woods #5 (**Inactive**)*	*0112080-05*	*Atkinson*			*500*		***(8) NA***			*N*	***Not approved***		2			Bryant Woods Road
Village Drive #1 (***Inactive***)	0112080-06	Atkinson	Aug 1995+/-		340	315	***(40) NA***	50	2"	Y	***(39.5) NA***		7.5	3/22	**Y**	West Side Drive & Old Village Road
Village Drive #2 (***Inactive***)	0112080-**07**	Atkinson	Aug 1995+/-		418	378	***(40) NA***	50	2"	Y	39.5		7.5	3/22	**Y**	West Side Drive & Old Village Road
Summer Well (***Inactive***)	0112080-08	Atkinson	03/17/02		450	420	***(18) NA***			N	***(14) NA***		3	1/17	**N**	Providence Hill Rd & Geary Lane
Midpoint	0112080-**09**	Atkinson	01/28/99	2008 (600"), 2019 Old pump 242' Take	800	360	40	35	2" PVC	N	39.5		7.5	3/22	**Y**	Walker Road & Eldon Way
Settlers Ridge (Village Drive) (***Inactive***)	0112080-**10**	Atkinson	Aug 1995+/-		560	320	60			Y	39.5		7.5	3/22	**Y**	Settlers Ridge Road
Midpoint Island #1	0112080-**11**	Atkinson	02/10/99	6/24/2015, 8-11-18	*420/280' to pump	260	*39.5*	55	2" PVC	Y	39.5		7.5	3/22	**Y**	Walker Road & Eldon Way
Midpoint Island #2	0112080-**12**	Atkinson	02/10/99	5/2011, 8-17-18	445	363	*39.5*	60	2" PVC	Y	39.5		7.5	3/22	**Y**	Walker Road & Eldon Way
Cogswell Farm #1	0112080-**13**	Atkinson	12/13/01	2001	*600*	*400*	39.3	50	2"	Y	19.8		7.5	3/22	**Y**	Main Street or Meditation Lane
Cogswell Farm #2 (***Inactive)***	0112080-**14**	Atkinson	12/31/01	07/24/12	*600*	*300*	***(75) NA***	75	2"	Y	19.8		7.5	3/22	**Y**	Main Street or Meditation Lane
Jesse Page #1 **(Inactive)**	*0112080-15*	*Atkinson*			*560*	*300*	***(80) NA***			N	***(39.5) NA***		7.5			121A > Pope Rd. > Jesse Page
Jesse Page #2 ***(Inactive)***	0112080-**16**	Atkinson	Nov 2000+/-	5/25/17New , 4-10-18	420	300	***(83.5) NA***	50	2" PVC	Y	***(39.5) NA***		7.5	3/22	**Y**	121A > Pope Rd. > Jesse Page
Jameson Ridge	0112080-**17**	Atkinson	09/22/04	10/08	660	300	*30*	*30*	1 1/2"	Y	*25*		3	3/10	**Y**	121A > Jameson Ridge
Settlers Ridge (Pope Road) SR-4	0112080-**18**	Atkinson	12/2007	02/22/18	450	155	*150*	*150*	3"	Y	*40*** (55)*		15	3	**Y**	121A > Pope Rd. > McFarland's Pass
Settlers Ridge (Pope Road) SR-3	0112080-**21**	Atkinson	1/2008	6/25/2013, 1-16-19	8"to350' 6"to500'	205	*90*	*55*	2" PVC	Y	*97*		7.5	3	**Y**	121A > Pope Rd. > McFarland's Pass
Page Farm HWT-1	0112080-**22**	Atkinson	05/18/16	03/16/20	8"to400' 6"to600'	150	*45*	*55*	2" PVC	Y	*45*		7.5		**Y**	Main Street > Wild Pasture Ln
West Side Dr Booster Station **(SNHRWC Source)**		Atkinson	08/25/20				*380*				*173.6*					Westside Dr
12 active wells (& 8-Inactive)		**Atkinson**					**993.3**				**661.2**					**ATKINSON = Total Service Area**
12 active wells = Atkinson System		**Atkinson**														**Atkinson - CORE System**
Village Green #3 (PS#1)	1031010-**01**	Hampstead	1992	12/22/2015, 4/9/19	228	208	80	55	2"	Y	90		7.5	3/32	**Y**	Rt. 111 & Village Green Road
Village Green #1 (PS#1)	1031010-**02**	Hampstead	1981 / 2010	6/16/2016, 4/10/19	350	210	25	55 (WE)	2" PVC	Y	30		5	3/17	**Y**	Rt. 111 & Village Green Road
Village Green #2 ***(Inactive)***	*1031010-03*	*Hampstead*	1992		299		***(90) NA***			N	***NA***		7.5			Rt. 111 & Village Green Road
Tanglewood BRW#4 (PS#2)	1031010-**04**	Hampstead		01/25/20	295	260	18	20	1 1/4" PVC	N	25		3	1/17	**N**	Rt. 111 to Tanglewood Drive
Woodland Pond #5 (PS#4) ***(Inactive)***	1031010-**05**	Hampstead	1988		225	180	50			N	25		3	1/25	**N**	Pilgrim Circle - E. Hampstead
Woodland Pond #6 (PS#5) ***(Inactive)***	1031010-**06**	Hampstead	1988		300	260	***(50) NA***			N	***(22) NA***		3	1/12	**N**	Pilgrim Circle - E. Hampstead
Pit/Hatch Woodland Pond #7 (PS#3)	1031010-**07**	Hampstead	06/16/05	5/6/2015, 4/30/19	284	200	25	25	1 1/4" PVC	N	17		5	1/28	**Y**	Pilgrim Circle - E. Hampstead
Cranberry Meadows	1031010-**08**	Hampstead	06/20/05		360	300	40			Y	39.5	*****	7.5	3/22	**Y**	Main Street to Norfolk Street
Bartlett Brook #1	1031010-**10**	Hampstead	1998'		900	400	*30*			N	30		5	3/16	**Y**	Rt 111 > Hunt Rd. > Bartlett Brook
Bartlett Brook #2	1031010-**11**	Hampstead	1998'		800	400	*24.5*			N	24.5		5	3/16	**Y**	Rt 111 > Hunt Rd. > Bartlett Brook
Bartlett Brook #3	1031010-**12**	Hampstead	1998'		800	400	*14.5*			N	14.5		5	3/16	**Y**	Rt 111 > Hunt Rd. > Bartlett Brook
Putnam Place	1031010-**13**	Hampstead	10/31/02		660	588	32			?	32		7.5	3/22	**Y**	Rt. 121>Emerson Ave.>Little's Lane
East Wood Place ***(Inactive)***	1031010-**14**	Hampstead	04/29/03	6/2013	360	*282*	**(39.9) NA**			?	39.9		7.5	3/22	**Y**	off Brown Hill Road
Angle Pond Woods #1	1031010-**15**	Hampstead	02/03/03		1000	320	**30**			?	**30**		7.5	3/22	**Y**	Rt. 121A > Pillsbury Rd. > Odd Fellows Rd.
Angle Pond Woods #2 ***(Inactive)***	1031010-**16**	Hampstead	02/10/03	03/01/18	340	300	**(39.9) NA**	**55**		Y	**39.9**		7.5	3/22	**Y**	Rt. 121A > Pillsbury Rd. > Odd Fellows Rd.
Angle Pond Woods #3	1031010-	Hampstead	12/29/17	2018	600	320	**120**	**150**			**114**		20	3/?		Rt. 121A > Pillsbury Rd. > Odd Fellows Rd.
Kent Farm #1 ***(Inactive)***	1031010-17	Hampstead	1987	01/16/15	500'+	305	***(60) NA***	55	2" PVC	Y	***(8) NA***		7.5	3/22	**N**	Rt. 121>Kent Farm Rd.>Wheelright>Page Ln
Kent Farm #2 ***(Inactive)***	1031010-18	Hampstead	1987	12/03/12	500	378	***(60) NA***		2"	?	***(60) NA***		5	1/25	**N**	Rt. 121>Kent Farm Rd.>Wheelright>Page Ln
Kent Farm #4 (Replacement Well)	1031010-**22**	Hampstead	01/28/16	3/31/2018, 4/3/18, 2/4/20	520'	300'	**70**	70	3" Galvi	Y	**70**		15	3/22	**Y**	Rt. 121>Kent Farm Rd.>Wheelright>Page Ln
Granite Village Phase V	1031010-**20**	Hampstead	10/30/03	01/22/20	600	200'	35	35	2" PVC	?	35		3	3/10	**Y**	Off the end of Freedom Hill Road
13 active wells (& 7-Inactive)		**Hampstead**					**594**				**656.3**					**HAMPSTEAD = Total Service Area**
13 active wells = Hampstead System																

***** = Well is Permitted but currently inactive**
^^ = Not part of Core Atkinson or Hampstead Systems.
@@ = PUC ApprovalPending

Potable Water Supply Storage Tanks & Pump Stations - Hampstead Area Water Company 12/13/2021 11:58

Pump Station Name (No. of Wells served)	EPA I.D. #	Area Served	No. of BstrPmps	TotCap (GPM)	HP of Lg.Pp	Phase/ Amps	VFD S/S	Atm.Stor. (Gal.)	HydStor (Gal.)	HydStor (PSI)	Cl_2 Y/N	Filtration	Auto Chem	Station Alarms	SCADA	Comments
Bryant Woods **(3)**	112080-**01,03,04**	Atkinson	2	300	15	3/42	Y	40,000	7,500	80-90	Y	1-5' & 1-6' Dia.	Y	Y	N	
Village Drive & Settlers Ridge **(Offline)**	112080-**07**	Atkinson	2	600	25	3/65	Y	0	7,500	85-90	Y	2 - 6' Dia.	Y	Y	N	
Summer Well (Golf Course) (1) **(Offline)**	112080-**08**	Atkinson	1	25	2	3/7	Y	0	N/A	65	Y	N/A	N	N	N	Radon Treatmnt
Midpoint & Midpoint Island **(3)**	112080-**09**	Atkinson	2	300	15	3/42	Y	22,000	3,500	90	Y	2 - 6' Dia.	Y	Y	Y	Wells Hyd. connectd
Midpoint Island Control Station	112080-**09**	Atkinson				3/42	Y	NA	NA	NA		N/A			N	VFDs for Well Pumps, Venturi
Cogswell Farm **(2)**	112080-**13, 14**	Atkinson	2	180	7.5	3/22	Y	25,000	2 x 80	65	Y	2 - 5' Dia.	Y	N	N	
Jesse Page (2) **(Offline)**	112080-**16**	Atkinson	2	180	7.5	3/22	Y	0	2 x 80	65	Y	2 - 5' Dia.	Y	Y	N	Venturi for Radon
Jameson Ridge **(1)**	112080-**17**	Atkinson	2	180	7.5	3/23	Y	12,000	2x119	65-75	Y	1 - 4' Dia.	Y	Y	Y	
Meditation Lane Booster Sta.	112080	Atkinson	2	700	15		Y	0	0	0	N	N/A	N	Y	N	
Main St. PRV Sta.	112080	Atkinson	1	140	15	3/42	S/S		2,000	50-115	N	N/A	N	Y	N	4" PRV at 50 psi
54 Sawyer Ave.Booster Sta.(**Jul 93**+/-)	112080	Atkinson	2	560	15	3/42	Y	**400,000**	7,390	55-65				Y	N	
1 MG Atkinson Tank	112080	Atkinson						**1,000,000**						Y	Y	
Westside Dr Booster Station	112080	Atkinson	3	1200	40	3/46	Y	**0**	0	0	Y		Y	Y	Y	
Settlers Ridge (Pope Road) **(2)**	112080-**18, 21**	Atkinson	3	450	10	3	Y	0	2x119	65-75	Y	2 - 6' Dia.	Y	Y	Y	
Page Farm **(1)**	112080-**22**	Atkinson	0	45	5	3	Y	0	2x119	65-75	Y	2 - 5' Dia.	Y	Y	Y	
15 Pump/Treatment/Cont'l Stations	**Services =**	**1348**														
Village Green (PS#1) **(2)**	1031010-**01, 03**	Hampstead	2	300	15	3/42	Y	0	7,500	80-90	Y	2 - 6' Dia.	N	Y	Y	PRV to Village Green
Tanglewood (PS#2) **(1)**	1031010-**04**	Hampstead	0					0	1,000	50-60	N	N/A	N	N	N	As Media changed 12/11
Woodland Pond BRW#5 (PS#4) **(Offline)**	1031010-**05**	Hampstead						0	2 x 60	70	N	Venturi & Birm		N	N	"Lead" well pump
Woodland Pond BRW#6 (PS#5) (1) **(Offline)**	1031010-**06**	Hampstead						0	60	65	Y	Sand Separator		N	N	"Lag" well pump
Woodland Pond Booster Sta. **(Offline)**	1031010	Hampstead	2	300	15	3/42	N	0	7,500	80	N			Y	N	
Pit/Hatch Woodland Pond BRW#7 (PS#3) **(1)**	1031010-**07**	Hampstead						0	1700+/-	87-96	Y	1 - 4' Dia.	N	N	N	PRV to Woodland Pd
Cranberry Meadows **(1)**	1031010-**08**	Hampstead	2		7.5		Y	0	2 x 119		Y	N/A	Y	Y	Y	Well Pump VFD & Cl_2
Bartlett Brook **(3)**	1031010-**10,11,12**	Hampstead	2	180	7.5	3/22	Y	10,000	1,000	72	Y	2 - 5' Dia.	Y	Y	N	Wells Hyd. connectd
Putnam Place **(1)**	1031010-**13**	Hampstead	0				Y		80	60	Y	2 - 3' Dia.	Y	Y	N	Well Pump VFD & Cl_2
East Wood Place **(Offline)**	1031010-**14**	Hampstead	2	180	7.5	3/22	Y	0	80	80	Y	2 - 5' Dia.	Y	Y	N	Radon Treatmnt
Angle Pond Woods **(2)**	1031010-**15,16**	Hampstead	2	180	7.5	3/22	Y	0	2 x 119	80	Y	2 - 5' Dia.	Y	Y	Y	
Granite Village Phase V **(1)**	1031010-**17**	Hampstead	2				Y	0	2 x 119		Y	2 - 4' Dia.	Y	Y	Y	
Hampstead "Core" System Storage Tank	1031010	Hampstead						**500,000**						Y	Y	
Kent Farm (2)	1032050-04	Hampstead	2	280	15	3/42	Y	0	7,500	74-84	Y	2 - 5' Dia.		Y	N	
Granite Village Booster Sta.	10302050	Hampstead	2	120	5	1/25	N	0	8,000	50-60	N			Y	N	PRV for Kent Farm
***15* Pump/Treatment/Cont'l Stations**	**Services =**	**1370**														

^^ = This system not part of the Hampstead "Core" System.
@@ = Pending NHDES Approval

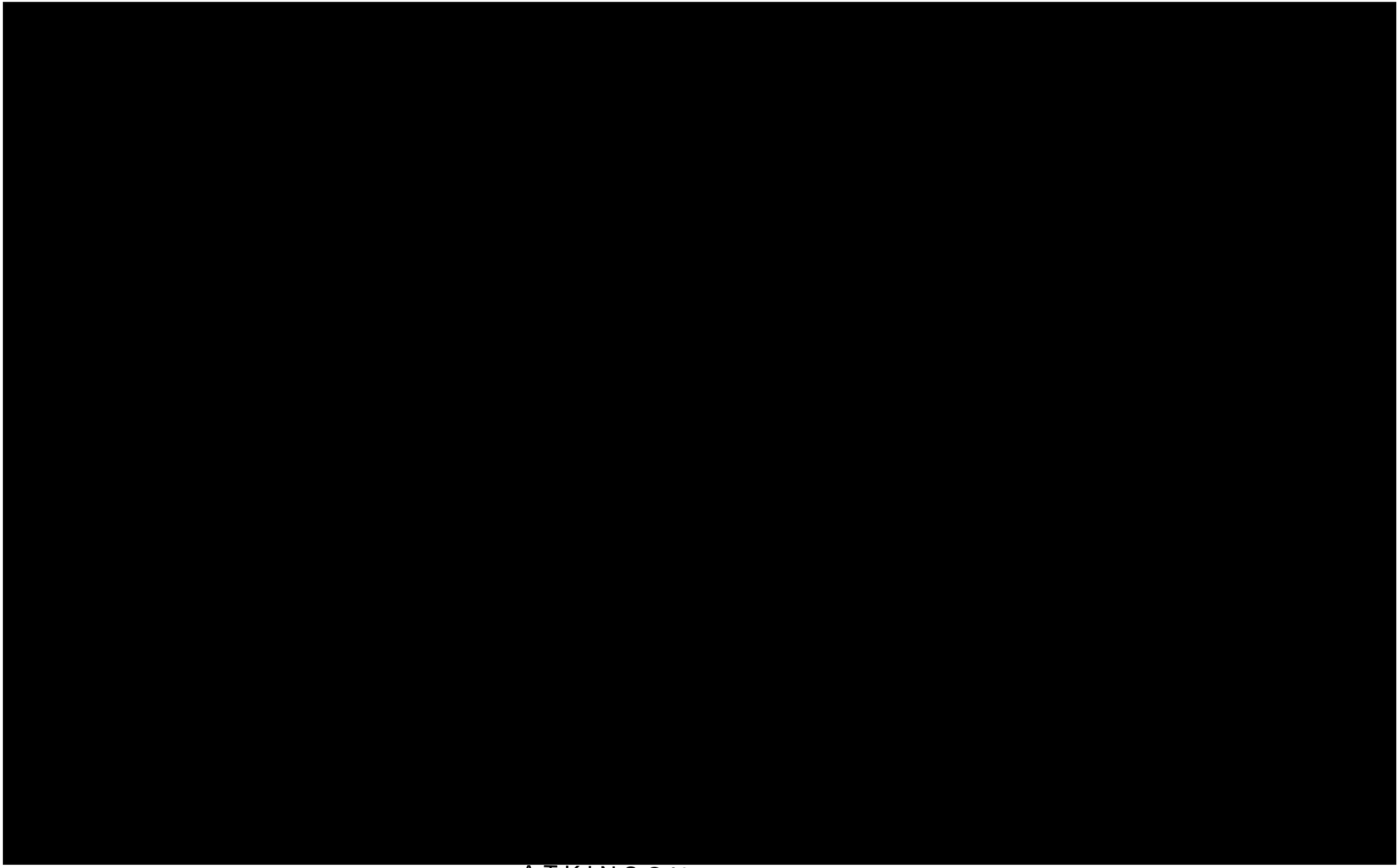
ATTACHMENT C

ATKINSON & HAMPSTED AS-BUILT PLANS

Atkinson Key Sheet Begin Confidential

[redacted]

Bow Lake Sheet 75B End Confidential



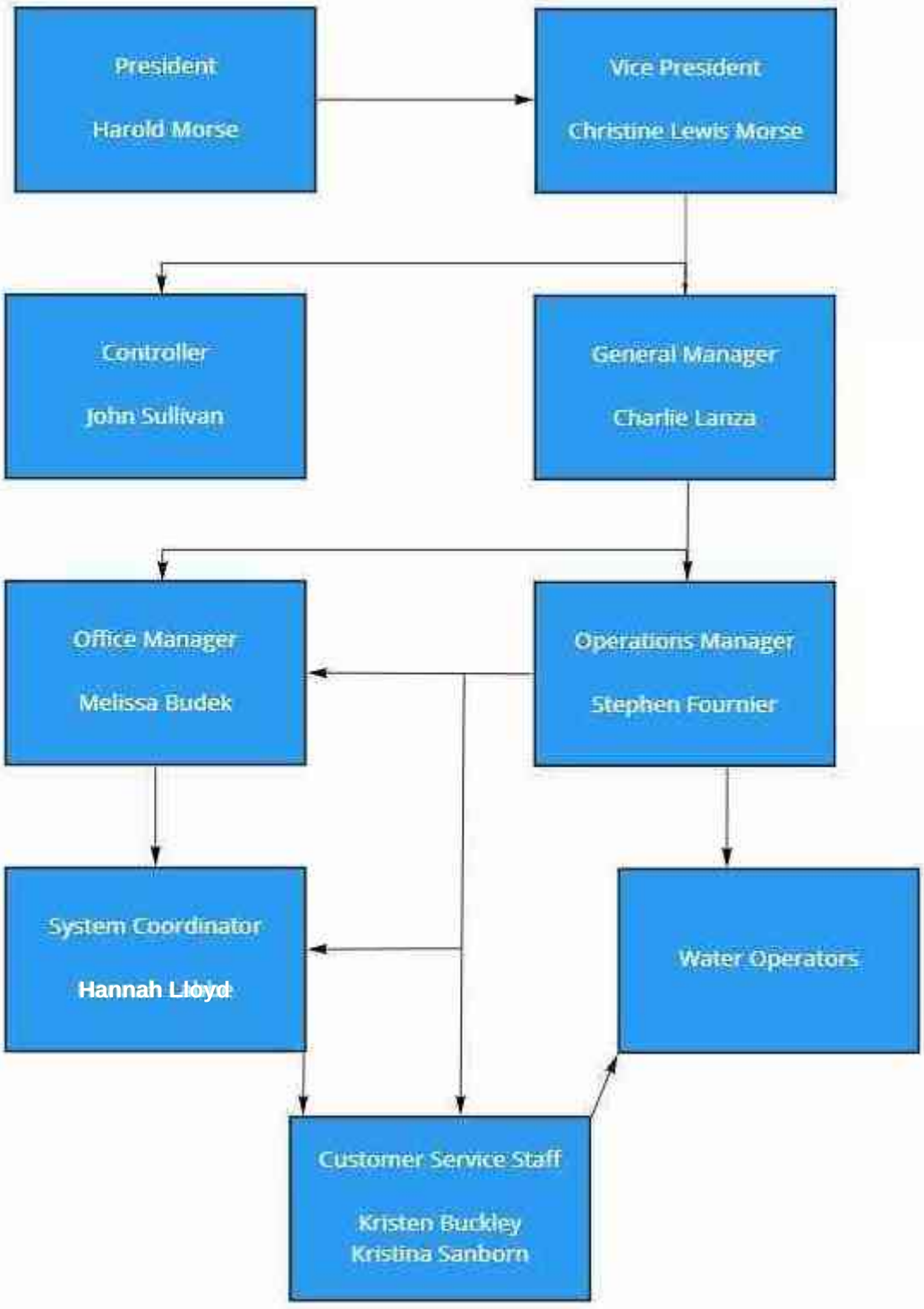
ATKINSON

ATTACHMENT D

CHAIN OF COMMAND

HAMPSTEAD AREA
WATER COMPANY, INC

HAWC ORGANIZATIONAL CHART



ATTACHMENT E

SYSTEM DEMAND

ATTACHMENT E

HAWC

Atkinson-Hampstead Core
System Demand
(All Numbers are in Gallons)

Month	Produced	# of Days	Average GPD
Jan	12,243,766	31	394,960
Feb	11,004,949	29	379,481
Mar	11,100,379	30	370,013
Apr	11,420,648	29	393,815
May	16,048,450	30	534,948
Jun	19,039,836	28	**679,994**
Jul	17,347,014	31	559,581
Aug	12,492,256	32	390,383
Sep	12,469,565	32	389,674
Oct	12,234,959	30	407,832
Nov	10,780,147	32	336,880
Dec	10,748,750	29	370,647
YTD	**156,930,720**	**average**	**434,017**

Estimated Peak Daily Demand is 2x highest average usage. 679,994 gpd x 2 = 1,359,988 gpd

Total Customers as of 2020 : 2718

Average Day Demand per Customer = 160 gpd

Total Storage Capacity : 2,009,000 Gallons

Storage Capacity / Avg. Day Demand = 4

ATTACHMENT F

ELECTRIC PROVIDERS

Electric Company Info

Provider: Unitil

Provider's Phone #: 800-582-7276

Bill To: Hampstead Area Water Co., Inc.
54 Sawyer Ave
Atkinson, NH 03811

Contact: Christine Lewis-Morse

Phone: [redacted]
603-362-8700

Water System Name:	Number of Active Cust:	HAWC Acct #:	Service Address from Electric Bill:	City:	Zip:	Sewer Force Mains YES / NO	No. of Booster Pumps & H.P.	Phase / Amps	Well Pump(s) & H.P.	Phase / Amps each	Incoming Electrical Phase(s)
Bartlett Brook	143	[redacted]	Patriot Dr Well Pump	East Hampstead	03826	N/A	2-7.5	3/22	3 - 5	3/16	200A 1 Phase
Colby Pond	192	[redacted]	Boulder Dr Pump House	Danville	03819	Some	2-15	3/42	2-5	3/17	
Coopers Grove	18	[redacted]	Off Cottonwood Cir Pump House	Kingston	03848	Unknown	2-5, 1-1.5	1/25,	2		
Cricket Hill/Maplevale	124	[redacted]	Crickett Hill Rd 410 Pump	East Kingston	03826	Y	2-7.5, 1-3	3/22, 3/10	1 - 7.5, 1 - 3	3/22, 3/10	200A 1 Phase
Dearborn Ridge	11	[redacted]	Dearborn Ridge Rd Pumo Hse	Atkinson	03811	Unknown	2-5	1/25	2	1/12	200A 1 Phase
Kings Landing	44	[redacted]	Castle Crt Water Pump	Kingston	03848						
Lamplighter Estates	56	[redacted]	Lantern Ln Pump	Kingston	03848	Y	2-7.5, 1-3	3/22, 3/10	2 - 1.5	1/11.5	200A 1 Phase
Little River Village	25	[redacted]	187 Main St 1/2 Pump	Plaistow	03865						200A 1 Phase
Rainbow Ridge	15	[redacted]	Deer Hollow Rd Pump Hse	Plaistow	03865		2-7.5		2-5	1/28	200A 1 Phase
Sargent Woods	118	[redacted]	Nichols Dr Well Pump	Newton	03858	Y					200A 1 Phase
Snow's Brook	35	[redacted]	Torrey Pines Cir Pump House	Plaistow	03865						200A 1 Phase
Hampstead Area Water	1385	[redacted]	Meditation Ln Pump	Atkinson	03811	N/A	1-30, 1-3		N/A	N/A	200A 1 Phase
		[redacted]	Village Dr Pump House				2-25	3/65	2-7.5	3/22	
		[redacted]	47 Main St Pump (Pit Hatch)				N/A	N/A	N/A	N/A	200A 1 Phase
		[redacted]	54 Sawyer Ave Pump House (Tower/Tank)				2-15	3/42	N/A	N/A	200A 3 Phase
		[redacted]	1 Eldon Way Pump House (Midpoint)				2-15	3/42	3 - 7.5	3/22	
		[redacted]	Eldon Way Islad Pump (Midpoint Island)				N/A	N/A	N/A	N/A	
		[redacted]	Hayden Dr Pump (Settlers Ridge/Jesse Page)				2-7.5	3/22	1 - 7.5	3/22	
		[redacted]	Parish Square Pump (Cogswell Farm)				2-7.5	3/22	2-7.5	3/22	
		[redacted]	Pope Rd Pump Satn (Settlers Ridge/Jesse Page)								
		[redacted]	Winslow Dr Well Pump (Jameson Ridge)				2-7.5	3/23	1 - 3	3/10	200A 1 Phase
		[redacted]	Colonial Run								
		[redacted]	Browns Way Pump								
		[redacted]	Bryant Woods Rd Pump House				2-15	3/42	1-7.5, 1-2, 1-3	3/22, 3/6.8, 3/16	

Electric Company Info

Provider: Eversource

Provider's Phone #: 800-662-7764

Bill To: Hampstead Area Water Co., Inc.
54 Sawyer Ave
Atkinson, NH 03811

Contact: Christine Lewis-Morse

Phone: [redacted]
603-362-8700

Water System Name:	Number of Active Cust:	HAWC Acct #:	Service Address from Electric Bill:	City:	Zip:	Sewer Force Mains YES / NO	No. of Booster Pumps & H.P.	Phase / Amps	No. of Well Pumps & H.P.	Phase / Amps	Incoming Electrical Phase(s)
~~Bricketts Mill~~	~~29~~	[redacted]	~~Bricketts Mill Rd~~	~~Hampstead~~	~~03841~~	~~Unknown~~	~~2-7.5~~	~~1/40~~	~~2-3~~	~~1/17~~	
Black Rocks	114	[redacted]	18 Hoyt Way	Fremont	03844	Y					
Bow Lake Estates	42	[redacted]	98 Bow Lake Estates Rd	Strafford	03884						
Little Mill Woods	39	[redacted]	0 Christopher Dr	Sandown	03873	Possibly	2-7.5		2-5	3/10	
Woodland Pond	143	[redacted]	0 Harper Ridge Rd	Hampstead	03841	N/A	2-15		N/A	N/A	200A 3 Phase
		[redacted]	0 Pilgrim Cir Lot 72-C				N/A	N/A	1		100A 1 Phase
		[redacted]	0 Pilgrim Cir				N/A	N/A	1		100A 1 Phase
Oakhill (Well Only - Pump House electric provided by NH Elec Co-Op)	60	[redacted]	0 Red Squirrel Ln	Chester	03036	Y	2 - 7.5	1/40	1-1.5 -- 1-5	1/9.2, 1/27	200A 1 Phase
Camelot Court	19	[redacted]	20 Camelot Ct	Nottingham	03290	Unknown	1-7.5 -- 1-3	3/22, 3/10	1-1	1/16	200A 1 Phase
Kent Farm	286	[redacted]	0 Freedom Hill Rd	Hampstead	03841	Some	N/A	N/A	N/A	N/A	
		[redacted]	0 Page Ln				2-15	3/42	2-5	1/25	
		[redacted]	0 Granite Circle Lot PH				2-7.5				100A 1 Phase
		[redacted]	0 Cardinal Ln				N/A	N/A	N/A	N/A	
Hampstead Core	918	[redacted]	0 Littles Ln	Hampstead	03841	Some					
		[redacted]	0 Norfolk St				2-7.5		1-7.5	3/22	
		[redacted]	0 Village Green Rd				2-15	3/42	1-10 -- 1-5	3/32, 3/17	
		[redacted]	0 Lewis Ln (Pit Hatch)								
		[redacted]	0 Forrest St (Eastwood Place)				2-7.5	3/22	1-7.5	3/22	
		[redacted]	0 Odd Fellows Rd (Angle Pond Woods)				2-7.5	3/22	2-7.5	3/22	
		[redacted]	0 Tanglewood Dr				1-3	1/17			200A 1 Phase

Note: Pump Phase & Amps refer to the VFD phase where VFD's are installed

Electric Company Info

Provider: Liberty Utilities **Electric Supply Provider: Constellation Newenergy Inc.**

Emergencies call: 855-349-9455 **Provider's Phone #: 800-465-1212** **Electric Prov Phone #: 844-636-3749**

Bill To: Hampstead Area Water Co., Inc.
54 Sawyer Ave
Atkinson, NH 03811
Contact: Christine Lewis-Morse
Phone: [redacted]
603-362-8700

Water System Name:	Number of Active Cust:	HAWC Acct #:	Service Address from Electric Bill:	City:	Zip:	Sewer Force Mains YES / NO	No. of Booster Pumps & H.P.	Phase / Amps	No. of Well Pumps & H.P.	Phase / Amps	Incoming Electrical Phase(s)
Lancaster Farms	84	[redacted]	0 Lancaster Farm Rd well House	Salem	03079	Y	2-15		2-5	3/16	
Hampstead Area Water	2762	[redacted]	65 Westside Dr	Atkinson	03811						

ATTACHMENT G

NHDES FACT SHEETS, FORMS, ETC.

ENVIRONMENTAL
Fact Sheet

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

29 Hazen Drive, Concord, New Hampshire 03301 • (603) 271-3503 • www.des.nh.gov

DWGB-18-2 2020

Emergency Bulk Water for Public Water Systems

In the event of equipment failure, water quality or quantity problems, or other unexpected circumstances, a Public Water Supply (PWS) may need to purchase bulk water from an approved source to maintain an adequate water supply. Although NHDES does not encourage this method of supplying water, trucked water may be the only viable alternative in some situations. Env-Dw 304 Emergency Bulk Water Supply for Public Water Systems defines state requirements to ensure that water obtained from bulk water deliveries meets the same water quality standards that are required of public water suppliers.

Bulk Water Source Requirements
A PWS can obtain emergency bulk water from the following four NHDES-approved sources.

1. A community water system (CWS) source that has been approved by NHDES and is in compliance with all relevant requirements;
2. A bottled water source that is monitored by NH Department of Health and Human Services (DHHS);
3. A non-public water source approved by NHDES; or
4. A CWS source or bottled water source approved by another state.

If there is any treatment or blending of the sources described above, bulk water should only be obtained from the finished water.

Groundwater sources that are not approved CWSs can be used as long as they have been inspected, meet specific sampling requirements, and are approved and registered by the Drinking Water and Groundwater Bureau (DWGB) *prior* to use. To acquire DWGB approval of a groundwater well for emergency bulk water, the well must conform to the following requirements.

- The well was installed by a licensed well driller in accordance with standards established by the water well board. If the well was installed before August 17, 1983, the well should be adequately constructed to prevent the direct introduction of contaminants from the surface into the well.
- The well is located at least 50 feet away from surface water.
- The owner of the source initiates and maintains a water quality sampling program that shows that the water meets the standards defined in Env-Dw 304.04 Water Quality Sampling Program.
- The owner of the source submits analytical results to the department immediately whenever any sampling result exceeds the maximum contaminant level.
- A site visit by NHDES once every 5 years to confirm fulfillment of the above requirements.

Contact DWGB to make arrangements to apply for approval of a non-public emergency bulk water source.

Surface water cannot be used for emergency bulk water unless it is finished water from an approved CWS.

Equipment Used to Transport Bulk Water

Equipment surfaces that come into contact with water during transport of bulk water must be well maintained and be made of material that is smooth, impervious, nonabsorbent, corrosion-resistant and non-toxic, such as stainless steel. While stainless steel tanks are preferred, aluminum tanks are also allowed. Tanks shall be of the type that can be closed to exclude all foreign matter and vents on tanks shall be protected to prevent contamination of the bulk water during filling and emptying. Bulk water should be stored, loaded, transported, and unloaded in a manner that prevents contamination.

Tanks previously used to carry any non-food products, toxic substances, or petroleum products may not be used unless the tank is approved by DES after the following is completed.

- The tank must be thoroughly cleansed using appropriate sanitation methods to remove all previously transported products.
- The tank should be filled with drinking water and be tested for the presence of contaminants associated with the products previously stored in the tanks and the chemicals used for cleaning.
- The two processes above should be repeated until there is no trace of contaminants.
- Pipes, hoses, fittings and valves associated with the tank must be replaced with equipment not previously used to transport petroleum products, toxic substances or any non-food products. Such appurtenances used to transport water from an non-approved source must be disinfected prior to use for emergency bulk water for public water systems.

Equipment Sanitation

Prior to receiving each load of water, the tank and all hoses, pipes, pumps and other handling equipment should be visually inspected to ensure that no rust or sediment is present. If any is found it should be removed by rinsing and flushing. Tanks and equipment that have been previously used to haul petroleum products, toxic substances, non-food products, food products or a water source that is not an approved source must be disinfected by using one of the following methods.

- A chemical sanitizer having an equivalent bactericidal action to 50 mg/l available chlorine for 2 minutes at 57°F as an immersion or circulating solution for the entire tank volume.
- A chemical sanitizer having an equivalent bactericidal action to 100 mg/l available chlorine at 57°F applied as a spray or fog.
- An ozone water solution with a concentration of 0.1 mg/l of ozone for 5 minutes as an immersion or circulating solution to sanitize the entire tank volume.
- Liquid sodium hypochlorite bleach used to disinfect hauling equipment that does not contain additives such as scent or cleaning enhancers or odorants, and that is mixed in the proportions identified in the following table.

Amount of Liquid Sodium Hypochlorite having 8.25% Available Chlorine Per Volume of Water to Obtain Resulting Solution

Resulting Solution Concentration (mg/l) ↓	Water Volume				
	50 gallons	100 gallons	500 gallons	1,000 gallons	5,000 gallons
1	0.5 teaspoon	1 teaspoon	5 teaspoons	3 Tablespoons	1 cup
50	½ cup	1 cup	1 quart ¾ cup	2.4 quarts	3 gallons
100	1 cup	2 cups	2.4 quarts	1.2 gallons	6 gallons

Delivery

The PWS must arrange to have a certified operator present during the water delivery to ensure that all necessary sanitary measures are met and followed during transfer of water into the system's storage tank, and to assure proper chlorination. The operator should provide the bulk water hauler the following information to help save valuable time in a water shortage situation, including emergencies:

1. Detailed directions to your water system and any access limitations to the tank.
2. Diameter of your fill pipe on your atmospheric tank.
3. The thread pitch (threads per inch length) or other description of the connection point. Determine who supplies pipe or connectors necessary for the transfer.
4. Indicate whether a pump is necessary to unload the water and, if so, who will supply the pump, the distance to the tank(s), and the amount of lift needed.
5. An estimate of the water volume that may be accommodated in your tank and the best time of day for delivery.
6. Road and bridge weight restrictions en route to the water system.
7. Contact information for last minute changes in the plan. Ideally provide a cell phone or pager number.
8. An estimated number of loads that will be required.
9. Discuss payment terms.

Before allowing delivery of bulk water into the PWS, the certified operator must measure the free chlorine residual of the bulk water to ensure a concentration between 0.2 mg/l and 4.0 mg/l. If the free chlorine residual is not between 0.2 mg/l and 4.0 mg/l, the certified operator will need to add the appropriate amount of sodium hypochlorite to produce the required concentration.

It is advisable to establish a working knowledge of your bulk water hauler's procedure to obtain, transfer and provide bulk water prior to use of their services. There will be many different scenarios depending on the system requirements, availability of potable emergency water sources and limitations (regional and seasonal) on the water hauling providers. For additional information regarding options of for your storage tank fill point, please review fact sheet DWGB-7-7, "Providing a Storage Tank Fill Point For Emergency Water Delivery."

Bulk water should be delivered into a storage tank or pump house tap. Water delivered directly into a well is a violation of Env-Wq 404 Underground Injection Control.

Bulk Water Providers

For a list of possible bulk water haulers in New Hampshire, visit Bulk Water Haulers and Providers. While the bulk water providers listed are not licensed by NHDES, they have chosen to register with NHDES and have provided information that they are meeting bulk water requirements under Env-Dw 304. A bulk water provider can be used that is not on this list as long as they meet the requirements of Env-Dw 304.

Notification and Documentation

A certified operator representing the receiving PWS is responsible for attending the bulk water delivery and keeping proper records and making sure that NHDES is notified using the "Bulk Water Delivery Notification Form" (available on the NHDES Bulk Water web page) within 2 business days after emergency bulk water is delivered to customers. The form should be signed by the certified operator representing the PWS. The PWS must retain a copy of the notification form for at least 5 years. The PWS must also list any bulk water deliveries in their annual consumer confidence reports.

Emergency Plans

For community water systems, details regarding bulk water procedures should be included in your system's emergency plan. Your plan should include at a minimum:

- Contact information for the bulk water provider that has agreed to provide the system with emergency bulk water.
- Although not necessary, a service contract with an approved bulk water provider is highly recommended (you may want to discuss your water system's place in order of delivery priority in event of a regional emergency).
- This fact sheet and the NHDES "Guidelines for Emergency Bulk Water Supply for Public Water Systems" brochure.
- The procedures specific to the system for delivering the bulk water such as specific equipment needed.
- Estimated timeframe for delivery to arrive.
- Alternate plan for water should your first option not work out such as contacting a second bulk water provider or purchasing bottled water from local stores.

It is essential that all water systems plan for the possibility of having to provide water from an outside source during an emergency. For larger systems, tank trucks may not be a viable alternate water source option due to high volume needs. If you do not have an atmospheric storage tank, bulk water delivery from a tank truck is not an option. If you simply plan on using a bulk water company it is recommended that you contact the water hauler directly to ensure that delivery is feasible.

Long Term

For an alternate or long-term solution, refer to fact sheet DWGB-18-4 "Emergency Water Supply Wells for Public Water Systems" or DWGB-1-16 "Water Supply Options During Droughts."

For More Information

Please contact the Drinking Water and Groundwater Bureau at (603) 271-2513 or dwgbinfo@des.nh.gov or visit our website at www.des.nh.gov.

Note: This fact sheet is accurate as of July 2019. Statutory or regulatory changes or the availability of additional information after this date may render this information inaccurate or incomplete.

BULK WATER DELIVERY NOTIFICATION FORM

Water Division/Drinking Water & Groundwater Bureau (DWGB)

Pursuant to Safe Drinking Water Act (SDWA) Section 1420 (C) and New Hampshire RSA 485:3, XII, and Env-Dw 304, Emergency Bulk Water Supply for Public Water Systems

This form is to be filled out by a water system representative and submitted to NHDES within 2 business days after any bulk water is delivered to customers of a public water system.

System Information:

System Receiving Delivery:			
PWS ID #:		Town:	
Date & Time of Delivery:			

Reason for Water Shortage:

Identify the cause of the water shortage and explain the steps being taken to resolve the problem (please note that lowering tank levels are not a cause, they are indicative of the problem). If cause is unknown, or is a suspected leak, please note below and provide an update when cause is known or leak confirmed. If due to a leak, please estimate the size of the leak. If due to overuse of water, please provide reason for overuse:		
Estimation of when the cause of the water shortage will be corrected:		
Anticipated number of deliveries/week and total future deliveries due to this issue?	/week	Total

Certified Water System Operator On-Site for Delivery:

Name of Certified Operator:		Operator License #:	
Contact Information for Certified Operator:			
Chlorine residual in the bulk water for each delivery (***MUST be measured*** *& be between 0.2 mg/l – 4.0 mg/l*):			
1st: mg/L	2nd: mg/L	3rd: mg/L	4th: mg/L

Bulk Water Information:

Source of the Bulk Water Being Delivered:	
PWS ID# of Bulk Water Source (if applicable):	
Amount of Water Delivered:	

NHDES DWGB
PO Box 95, Concord, NH 03302-0095
(603) 271-2513 (phone)
dwbulkwater@des.nh.gov
www.des.nh.gov

Bulk Water Provider Information:

Name of Bulk Water Provider:	
Name of Driver Making the Delivery:	
Contact Information for Delivery Driver:	

Delivery Information*:

What volume and material of tank and type of connectors and hose were used?
Describe tank inspections, cleaning and disinfection methods used:
What measures were taken to ensure there was no contamination entering the drinking water from the tanker, hoses or connectors; both during tanker fill and delivery to the system?
Where was the physical connection for the delivery (pressurized hydrant, storage tank fill pipe, pumphouse tap)?

If the water was received from a source that is not a CWS, but approved by NHDES, request a copy of the most recent analytical results when ordering the water and attach a copy.

Signature

This form should be signed by the certified operator representing the public water system.

Name:		Title:	
Signature:		Date:	

Please fax or email this form to the Drinking Water and Groundwater Bureau within <u>two business days</u> after any bulk water is delivered to customers. *If it is after hours and the situation involves a major water system emergency that cannot wait until the next business day, please contact the NH State Police at (603) 223-4381 and ask for the on-call person at NHDES.*

NHDES DWGB
PO Box 95, Concord, NH 03302-0095
(603) 271-2513 (phone)
dwbulkwater@des.nh.gov
www.des.nh.gov

Bulk Water Haulers and Providers

The following list includes providers that have signed off that they are able to comply with the bulk water rules, Env-Dw 304, *Emergency Bulk Water Supply for Public Water Systems*, and would like to be listed on the NHDES fact sheet as an available bulk water provider. Please note these providers are not licensed or inspected by NHDES. Other providers not listed below can be used as long as they meet the requirements of Env-Dw 304.

Company Name	Contact Name	Address	Phone	Fax	E-mail / Company Website	Available Resources	Truck Type & Delivery Area	Requirements/Limitations	Min. Order	Max. Order
Manchester Water Works	Guy Chabot	281 Lincoln St, Manchester, NH	(603) 624-6494	(603) 628-6020	www.manchesternh.gov/water	Drinking water only	n/a			
Alan Hamel Trucking Co.	Alan Hamel	20 Mountain Rd, Epsom, NH	(603) 496-5238		ahameltrucking@gmail.com	Drinking water and hauler	Tractor Trailer Aluminum Tank	3" camlock		6,000 gallons
Buxton Water	Donna Buxton	PO Box 8, Exeter, NH	(603) 772-3400 May also contact via website contact page		buxtonwaternh@gmail.com www.buxtonwater.net	Drinking water and hauler	Stainless Steel & Aluminum	Has own pumps, hoses and fittings of all sizes.	1,000 gallons	
Fortin Pool Water	Marc Fortin	574 Mammoth Rd, Londonderry, NH	(603) 622-6910 (603) 860-7992 (cell)	(603) 622-4224	mfortin@fortinstorage.com www.fortinstorage.com	Drinking water and hauler	Aluminum/poly Southern and Central NH (call for further distances)	3" camlock or open top		6,000 gallons
Wendell's Pool Water & Trucking LLC	Mitchell Wendell	41 Fordway St, Derry, NH	(603) 432-7150		mitchwendell@icloud.com	Drinking water and hauler	Derry area	April 1st-December 1st (24 hours)	1,000 gallons	6,000 gallons
Pristine Mountain Springs of VT	Ronald Colton	PO Box 662 Pittsfield, VT	(802) 746-8186		recwaterbaron@aol.com	Drinking water and hauler	Stainless steel tractor trailers (also have small F550 with 1,100gal PE tank for smaller water needs)	2" and 3" pumps, hoses, and adapters to accommodate most connection needs	1,100 gallons	6,200 gallons
M.E. Matthews Inc.	John Matthews Jr.	1700 Route 12, Westmoreland, NH	(603) 399-4982 (603) 381-5319 (cell)		mematthews@charlesworks.net	Drinking water and hauler	Stainless Steel & Aluminum NH and VT	April-October/Daylight Hours. Have most couplings, hoses and portable pumps. 3" discharge line.	6,000 gallons	6,500 gallons
Francoeur Brothers Inc.	Lynda Tucker or James Francoeur	220 Derry Rd, Hudson, NH	(603) 883-9444	(603) 883-5010	francoffice@aol.com	Drinking water and hauler	Stainless Steel & Aluminum Statewide	Need quick connect for delivery. In winter temperature must be above 32 degrees.	No minimum	8,500 gallons
Becker Transportation	Jerry Becker	240 Raymond Rd, Candia, NH	(603) 483-2967 (603) 370-2547 (cell)			Drinking water and hauler	Stainless Steel Southern NH	3" camlock		6,000 gallons

***Disclaimer:** This list of vendors does not constitute an endorsement of business products or services by the NH Department of Environmental Services (NHDES), nor is the list exhaustive. NHDES is publishing a list of vendors in an effort to further public awareness of vendors identified as possible contacts for purchase of bulk water for drinking water purposes. Bulk water haulers interested in being on this list may contact* NHDES at dwbulkwater@des.nh.gov or (603) 271-0867.

Last updated May 2021

ENVIRONMENTAL
Fact Sheet

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

29 Hazen Drive, Concord, New Hampshire 03301 • (603) 271-3503 • www.des.nh.gov

DWGB-18-3 2020

Emergency Planning for Public Water Systems

New Hampshire Administrative Rule Env-Dw 503.21 requires all community public water systems to have a formal emergency plan. These plans are action steps to follow in the event that a source of drinking water becomes contaminated or any other component of the storage or distribution system becomes damaged or is at risk. Completion of an emergency plan is a significant endeavor, but one that can benefit the system and its users by minimizing disruptions in service in the event of an emergency.

Rule Requirements
Env-Dw 503.21 requires that all community water systems submit a formal plan to NHDES once every six years beginning in March 2003. It further requires that the plan be reviewed *annually* by the system and updated as needed. Additionally, the plan will be subject to review during each sanitary survey, and lack of a current plan will be a survey deficiency.

Bureau Actions to Foster Emergency Planning
To aid water systems in preparing an effective emergency plan, NHDES has developed an Emergency Planning Guide, which is intended to help water system planners understand and meet the basic standards for an emergency plan as set forth in Env-Dw 503.21. The guide illustrates the content and format of a basic plan. By following these guidelines, you are assured a thorough emergency plan.

Assistance in Plan Development
Developing a plan that meets NHDES requirements should require minimal time and only in-house resources. Some systems may decide to develop, implement, or maintain their plans at a more advanced level. Technical assistance is available from a variety of technical assistance providers such as NHDES, Granite State Rural Water Association and RCAP Solutions, Inc.

Components of a Basic Plan include:

Chain of Command: To identify who is responsible for making decisions during an emergency and outline each person's responsibilities during an emergency.

Notification Procedures: To identify who will be contacted and how during an emergency, and details for boil orders, critical users and mutual aid agreements.

System Components: Accurate, up-to-date information about a system's facilities, equipment, design, and record drawings. This will facilitate repair during an emergency and help assess a system's vulnerability to emergencies.

Alternate Water Sources: Identifies how a system might obtain water from outside sources, or modify treatment capabilities to meet basic water needs during an emergency.

Alternate Power Supply: Details regarding available alternate power supplies.

Water Use Restrictions: Steps that could be taken to cope with losses of source capacity.

Return to Normal Operation: Follow-up actions and staff responsibilities to return to normal system function.

Plan Readiness and Training: Access to the plan, rehearsals and special staff training or certifications such as incident command system training.

Risk Assessments

Although not required as part of the emergency plan, a risk assessment should be performed by every water system. Some emergencies are caused by reasons beyond the control of the water system, such as floods, sabotage, ice storms, earthquakes, droughts and power outages. Other emergencies may be preventable. Age and obsolescence of equipment, lack of equipment, poor maintenance, poor system design, lack of spare parts, high-risk or ill advised land uses near sources of water, and lack of source protection efforts are all preventable factors that can cause water system emergencies. Each system should assess its potential susceptibility to unpreventable and preventable emergencies and consider the impact of each identified vulnerable factor to the supply, storage, distribution and cyber components of the system. Reducing a system's vulnerability to emergencies is a key element of any emergency plan.

Practicing the Plan

For an emergency plan to be effective, the staff must have a clear understanding that management supports the plan. Systems should occasionally practice scenarios to evaluate actual system readiness. A practice scenario would be created and would then be acted out. The system should then evaluate staff actions and make any necessary changes to the plan to address observed problems.

For More Information

Please contact the Drinking Water and Groundwater Bureau at (603) 271-2513 or dwgbinfo@des.nh.gov or visit our website at des.nh.gov.

Note: This fact sheet is accurate as of July 2019. Statutory or regulatory changes or the availability of additional information after this date may render this information inaccurate or incomplete.

ENVIRONMENTAL
Fact Sheet

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

29 Hazen Drive, Concord, New Hampshire 03301 • (603) 271-3503 • www.des.nh.gov

DWGB-4-8 2020

Boil Water Advisories

The possible presence of microbiological pathogens in drinking water supplies is a significant concern in the protection of public health. This risk of contaminants can be minimized through such measures as complying with required setbacks of water sources from septic systems, proper disinfection at the source where needed, and maintenance conducted as part of a program to prevent back-siphoning of contamination into the supply mains. Despite these measures, however, there are occasional bacterial incidents that represent a significant threat to the safety of a public water supply.

As a safeguard until corrections can be made, NHDES may issue a boil water advisory to the system. The notice generally advises that all water that is used for consumption should be brought to a boil, then kept at a vigorous boil for at least one minute. Such advisories may be issued for the following reasons.

Detection of fecal coliforms (including *E. coli*). Every public water system conducts periodic monitoring for coliforms and, when coliforms are detected, fecal coliforms. In municipal systems, monthly monitoring is typically required at several locations in the system, with the number of sites determined by the system's service population. Presence of coliforms indicates a possible deficiency that allows inadequately treated water into the system and that can be corrected as a high-priority maintenance item. Presence of fecal coliforms, on the other hand, indicates a more urgent problem that requires immediate attention. Any detection of fecal coliforms triggers NHDES notification to the water system and the immediate issuance of a boil water advisory.

Lapse in distribution system integrity. Water distribution systems normally operate at a minimum positive pressure to prevent infiltration of untreated water into the system. Backflow of contaminated water into the distribution system is a concern whenever water pressure drops, or could drop, below 20 pounds per square inch (psi) as measured at ground level. Operation of the water system at pressures below this level increases the possibility of back-siphoning of contaminated water into the piping system. Such a pressure drop can occur because of broken mains, loss of stored water (especially in small systems), or long-term loss of power or source capacity. In the case of water main breaks, water supply owners can often isolate main breaks to complete repairs without pressure loss to other areas within the distribution network. Breaks occasionally occur that cannot be isolated and require interruption of service over a much wider area. The widespread loss of service may require a Boil Water Advisory ("Boil Order"). Public water systems can place themselves on an advisory ("Precautionary Boil Order") for this reason. These have the same lift requirements as NHDES-imposed advisories (see the following page).

Detection or suspicion of waterborne pathogens. Disinfection through use of chlorine or other oxidants has been shown to be effective for inactivation of most bacteria, viruses, and other microorganisms that

represent a health risk. However, there are other pathogens, most notably protozoans, which are extremely resistant to chemical attack and may be inactivated only after high dosages or unusually long contact times. Because of this resistance, protozoans may be present even though routine coliform monitoring indicates an otherwise safe supply. Pathogens of note are *Giardia lamblia*, which has been the target organism in the mandated filtration of surface water supplies, and *Cryptosporidium parvum*, an organism that gained widespread infamy in a 1993 Milwaukee outbreak that was responsible for more than 100 deaths. Infections by either of these organisms are reportable to the New Hampshire Division of Public Health Services and are of importance because of their more profound effect among immuno-compromised populations. Detection in the water supply may be very difficult given the long incubation periods, diagnostic procedures, and extended times for water sampling and analysis. The determination that these protozoans are present in the water supply frequently depends on collection of circumstantial evidence. A safe approach under these circumstances is to issue a boil water advisory when there is reasonable suspicion of contamination of the water supply.

Boil water advisories can be lifted by NHDES when system corrections have been completed and water quality indicators are acceptable. In the case of fecal coliform presence, the boil water advisory typically remains in effect until a minimum of two consecutive sets of samples show the absence of coliform and any outstanding system defects have been corrected.

Experience at NHDES has shown wide variation in circumstances where boil water advisories are necessary. Notification of the public leads to numerous inquiries regarding uses that require prior boiling, boiling procedure, and corrective action taken by the water supply owner. Restaurants, health clinics, and hospitals are especially affected. Close communication among staff of NHDES, the Division of Public Health Services, and local officials has been essential.

For More Information

Please contact the Drinking Water and Groundwater Bureau at (603) 271-2513 or dwgbinfo@des.nh.gov or visit our website at des.nh.gov.

Note: This fact sheet is accurate as of July 2019. Statutory or regulatory changes, or the availability of additional information after this date may render this information inaccurate or incomplete.

Community Public Water System Acute Contaminant Notification and Response Requirements

NHDES-Drinking Water and Groundwater Bureau

1. Public Notice

- Receive notice of acute contamination (E. coli or nitrate/nitrite) from your laboratory, operator or DWGB.

- Notify DWGB within 24 hours at (**603) 271-2513** (business hours) or (**603) 223-4381** (after hours).

- Notify water consumers as soon as possible, and no later than 24 hours. **Get help and designate staff** for notification, sampling and correcting the contamination. Perform the following notification tasks:

    - Contact the Town Health Officer to inform how it is being addressed. The Town often receives inquiries also.
    - Develop a list of Frequently Asked Questions (FAQs) or use factsheets DWGB-4-12 "Boil Order FAQs", DWGB-3-9 Nitrate / Nitrite.
    - Complete and distribute public notice forms with the FAQs or applicable NHDES fact sheet. Community water systems may have pre-printed forms in their Emergency Plans.
    - Community water systems must distribute the public notice through (1) broadcast media (radio or TV); (2) daily newspaper for three days; (3) door-to-door notices; or (4) Reverse 911 provided that current phone numbers are known for **all** service connections and a receipt mechanism confirms that notice was received within 24 hours of transmittal.

- Additional delivery methods for large public water systems include internet and website postings and delivery of public notices to schools, apartments, large private employers and organizations. Record phone voicemail message for resident calls.

- Contact critical customers such as health care facilities, dialysis centers, schools, daycares, restaurants, as they may need to implement additional precautions.

- Once public notice is distributed, sign the certification and return the certification and a copy of the public notice to dwmonitoring@des.nh.gov.

- Set time-frame expectations and provide regular updates to customers, DWGB and Town Health Officer throughout the advisory.

2. Sampling & Alternate Water Source

- Maintain at least 8 spare bacteria sample bottles and 2 nitrate/nitrite bottles on hand for acute response follow-up. Rotate bottle inventory to prevent container expiration.

- DWGB technical staff will contact you to begin troubleshooting, provide instructions for sampling, and to schedule a site inspection Level 2 Assessment for response to E. coli bacteria.

- For boil orders, three "repeat" bacteria samples from the distribution system and a "triggered" raw sample from each active well source are required within **24 hours** of the notice of a positive bacteria result, BEFORE chlorinating the system. More repeat samples may be needed to better isolate the problem or for larger service populations. Discuss and agree on the locations for the repeat and triggered samples over the phone with DWGB staff.

- Within 24 hours of receiving first notification, collect the required samples (nitrate confirmation samples if required, or bacteria repeats and triggered monitoring samples) and deliver to the laboratory within 24 hours. You must use sample forms from your Master Sampling Schedule (the "repeat" and "triggered" for bacteria, or the chemical form for nitrate/nitrite – checkmark the “Confirmation” sample type on the form). You may find your schedule and all associated sampling forms on the NHDES OneStop website with your 7-digit PWS ID.

- Contact your laboratory to confirm that they will promptly process your samples, and request at least 8 additional sample bottles (for lifting the boil later). Some laboratories do not accept bacteria samples after noon on Fridays. Request your laboratory to call you as soon as results are available as this impacts follow-up actions needed to return to normal operation.

- Consider providing an alternative water source such as bottled water (this is not required by the state but may be helpful to your customers and reduce complaints).

3. Assessment & Correction

- A system inspection is required for all Boil Orders. DWGB staff will contact you to schedule completion of a "Level 2 Bacteria Assessment" with a water system representative. Click here for bacteria assessment forms.

- Any issues identified that must be corrected in order to address the contamination will be listed on the bacteria assessment report. A tear sheet "Inspection Report" will be issued to the water system representative present at the time of the site inspection, with copy emailed to the system owner. The standard time frame to correct the identified issues and notify DWGB in writing, with photos, is within 30 days of the inspection. Additional time may be granted and approved in writing by DWGB if requested and justified by the water system representative.

- LIFTING THE ADVISORY

    - BACTERIA: Once the assessment and corrective actions are completed you must collect 2 consecutive sets of at least 3 samples per set (DWGB staff will indicate if more are required) at least 24 hours apart, with chlorine <0.1 mg/L for systems without disinfection. These “Lift” samples must be submitted on the General System Evaluation sampling forms from your Master Sampling Schedule **(repeat samples described above can count as first lift set if all are clean),** and MUST list the chlorine residual at <0.1 mg/L on the chain of custody form and the lab report. Therefore, you must sample your water for chlorine immediately before collecting the samples, and only collect samples if chlorine is below 0.1 mg/L. Low-level chlorine test strips for swimming pools are acceptable to test for low chlorine concentrations.

    - NITRATE: The number of samples to lift a Nitrate Advisory will be determined by DWGB technical staff, and nitrate concentrations must be < 10 mg/L.

    - BOTH: Contact DWGB to request an Approval to Lift the Notice when all required samples show "Absent" for both Total Coliform and E. coli, and <10 mg/L for nitrate. DWGB will notify the system in writing when the Notice may be lifted. Follow procedures listed in the Notice until you have received the authorization to Lift.

REDACTED

HAWC **Staff 3-8**

2020 Payroll Proforma Adjustments

Employee	2019	YTD Pay 8/21/20	2020 Projected 18 Weeks	2020 Projected 2020 Projected	2020 Full Year	Payroll Proforma Adjustment
[redacted]	38,541.92	9,101.38	13,158.00	22,259.38	36,244.00	(2,297.92)
		27,975.18	17,802.00	45,777.18	50,232.00	50,232.00
	13,776.00	7,898.72	0.00	7,898.72		(13,776.00)
	23,891.03					(23,891.03)
	6,578.25					(6,578.25)
	20,505.58	14,885.72	0.00	14,885.72		(20,505.58)
					37,440.00	37,440.00
						-
[redacted]	47,383.00					(47,383.00)
	8,093.75					(8,093.75)
	81,166.67	53,723.92	27,540.00	81,263.92	81,263.92	97.25
		16,079.25	13,932.00	30,011.25	39,312.00	39,312.00
		32,916.34	18,576.00	51,492.34	52,416.00	52,416.00
	81,359.33	54,841.00	25,668.00	80,509.00	80,509.00	(850.33)
	44,080.00	28,840.00	15,498.00	44,338.00	44,338.00	258.00
	11,056.25	37,287.51	19,350.00	56,637.51	56,637.51	45,581.26
		7,996.76	0.00	7,996.76		-
					45,760.00	45,760.00
Totals	**376,431.78**	**291,545.78**	**151,524.00**	**443,069.78**	**524,152.43**	**147,720.65**

REDACTED

Employ	Employee Name	Prior Year Gross Pay	Pay Group
[redacted]	[redacted]	21,366.88	ADMIN
[redacted]	[redacted]	44,391.13	ADMIN
[redacted]	[redacted]	7,898.72	ADMIN
[redacted]	[redacted]	14,885.72	ADMIN
	Sub-Total	**88,542.45***	
[redacted]	[redacted]	82,992.46	FIELD
[redacted]	[redacted]	27,405.75	FIELD
[redacted]	[redacted]	51,394.34	FIELD
[redacted]	[redacted]	85,541.27	FIELD
[redacted]	[redacted]	44,080.00	FIELD
[redacted]	[redacted]	55,969.01	FIELD
[redacted]	[redacted]	3,360.00	FIELD
[redacted]	[redacted]	7,996.76	FIELD
	Sub-Total	**358,739.59***	
Report Totals:		**447,282.04***	

RAFTELIS

November 19, 2019

Mr. John Sullivan
Controller
Hampstead Area Water Company
54 Sawyer Ave.
Atkinson, NH 03811

Dear Mr. Sullivan,

Raftelis is pleased to submit this engagement letter to the Hampstead Area Water Company (HAWC) to assist in its upcoming rate filing with the New Hampshire Public Utilities Commission (NH PUC). This document will serve to provide you with an overview of our firm, our approach to this project as well as a scope of work, and a proposed price.

FIRM OVERVIEW

Raftelis has the largest consulting practice in the nation focusing on financial, rate, and management consulting for water, wastewater, and stormwater utilities. In 1993, Raftelis was founded to provide services that help utilities function as sustainable organizations while providing the public with clean service at an affordable price. With this goal in mind, Raftelis has grown to become the largest and one of the most respected utility financial and management consulting practices in the nation. Raftelis has experience providing these services to hundreds of utilities across the country and abroad, allowing us to provide our clients with innovative and insightful recommendations that are founded on industry best practices. Throughout our history, we have maintained a strict focus on the financial and management aspects of utilities, building a staff with knowledge and skills that are extremely specialized to the services that we provide, and thus allowing us to provide our clients with independent and objective advice.

PROPOSED SCOPE OF SERVICES

We have developed the following scope of services based on our initial understanding HAWC's needs. We can certainly adjust this as needed.

We will arrange a kick-off meeting to further discuss the project in order to ensure we understand HAWC's needs and expectations. We will use this meeting to gather background data needed for the study including recent annual reports, test year financial data, customer usage information, and system operating records. Also at this meeting, Raftelis will facilitate a pricing objectives exercise to understand what HAWC's goals and objectives are such that rates and fees may be designed in accordance with accomplishing those goals and objectives.

Once all data are collected, we will incorporate test year revenue requirements, including all known and measurable or inflationary adjustments, into a rate model along with fixed asset and depreciation data. Using this information, along with the results of our pricing objectives exercise, we will prepare a cost of service analysis using methodologies outlined in the AWWA's M1 Manual: Principles of Water Rates, Fees, and Charges. We will then calculate updated rates to be included in HAWC's filing. Along with user charges, Raftelis will also calculate new miscellaneous fees to also be included in HAWC's filing with the NH PUC. We will then prepare exhibits and supporting schedules presenting all rate year revenue requirements, cost of service allocations, and resulting rate design along with prefiled written testimony that can be submitted to the NH PUC.

We propose to complete the scope of worked outlined above for a not-to-exceed amount of [redacted]. It is very likely that Raftelis will not need the entire budget associated with this scope of work, and subsequently all remaining budget will be passed onto HAWC in the form of savings. Given the uncertainty of the exact level of effort to provide services after the initial filing, this proposal does not detail or include any time or budget for post-filing efforts. As needed, Raftelis will be available to provide responses to data requests, intervenor

testimony reviews, oral testimony, and case coordination. We will bill HAWC on a monthly basis for services based on our hourly rates presented in Exhibit A.

We look forward to working with you on this engagement. Should you have any questions, please do not hesitate to contact me at (774) 243-0619. If the provisions of this engagement letter are acceptable, please sign and return one copy of the letter for our files. We are delighted to have this opportunity to work with you and HAWC.

Sincerely,
RAFTELIS FINANCIAL CONSULTANTS, INC.

Dave Fox, *Manager*

We accept the terms of this engagement letter:

Signature	Date 11/20/19
Title Controller	Name of authorized agent John Sullivan

Exhibit A – Raftelis' 2019 Standard Hourly Billing Rates

Position	Hourly Billing Rate **
Chair	[redacted]
Chief Executive Officer/President	
Executive Vice President	
Vice President/Principal Consultant	
Director of Governmental Services	
Senior Manager	
Director of Florida Operations	
Manager	
Director of Data Services	
Senior Consultant	
Consultant	
Creative Director	
Associate	
Graphic Designer	
Analyst	
Administration	
Technology/Communications Charge*	

* Technology/Communications Charge – this is an hourly fee charged monthly for each hour worked on the project to recover telephone, facsimilie, computer, postage/overnight delivery, conference calls, electronic/computer webinars, photocopies, etc.