NEW WESTMINSTER

CITY OF NEW WESTMINSTER

Potable Water Emergency Response Plan

REPORT

July 2009

Updated Dec 2016

Updated Jan 2023

PREFACE

Following are highlight figures and sections of the City of New Westminster Potable Water Emergency Response Plan that contain materials and guidance to assist the first responder to plan and response to potable water crisis. This is intended for the urgent reader and excludes less urgent components of the plan.

Section/Annex	*Description*	*Page*
WATER SYSTEM INFORMATION		
10.0	Figure 10.1: Water System Overview	Page 40
	Figure 10.2: Water Network HGL and Model Schematic	Page 41
	Figure 10.3: Pressure Zone Boundaries	Page 42
A	Emergency Contact Numbers	Page 43
B	System Priorities General Information	Page 46
C	Threat Specific Plan	Page 51
	C1 General Response for System Component Failures	Page 52
	C2 Security Breaches and Critical Equipment Theft Response	Page 56
	C3 Earthquake Response	Page 59
	C4 Flood Response	Page 64
	C5 Loss of Metro Vancouver Water Supply Response	Page 68
	C6 Water Supply Contaminated Response	Page 72
	C7 Loss of Power Response	Page 80
	C8 Loss of System Pressure Response	Page 82
	C9 High Turbidity Response	Page 86
	C10 Affected Service Connections Notification List	Page 90

ADDITIONAL RESOURCES

D	Utility Damage Assessment Form	Page 92
E	Advisory Notifications	Page 94
F	Recovery Plan	Page 98
G	Mobile Water Emergency Unit Specifications & Operation Procedures	Page 102

TABLE OF CONTENTS

ACRONYMS 7

PART 1 – *AIM OF THE WATER UTILITY RESPONSE PLAN*

1.0 Executive Summary 8
1.1 General Goals 9
1.2 Objectives of the Plan 9
1.3 Concept of Operations 9
1.4 Plan Organization 10

PART 2 – *ADMISTRATION*

2.0 General 11
2.1 Distribution lIST 12

PART 3 – *AUTHORIZATION*

3.0 General 13
3.1 Provincial Legislation 13
3.2 Metro Vancouver Inter-Operational Agreements, Protocols, Policy and Procedures 14
3.3 Municipal Bylaws & Procedures 15

PART 4 – *ACTIVATION OF PLAN*

4.0 General 17
4.1 Authority to Activate 17
4.2 Staff Response to a Disaster or a Notification of Activation 17
4.3 The Activation Sequence 18
4.4 Activation Criteria and Levels 20

PART 5 – *CITY ORGANIZATION AND ACTIVITIES*

5.0 General 22
5.1 The Organization of the City in Normal Times 22
5.2 Activities in Normal Times 23
5.3 Critical Water System Operational Facilities, Threats and Vulnerabilities 24
5.3.1 Operational Facilities 24
5.3.2 Establish System Priorities 24
5.3.3 Possible Threat Exposure 24
5.4 City High Priority Facilities 24
5.5 Critical Staff 24
5.6 Critical Communications 25

PART 6 – *FIRST ACTIONS BY STAFF*

6.0 General 26
6.1 Concept of Operations 26
6.1.1 Basic Principles 26
6.1.2 Assumptions 26
6.1.3 Activation Levels 27
6.1.4 Operation Periods 28
6.1.5 Work Scheduling 28
6.1.6 Quality Control Telephone Line 28
6.1.7 Dispatching 28
6.1.8 Use of Incident Command System 28
6.1.9 Security of Operations 28

6.2 City Actions to Support Water Response Actions 29
6.3 Interaction with Other City Departments to Support Water Response Plan 30
6.4 Mutual Aid Agreements 30
6.5 Declarations of Local States of Emergency 30
6.6 Regional Emergency Coordination Centre 30
6.7 Interaction with Regulatory Agencies 30
6.8 Interaction with other Agencies 31
6.9 Recovery Activities 31

PART 7 – *ROLES & RESPONSIBILITIES OF OTHER MUNICIPAL DEPARTMENTS*
7.0 General 32
7.1 Engineering Department 32
7.2 Communication Department 32
7.3 Human Resources 33
7.4 Information Technologies I/T 34
7.5 Finance Department 34
7.6 Development Services 34
7.7 Police and Fire 34
7.8 Risk Management 34

PART 8 – *ROLE & RESPONSIBILITIES OF OTHER MUNICIPALITIES & GOVERNMENT AGENCIES*
8.0 General 35
8.1 Interaction with Metro Vancouver Municipalities 35
8.2 Interaction with Metro Vancouver Regional District Emergency Programs 35
8.3 Threat Assessments 35

PART 9 – *RESOURCES TO SUPPORT RESTORATION OF WATER UTILITY OPERATIONS*
9.0 General 36
9.1 Internal Resources 36
9.2 External Resources 37

PART 10 – *WATER SYSTEM DESCRIPTION*
10.0 Water System Description 38

ANNEXES
A Emergency Contact Number 43
B System Priorities 46
C Threat Specific Plan 51
C1 General Response for System Component Failures 52
C2 Security Breaches and Critical Equipment Theft Response 56
C3 Earthquake Response 60
C4 Flood Response 64
C5 Loss of Metro Vancouver Water Supply Response 68
C6 Water Supply Contaminated Response 72
C7 Loss of Power Response 80
C8 Loss of System Pressure Response 82
C9 High Turbidity Response 86
C10 Affected Service Connections Notification List 90
D Damage Assessment Form 92
E Advisory Notifications 94

F Recovery Plan 98

G Mobile Water Emergency Unit Specifications and Operation Procedures 102

ACRONYMS

BCCDC	British Columbia Centre for Disease Control
BCERMS	British Columbia Emergency Response Management System
BCDWPR	British Columbia Drinking Water Protection Regulation
CAO	Chief Administrative Officer
City	City of New Westminster
EOC	Emergency Operations Center
FHA	Fraser Health Authority
GVWD	Greater Vancouver Water District
HRVA	Hazards Risk Vulnerability Assessment
MHO	Medical Health Officer
MV	Metro Vancouver
NW	City of New Westminster
ORC	Operations Response Center
PEP	Provincial Emergency Program
PRV	Pressure Regulating Valve
PWERP	Potable Water Emergency Response Plan
PREOC	Provincial Regional Emergency Operations Centre
SCADA	Supervisory Control and Data Acquisition
WFCL	Water Field Crew Section Leader
WSL	Water Section Leader
WQT	Water Quality Technician

1.0 Executive Summary

A Potable Water Emergency Response Plan (PWERP) was prepared to outline the requirements to be implemented in the event of emergencies and disasters. This plan sets out the respective roles, responsibilities and activities within the City of New Westminster (City) so that staff are aware of the expectations placed upon them. The interlinking of other operational plans and the City's Emergency Plan provide a cohesive, integrated, City wide approach to major emergencies or disaster threats facing the Water Utility.

The City is responsible for the provisions of potable water at sufficient quantities and pressures to ensure distribution of drinking water and effective fire fighting. Therefore there is a need to ensure that there is an effective plan to assure both regulatory compliance and major emergency or disaster response capacity in the event of a significant distribution system or regional incident.

The City of New Westminster Engineering Operations Department will play a critical role in the event of an emergency. Of primary importance to utilities staff members will be to ensure the City's supply of potable water is maintained during a crisis, and to expedite any repairs required in the event of loss of water supply. This document is designed to prepare for a planned response to emergency situations associated with natural disasters, technological incidents, and national security emergencies in, or affecting, the water supply system. This plan describes the following:

- Emergency management organization required to assist in mitigating issues arising from a significant emergency or disaster.
- Authorities, policies, responsibilities, and procedures required to protect the health and safety of customers, personnel, and facility property.
- Operational concepts and procedures associated with field response to emergencies and the recovery process.
- Implementation of the British Columbia Emergency Response System for use within the municipal, regional, and provincial systems.
- Multi-agency and multi-jurisdictional coordination with municipal, regional, provincial and federal agencies during emergency operations.
- Mitigate measures as well as emergency operations procedures.

1.1 General Goals

The purposes of this Potable Water Emergency Response Plan are to:

- Provide for the Health and Safety of all City staff and first responders in the event of a major emergency or disaster impacting the City Water Utility.
- Protect public health in the operation of the water utility.
- Minimize disruption of utility service when the Water Utility is faced with emergency or disaster circumstances.
- Identify critical infrastructure and their interdependencies.

1.2 Objectives of the Plan

The objectives of this Plan are to:

- Set out the roles, responsibilities, and activities within the City that will ensure that the staff are aware of what is expected from them and what duties they need to undertake in order to meet the relevant legislation.
- Ensure that there is continuity of operations in the provision of water utility services to residents and businesses.
- Provide adequate guidance for the restoration of critical infrastructure that could be damaged or destroyed in the event of a major emergency or disaster.
- Protect the environment in the event of a water utility emergency.
- Reduce economic and social impacts from a water utility emergency.
- Apply the principals of emergency management including Hazards Risk Vulnerability Assessment (HRVA) prevention and mitigation strategies, preparedness activities, response capacity and recovery planning to the effective management and operation of the municipal water utility.
- Set out, in brief plan form the activities, supported by appropriate documentation, organizational roles, and responsibilities, and supporting measures that will ensure effective planning for response to and recovery from a major emergency or disaster affecting the City water utility.
- Identify other documentation or responsibilities that support the PWERP.
- Provide staff with guidance for the execution of system repairs and the adoption of accepted emergency procedures.
- Formalize communication lines.

1.3 Concept of Operations

This PWERP recognizes a number of threat circumstances, both natural and manmade. The PWERP envisions that in all disaster circumstances apart from a region-wide earthquake, where all resources would be needed all at once, the Emergency Contact Number (***Annex A***), System Priorities (***Annex B***), and Threat Specific Plan (***Annex C***) will be the first method of response. The PWERP will also immediately be applied, if the resources available exceed the scope, or if there are serious implications for the City as whole or for the general public in the event of a disaster situation. Additionally, the City's Emergency Plan may be activated if the serious event, which has wide-spread impacts or implications beyond the City ability to

address the event, takes place. In such a case, Mutual aid or a Declared Local/Regional/National Emergency may then be required.

1.4 Plan Organization

This PWERP is organized into ten sections, which are:

Part 1: Provides the Aim of the Plan;
Part 2: Outlines Plan Distribution and Administration;
Part 3: Outlines the Authorities that support the Plan;
Part 4: Stipulates how the Activation of the Plan occurs;
Part 5: Records the normal operational Activities of the utilities, their critical elements and threats as well as the prevention, mitigation and preparedness activities undertaken to diminish vulnerability;
Part 6: Identifies the Actions to be taken when a serious event impacting utilities is probable, or has happened;
Part 7: Identifies the Roles of and Responsibilities of other Municipal Departments to support the Water Utility Operation;
Part 8: Identifies the Roles and Responsibilities of other Municipalities and Agencies to support the utility;
Part 9: Identifies the Resources requirement to prepare for, respond to, repair, reschedule, reorganize or otherwise recover from any impacts that could or have reduced the delivery of service and Continuity of Water Utility Operations.
Part 10: Provides descriptions of the City water system.

List of Annexes included in the Plan are:

Annex A: Emergency Contact Numbers
Annex B: System Priorities General Information
Annex C: Threat Specific Plan
Annex D: Damage Assessment Form
Annex E: Advisory Notifications
Annex F: Recovery Plan
Annex G: Mobile Water Emergency Unit Specifications and Operating Procedures

2.0 General

The PWERP was developed under the responsibility of the Operations Engineering Department to ensure its continued maintenance, annual review and testing of the water system. Plan maintenance and updating shall include review and modification of the plan and annexes for current information regarding hazards and actions.

Amendments will be made on a regular basis and identified on the following list.

DATE	PART	AMENDED
Dec 2016		
January 2023	2.1 Distribution List	Updated
January 2023	Annex A	Emergency Contact Numbers Updated

2.1 Distribution List

This manual must be maintained by the person to whom it was issued as follows:

MANUAL #	NAME	DEPARTMENT / AGENCY
1	Lisa Leblanc	Engineering
2	Catalin Dobrescu	Engineering
3	Ruzica Kragulj	Engineering (Digital Copy)
4	Gabe Beliveau	Engineering Operations
5	Wes Halliday	Engineering Operations
6	Kelly Flello	Engineering Operations (Front Desk Copy)
7	Emergency Operations Center	Emergency Management
8	Glenbrook Fire Hall	Fire and Rescue Services
9	Queensborough Fire Hall	Fire and Rescue Services

3.0 General

The City must respond to a variety of legislative and regulatory requirements. It must recognize and meet a number of obligatory documentation, activation, contact, or familiarization stipulations. Moreover, there are a number of agreements, policies, procedures or obligations that bind the City and its wholesale supplier, the GVWD, in the delivery of water in the region.

3.1 Provincial Legislation

Water utility purveyors are required by a variety of provincial laws to prepare and exercise plans, and to ensure that an adequate emergency response is available in the event that utility operations could impact public health or safety. A very brief synopsis of these requirements follows:

Greater Vancouver Water District Act 1924:22.1

(i) Part 57: Emergency Conditions

Under the GVWD Act the Board has, following the breakdown of the system or works or plant, absolute authority and power to apportion the quantity of water to be distributed to or received by municipalities in the event of an emergency and:

Part 33: Power to enter upon land or streets to enter, pass over under and upon lands and property to repair the system.

(ii) Article 12 – Statutory Powers and Force Majeure

12. (1) Upon the occurrence of any act of God, strike, lock-out, work slowdown, labour dispute or unrest, inclement weather, damage to any of GVWD's waterworks systems or facilities, order of any competent court or governmental authority, war (declared or undeclared), civil unrest, riot, action of terrorists or other enemies of the Queen or the state, or any other matter of whatsoever kind or nature not limited to the foregoing beyond the control of GVWD which adversely affects GVWD's ability to perform its obligations under this agreement then GVWD's obligations under this agreement shall either be abated to such extent as the GVWD Engineer deems necessary or desirable or shall be terminated until such time as in GVWD Engineer's opinion, exercised reasonably, GVWD's obligations can be resumed in part or in whole.

12. (2) The Agreement is subject in all respects to the provisions of section 57 of the Greater Vancouver Water District Act and any amendments thereto.

Health Act (RSBC 1966) Chapter 179 Safe Drinking Water Regulation 230/92

7(1) The Regulation requires water purveyors to have written Emergency Response Plans approved by the Medical Health Officer to be implemented in the event of an emergency affecting the waterworks infrastructure; and

7(2) The Plan must be readily available at strategic locations; and

7(3) The Plan must have appropriate contact numbers and steps to follow in the event of an emergency.

Drinking Water Protection Act.

10(1) Similar to the Health Act this Act requires the water purveyor to have written response and contingency plans in accordance with the regulations to be implemented in the event of an emergency or abnormal operating circumstance.

15(a) The water supplier's emergency response and contingency plan is to be made public.

Transportation of Dangerous Goods

To the extent that the City may transport hazardous goods for re-chlorination, it is subject to Federal and Provincial legislation governing such movements and at Section 6:

21(1) Must report any discharge, emissions or escape of dangerous goods and

21(2) Must as soon as possible take all reasonable emergency measures consistent with public safety like health, property or the environment.

Water Management Act Sewage Regulations in all facilities governed by the Act at Section 6 Operations and Maintenance

16(1) A person must not introduce a discharge to the environment and must have a proper Operating Plan Containing at (iii) Emergency Procedures.

Work Safe BC Regulations – Sections:

4.13 Requires risk assessments of any locations where the need to rescue or evacuate workers occurs.

4.14 Requires the designation of evacuation routes and emergency fire drills.

4.16 Requires appropriate training be given to workers in time and evacuation while workers with designated emergency roles must be given specific appropriate training.

5.0 The regulations note where hazardous substances are present that a risk assessment must be prepared.

5.97 A written emergency plan is to be completed as set out in Section 5.97.

3.2 Metro Vancouver Inter-Operational Agreements, Protocols, Policy and Procedures

- Metro Vancouver Operations and Maintenance Operational Continuity Plan

3.3 City Bylaws & Procedures

Bylaw and Description	Bylaw	Date
Greater Vancouver Water Dist. Agree. Auth. A Bylaw to authorize an agreement between Greater Vancouver Water District and the Corporation of the City of New Westminster for the purpose of adding the Corporation of the City of New Westminster to the Greater Vancouver Water District.	**1268**	**1930**
Lease Authorization – Greater Vancouver Water District re Westburnco Reservoir (10th Avenue/tennis courts) A Bylaw to lease the Westburnco Reservoir and surrounding lands from the Greater Vancouver Water District.	**6206**	**1994**
Water Shortage Response Bylaw (ad 09/27/04) A Bylaw to regulate Water Shortage Response	**6948**	**2004**
Water Shortage Response Amend Bylaw (09/25/06) A Bylaw to amend Water Shortage Response Bylaw No. 6948, 2004. This Bylaw may be cited for all purposes as the "Water Shortage Response Amendment Bylaw 7124, 2006.	**7124**	**2006**
Water Works Bylaw A Bylaw to provide regulations respecting the Water Works System of the City of New Westminster.	**7631**	**2013**
Major Emergency Program Bylaw A Bylaw to respond to and Recover from Emergencies and Disasters. This includes establishing an emergency management organization to develop and implement emergency plans and other preparedness, response and recovery measures for emergencies and disasters.	**6417**	**1997**

Plan Description	Date
Emergency Response Plan – New DRAFT to be completed and implemented by Spring 2017 The City of New Westminster Emergency Response Plan forms the core of all emergency response documentation for the City. This plan is supported by detailed plans that further define the roles and responsibilities of City Departments, which can be used in guiding response efforts. The Emergency Response Plan is to be used as a reference when integrating internal/departmental specific plans into strategic city-wide operational plans. This plan does not replace the responsibility a department has in developing and testing its own emergency response plans. In an event of current emergency, the 2006 plan will be activated prior to the completion of the new emergency plan.	

4.0 General

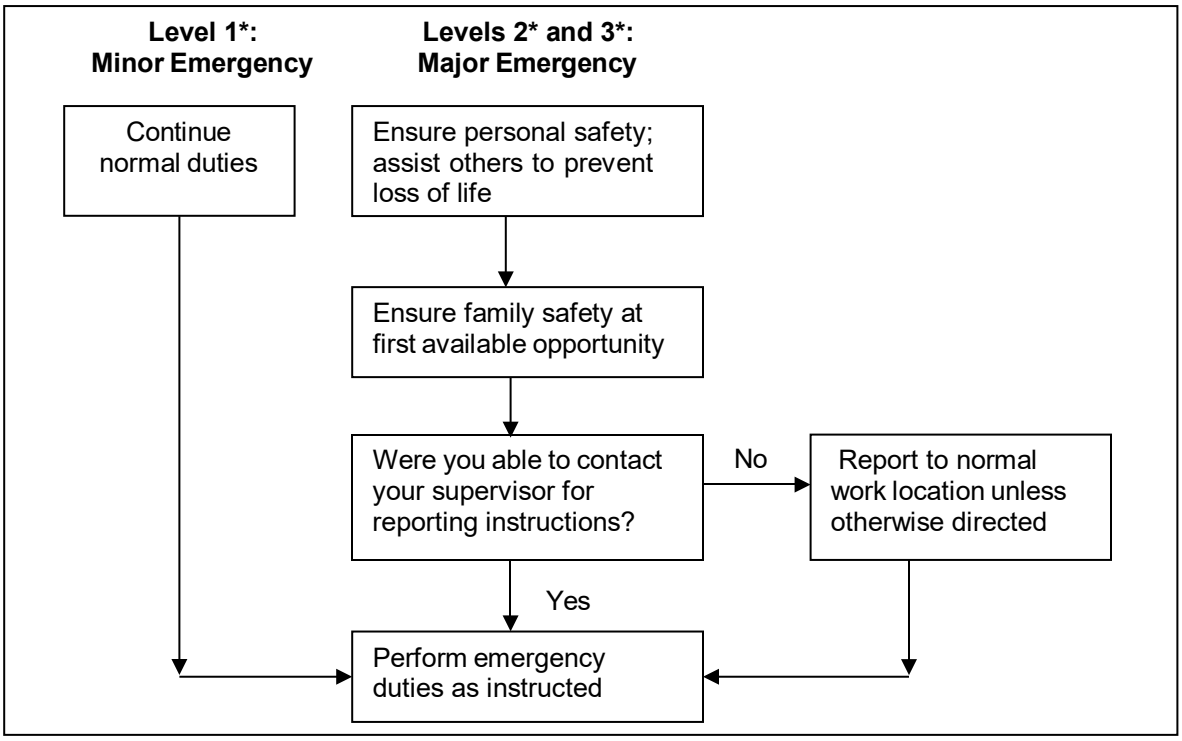
4.1 Authority to Activate

The Chief Administrative Officer (CAO), Director of Engineering, Manager Engineering Operations or their delegate who recognizes that a major emergency or disaster situation exists or is likely to exist can activate the Potable Water Emergency Response Plan at the level of activation required. During normal activities, this plan is not necessary.

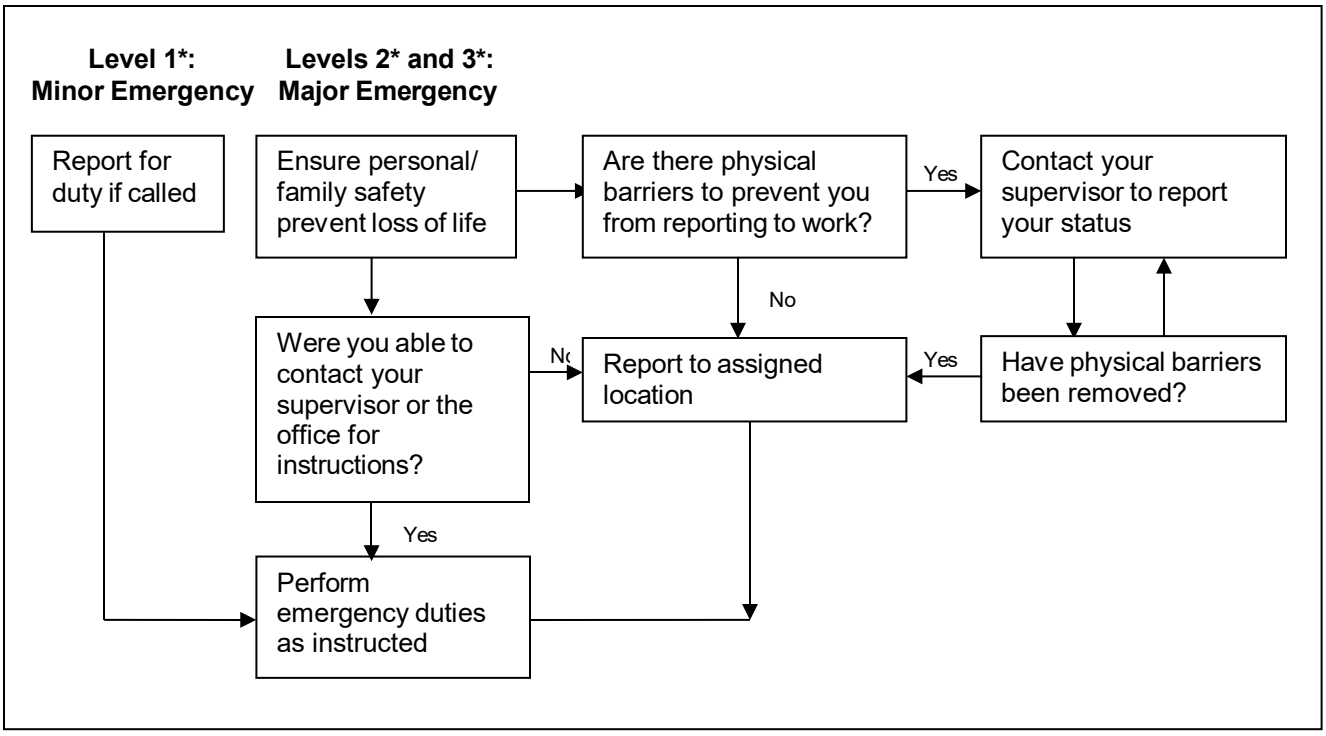
4.2 Staff Response to a Disaster or a Notification of Activation

Flowcharts 4.2a and 4.2b provides guidance to activated staff on the process of activation during regular work periods and after regular work periods of minor and major events.

Flowchart 4.2a: Guidance to Activate Staff during Regular Work Occurrence



Flowchart 4.2b: Guidance to Activate Staff after Regular Work Occurrence



** Emergency Levels 1, 2 and 3 as shown above do not conform to BCERMS*

4.3 The Activation Sequence

When the operations staff members are made aware that an emergency exists or is believed to be developing, steps will be initiated as outlined in ***Flowchart 4.3*** below, following the Threat Specific Plan shown in ***Annex C*** of this plan. Detailed procedures for activating each scenario are also shown in ***Annex C***.

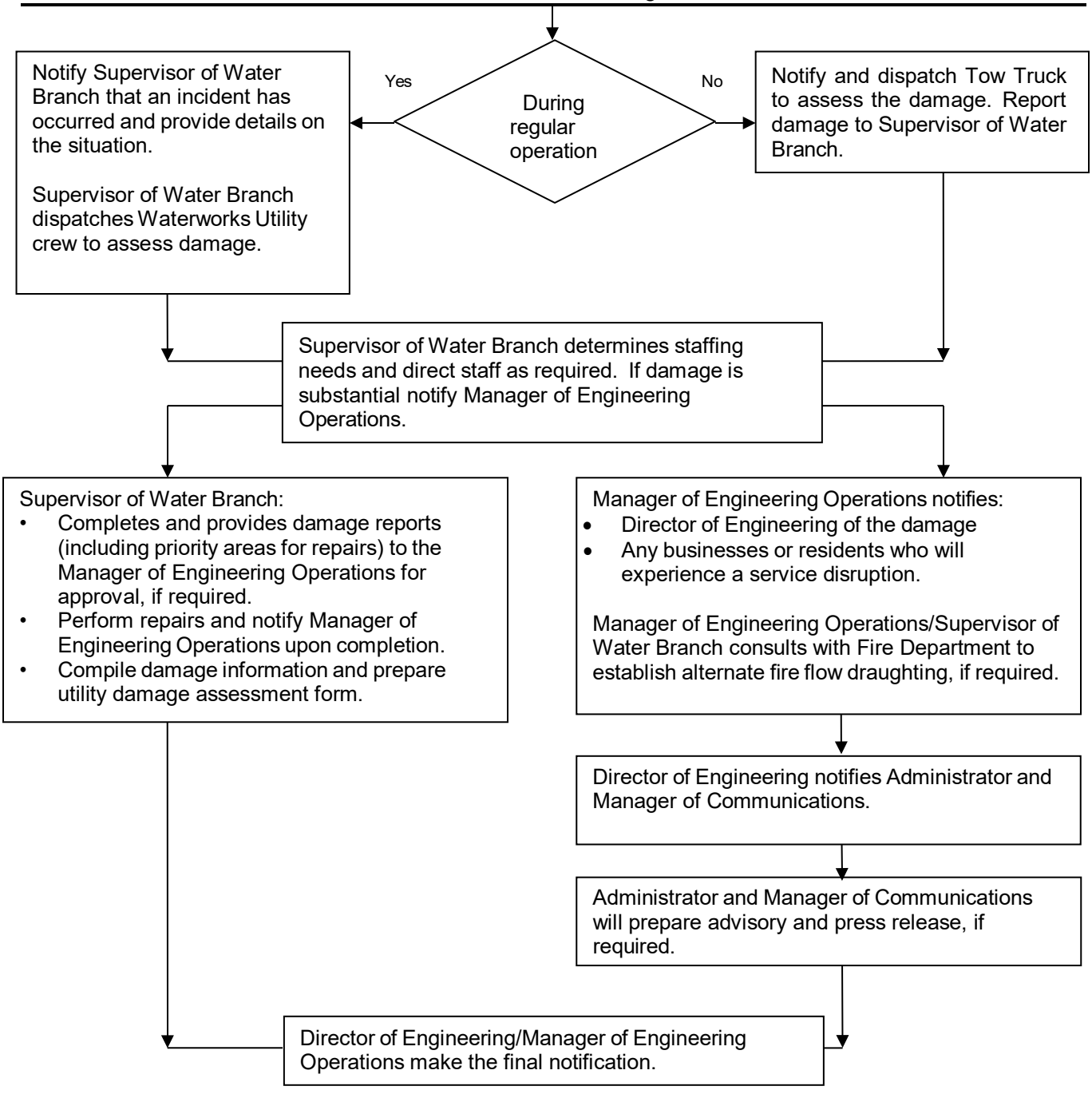
Flowchart 4.3: Activation Sequence

Initial notification of an emergency, disastrous event, or serious situation can come from any of the following:

Public Service **Media** **Internal Agencies** **External Agencies** **Customer**

NWPD, Fire/Rescue Field Crews, and Tow Truck

Ambulance, Transit Weather Forecasting, Other Municipalities, Fraser Health Region and Metro Vancouver



Staff Assignments

When the plan is activated, all identified staff will report for duty during non-work time, or remain on duty and assume their identified emergency assignment. The Manager of Engineering Operations will determine the impact to employees and systems, assess damage, identify additional staff requirements, and identify what outside agencies need to be contacted. It may be necessary to form shifts and to send people for rest as early as possible in preparation for extended 24-hour operations.

Reporting Structure

One of the most important components of emergency response is reporting at all levels. The CNW Emergency Response Plan describes the procedures and report formats to be used for communications between the Director of Engineering, the City EOC, and the Supervisor of Water Branch.

Supervisor

The Supervisor is responsible to provide regular reports to the Manager of Engineering Operations. These will be verbal reports at least hourly with a summary of information and whenever a significant event occurs. The Supervisor will assist the Manager of Engineering Operations to draft the water component of reports detailed in this plan.

Field Crews

Field crews will report regularly by radio or cell phone to the Supervisor at least hourly. They will also report their job status and reconnaissance information as it occurs or as it is discovered. It is vital that actions taken be reported with precise time and location. Detailed information and reports should be delivered to the Supervisor as soon as is practical but important details should be reported verbally.

4.4 Activation Criteria and Levels

Activation Levels 1, 2 and 3 as described below do not conform to BCEMS.

Level 1
This level will be utilized for major outages where personnel have been fully utilized to respond to a system failure and there is a likelihood of no further capacity to deal with a worsening of the event or the occurrence of a second similar event. The alert level will trigger information alerts to designated staff. Activation of any related threat specific plan or facility specific plan will require a Level 1 alert.

Level 2
This level would see an incident or group of incidents beyond the capacity of staff for normal outage repair. It would require staff from within the municipality to be rerouted to other than their normal working areas. It would see extensive additional shifts and disruption of normal work schedules. A major emergency will have degraded Water Utility capacity and impacted member municipalities, the general public or the environment. Centralized management of the

event will be required within the Water Department and possibly within the municipality. The City EOC will have been activated and opened.

Level 3
There has been significant loss of water utility capacity and will impact upon staff ability to respond. There are wide-spread or regional implications to loss of service and recovery to full operation will be protracted. Integrated management of the event will be required with other government agencies. A Local State of Emergency will exist or be probable in the City.

NEW WESTMINSTER

PART 5 – CITY ORGANIZATION AND ACTIVITIES

July 2009

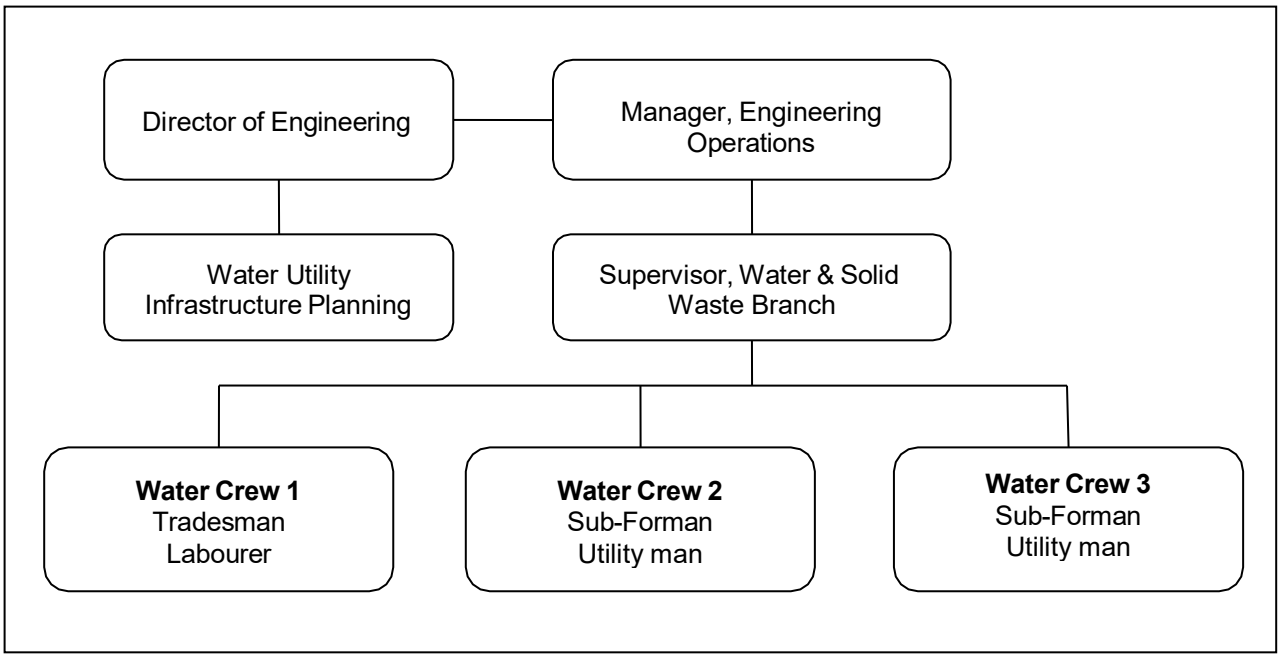
5.0 General

Within the City Engineering Services Department organization structure, the Water Branch is primarily organized for the safe delivery of water to its city customers.

5.1 The Organization of the City in Normal Times

The department is responsible for the maintenance of the water system, including water mains, services, PRV's, meters, hydrants, valves and all associated appurtenances of the system to ensure water quality and the provision of potable water and adequate fire flows. In addition, the department constructs specific portions of the system as is required to alter or improve the system. The City's Organization Chart is shown in ***Flowchart 5.1***.

Flowchart 5.1: City's Organization Chart in Normal Time



5.2 Activities in Normal Time

Normal operations and maintenance to support the City's water distribution system include the following activities:

- Service repairs;
- Service installations;
- Fire line installations;
- Hydrant servicing;
- Watermain flushing;
- Dead-end flushing;
- Valve exercising;
- Leak detection;
- Water meter:
  - Repair
  - Replacement
  - Readings
  - Meter Box Replacement
  - Meter Box Repairs
- Pressure reducing chamber:
  - Weekly Inspection
  - Adjustments
  - Repairs
- Zone meters:
  - Weekly Readings
- Watermain repairs; and
- Customer complaints and questions.

Department Management

The Supervisor Water Waste Branch provides day-to-day management and supervision of the Utilities Section. The Supervisor reports directly to the Manager of Engineering Operations. The Manager of Engineering Operations reports directly to the Director of Engineering.

5.3 Critical Water System Operational Facilities, Threats and Vulnerabilities

5.3.1 Operational Facilities

The City's critical operational facilities include:

- 220 km of watermain;
- 12 Pressure Reducing Valves;
- Fire hydrants;
- SCADA system and telemetry controls for PRV stations; and
- 33 Metro Vancouver Supply Connections.

5.3.2 Establish System Priorities

After the initial damage assessment and damage information is received from the field it will be necessary to determine those areas which will receive temporary repairs, those where permanent repairs are more efficient than temporary, and those that can wait until other repairs have been made. Actual priorities established will be based on the physical damages experienced; however, the following is general guidance and should be used in conjunction with the system priorities noted in ***Annex B***.

1. Review priority customers on an emergency by emergency basis including Royal Columbian Hospital, and the Downtown Core.

2. Determine if there is a need to re-direct the water distribution system.

3. Coordinate with the Fire Department to determine their need for water for fire fighting. In those areas where fire fighting operations are being conducted, determine if pipeline damages can be addressed with temporary repairs to re-establish service. Rerouting of fire truck may be required under a Level 1 watermain break.

4. Determine which pipelines can have temporary repairs made to restore them to service rapidly. Temporary repairs can include flexible pipe by-passing damaged sections of pipes, re-routing of water from adjacent zones where possible, and any other process that will allow service to be restored while permanent repairs are made.

5. If temporary repairs are not feasible, send water trucks to the reservoirs to obtain water and assign them to the fire department in order to supply the engines.

6. If temporary repairs are not feasible, provide bottled water for a small number of customers or alternatively, if the outage is large enough we would utilize the Potable Water Emergency Vehicle.

7. Where possible assign Water Field Crews to perform temporary repairs.

8. Begin permanent repairs.

5.3.3 Possible Threat Exposures:

(i) Natural Events

- Earthquakes
- Flash Flooding
- Freshet Flooding

(ii) Technological Failures

- Pipelines
- Fire in facility-general
- Toxic materials spill or release-general
- Fire in facility
- Wide spread power loss
- External events

(iii) Criminal Activities

- Critical equipment theft
- Arson
- Deliberate sabotage
- Bombs & Bomb threats
- Terrorism
- Chemical Biological Radiological & Nuclear Events (CBRN) – General

(iv) Health Related Events

- Major accident with fatalities
- Pandemic
- Serious illness depleting staff availability
- Other serious health issues including Critical Incidents Staff Debriefing (CISD)

5.4 City High Priority Facilities

See Civic Facility Condition Assessment Report (2008) and City Hazard Risk Assessment (2011) for the City high priority facilities.

5.5 Critical Staff

One of the most important components of emergency response is reporting at all levels. The following is a list of important roles during an emergency:

- The Director of Engineering will be responsible for the overall supervision of the engineering emergency response with assistance provided by the Manager of Engineering Operations, Supervisor of Water Branch and the Utility Engineer when required. He will keep the administrator informed of all operational activities,

established system priorities, recovery plans, provide authority for work undertaken and recommend activation of the EOC as necessary.

- The Manager of Engineering Operations will have a key role in specific emergency assignments, typically during emergencies requiring longer durations. He will oversee SCADA operation, planning and logistics along with other emergency assignments and responsibilities, as required to effectively respond to an incident.

- The Supervisor of Water Branch is responsible to provide regular reports to the Manager of Engineering Operations. These reports will be provided verbally at least once per hour with a written summary of information whenever a significant event occurs. The Supervisor of Water Branch will assist the Manager of Engineering Operations when draft reports are required for the Director of Engineering.

- Waterworks Crews will report regularly by radio or cell phone to the Supervisor of Water Branch, at least once per hour. During these calls, they will report the job status and reconnaissance information as it occurs or as it is discovered. It is vital that actions taken be reported, along with the precise time and location.

5.6 Critical Communications

All emergency calls for services related to the Water Utility will be made to the Engineering Operations at 604-526-4691 during and after normal business hours. See **Annex A**, Emergency Contact Numbers, for staff numbers.

6.0 General

First Actions by staff can significantly determine the outcome of any major emergency or potential disaster. The first staff on a scene may or may not be trained in first response procedures. However, the key to effective action is based in comprehensive preparedness, training and simple first steps once a hazardous or threatening condition is foreseen or perceived.

Major emergencies and disastrous events are characterized by complex circumstances, multiple jurisdictions, and inadequate initial damage information. Unclear lines of authority, insufficient resources, lack of comprehensive communications and an inability to comprehend how first actions are meant to evolve and how a small event can expand rapidly to a major problem, can lead to larger issues.

This section sets out the conceptual framework as to how it is anticipated a major event will be categorized and managed in the City of New Westminster.

6.1 Concept of Operations

6.1.1 Basic Principles

Water system emergencies can result from accidents, deliberate criminal acts, or natural disasters such as floods, fires or earthquakes. Minor emergencies may arise during routine operation and maintenance of the water system; responding to these incidents is part of normal operation and maintenance procedure. When the emergency situation involves a large part of the water system, a threat to drinking water quality, or a response that exceeds the capacity of on-duty personnel to respond, emergency response procedures must be initiated. Ensuring the safety of employees and responders, protecting public health, safeguarding the drinking water infrastructure and protecting the environment are the main objectives of an emergency response.

6.1.2 Assumptions

The concept of operations for this PWERP is structured around the following:

- Plans are in place for specific pre-identified specific threats.
- Plans are in place for the threats that the City is required to maintain as a Statutory Obligation including Fire and Safety Plans.
- Fire Suppression is dependent on Metro Vancouver ability to provide source water.

- The Plans are up to date and exercised on a basis consistent with their requirements.
- For significant threats or vulnerable facilities or activities, individual plans will be developed to support this plan.
- This Plan interlocks with supporting City Department Plans and the 2017 DRAFT Emergency Response Plan. Prior to this plan being completed staff will refer to the 2006 plan.
- This plan recognizes other emergency plans from other levels of government and agencies.
- The staff are trained on the content of these and their own threat specific plans, to the extent that is appropriate.
- The City Plans are exercised on a consistent basis.
- The City maintains a fully operational Emergency Operations Centre (EOC) and is using the British Columbia Emergency Management System (BCEMS).
- In the event of an EOC activation, the EOC plays a pivotal role and the PWERP is supplemental to the City's emergency response plan.

6.1.3 Activation Levels

There shall be three event levels recognized for this PWERP. Activation Levels 1, 2 and 3 as described below do not conform to BCEMS.

Level 1
This shall be an Alert Level. It shall signify that an individual Threat Specific Plan has, for whatever reason, been activated due to an impact or potential impact on utility infrastructure, operations or ability to fully provide service.

Level 1 shall not imply that other plans will be activated unless so requested by a supervisory level staff member.

Level 1 will require that Manager of Engineering Operations and Director of Engineering be informed.

Level 1 may be indicated if it appears that the level of an event will or could rapidly escalate, involve or compromise service delivery or public health.

Level 2
This Level will signify that a major emergency has occurred, either within the City impacting water service facilities or infrastructure or that an event has occurred external to the City that has or will impact the City's ability to provide full water utility service.

As appropriate, threat specific plans will have been activated at facilities. Facility or operational staff will have undertaken preliminary damage assessment or damage potential and will have called their appropriate supervisors. In turn they will have activated this PWERP and alerted the Director of Engineering and Operations and or the designate and the City Emergency Coordinator both of whom may also activate this plan if it has not been activated.

The Director of Engineering or their delegate will alert the Chief Administrative Officer. The Director of Engineering will alert those other City Departments and or managers likely to be impacted. The Fire Chief or designate will put the Emergency Operations Centre on an alert

status or activate if required. The Director of Engineering and or their delegate will notify the MV of the nature of the emergency and the status of the activation.

Level 3
Disaster situations characterized by widespread impacts that overwhelm the ability of municipal staff, equipment, facilities or infrastructure to deal with the impact of an event shall automatically require that this plan and the City EOC be activated. The City Emergency Response Plan and EOC operating procedures shall overwrite any other plans. However all other plans should be in force as required and shall continue to be in effect unless specifically curtailed by the EOC. MV's Operation and Maintenance Department and Fraser Health Authority will be notified of the status of the emergency and the activation.

Level 3 will require extensive damage assessment, extraction of service plans tailored to system damage or inability to function and assistance from external resources. If municipal or regional "states of emergency" have been declared, limitations and impact will govern response and recovery.

6.1.4 Operational Periods

This plan will recognize two (2) time conditions which may require differing response and recovery strategies. These are:

- During staff regular work periods; and
- After regular staff work periods.

This plan will recognize emergency response shifts that are 12 hours in length.

6.1.5 Work Scheduling

Regular construction and maintenance work will not continue, unless sufficient staff is available, despite the emergencies.

6.1.6 Quality Control Telephone Line

Calls pertaining to water related emergencies shall be managed by the Operations Clerk where it will be documented and forwarded to the Water Branch Supervisor. Further staff may be brought in and assigned to receive additional calls from the public. If the EOC is activated, a call centre will be established to take all calls related to the emergency.

6.1.7 Dispatching

All Calls for Service requests will be documented and forwarded to the Manager of Engineering Operations by the Operations Clerks. The Calls for Service will in turn be forwarded to a designated supervisor in the Water Utility to undertake remedial field work.

6.1.8 Use of Incident Command System (ICS)

BCEMS will only be used when EOC has been activated and the PWERP is acting as a supplemental document to the EOC.

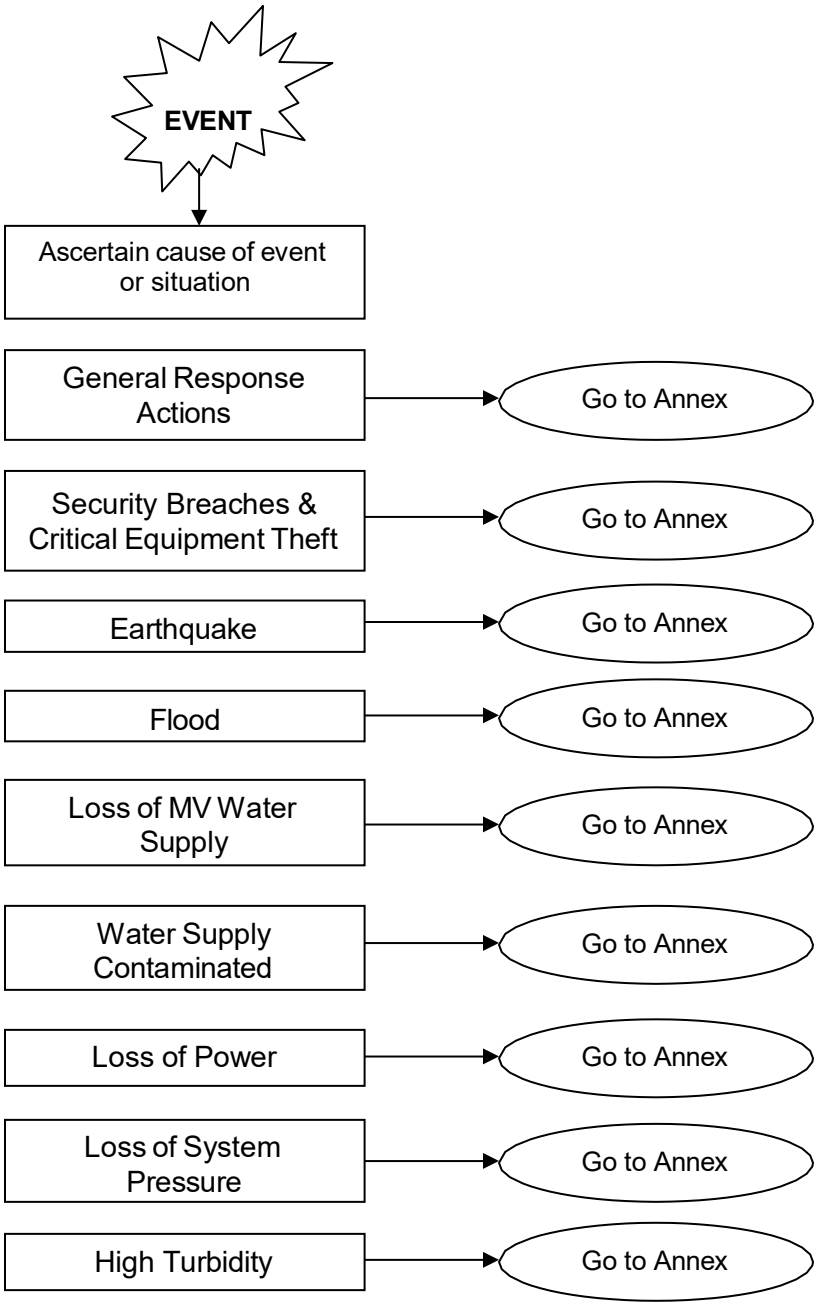
6.1.9 Security of Operations

Pad-Locks on PRV's, Zone Meter Chambers, and Sampling Stations.

6.2 City Actions to Support Water Response Actions

Response activities begin with the occurrence of the incident and continue until there is no additional threat to the health and safety of the employees, the facilities, or the water distribution system as a whole. Recovery will begin before the end of the emergency response. It will be during this transition from response to recovery that the coordination of the operation will be the most difficult. Refer to ***Flowchart 6.2*** for a response action flow chart and see **Annex C** for the typical Threat Specific Plan.

Flowchart 6.2: Response Action Flow Chart



6.3 Interaction with other City Departments to support Water Emergency Response Plan

Depending on the size and urgency of the emergency, additional municipal staff from the following departments will be utilized: Engineering, Fire & Rescue Services, Police Services, Building Services, Parks & Recreation Dept. and the Safety & Training Officer.

6.4 Mutual Aid Agreements

Mutual Aid Agreements are in place only for Fire & Rescue purposes with other Cities.

6.5 Declarations of Local State of Emergency

Declaration of Local State of Emergency may be implemented in extreme cases. Once it is apparent to the EOC Management Team that, in their best judgment, emergency conditions warrant a declaration, they must advise the Mayor or designate that they wish to issue a declaration, as well as the nature, extent, probability of loss, resources at risk, and geographic area.

6.6 Provincial Regional Emergency Operations Centre

Emergency Management BC (EMBC) will activate a Provincial Regional Emergency Operations Centre (PREOC) to coordinate, facilitate and manage information, policy direction and provincial resources in support of local authorities and provincial agencies responding to an emergency or disaster. The PREOC for this region (South West) is located in Surrey (Green Timbers) and in conjunction with the Provincial Emergency Coordination Centre (PECC) in Victoria, integrates overall provincial support to the community.

South West Provincial Emergency Operations Center
Green Timbers
14292 Green Timbers Way
Surrey BC

6.7 Interaction with Regulatory Agencies

Regulatory agencies includes:

- Regional Health Authority and Medical Health Officer
- Ministry of Health Services
- Ministry of Water Land and Air Protection
- Ministry of Public Safety and Solicitor General
- Ministry of Transportation and Infrastructure
- Workers Compensation Board

- Environment Canada
- Port Authority
- Metro Vancouver

Refer to ***Annex A*** *for r*egulatory agencies phone number and to ***City Emergency Numbers*** for completed list.

6.8 Interaction with other Agencies

The City maintains a working relationship with all regulatory agencies that may be required during an emergency, including:

- PREOC – Provincial Regional Emergency Operations Center
- Office of Critical Infrastructure Protection and Emergency Preparedness
- Department of Public Safety and Emergency Preparedness Canada
- Canada Customs and Revenue Agency
- E-Comm (Emergency Communications for South West British Columbia)
- Regional Emergency Coordination Centre

The phone numbers are available from the City Major Emergency Plan Contact List.

6.9 Recovery Activities

See ***Annex F*** for Recovery Plan.

NEW WESTMINSTER

PART 7 – ROLE & RESPONSIBLITIES OF MUNICIPAL DEPARTMENTS

July 2009

7.0 General

This Section outlines the role and responsibilities that other Municipal Departments will take before a major emergency or disaster occurs (preparedness) to diminish the likelihood of a loss of Water Utility service, or to insure prompt and effective restoration of service (response).

7.1 Engineering Department

The rules of the Engineering Department include:

- Site Assessment
- Mitigation Work and Repairs
- Monitoring and Assessment for Environmental Impacts
- Participation in EOC (if required)
- Emergency Reports
- Supply of background and system data (as required)
- SCADA and other Control Systems

7.2 Communication Department

Non EOC Situations (Activation Level 1)

The Communication Department will assist the Engineering Department with editing and releasing all formal communications with the public.

EOC Situations (Activation Level 2 and 3)

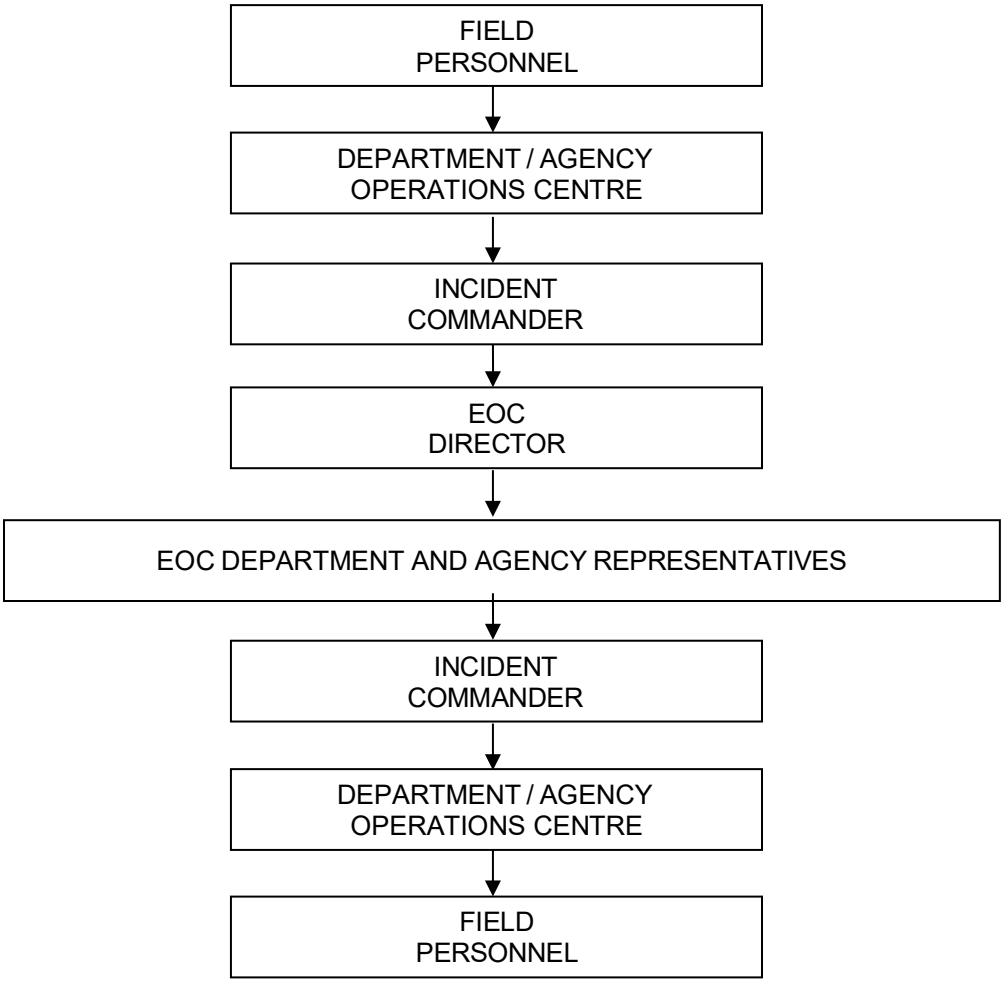
The Communication Department will coordinate all announcements and formal communications. Refer to the ***New Westminster Emergency Response Plan*** for the EOC activation and communication plan.

The protocol for communications, flow from the staff in the field reporting to their Incident Commander at the department or agency Command Post or Department Operations Centre (DOC). They will use their usual radio channel or communication systems.

When the Engineering Operations Supervisor, in his/her opinion, determines that the incident has the potential to exceed the capability of staff and/or local resources, he/she will call the Engineering Director or designate responsible of Engineering and make a request to activate the EOC.

Once the EOC Director evaluates the information deciding to activate the EOC and this plan as the Second Level of support, he/she will call the Operations Chief, City Administrator, and the Mayor. The Operations Chief sets these Call Out Procedures in motion on behalf of the EOC Director. The department communication structure is detailed in ***Flowchart* 7.2**.

Flowchart 7.2: Department Communication Structure



7.3 Human Resources

The Manager of Engineering Operations in conjunction with the Executive Assistant to the CAO administer the terms of the Collective Agreement Emergency Response Conditions and Emergency Condition Policies, including provisions for the following:

- Shift times
- Emergency Call In

- Pagers and Cellular Phones
- Provision of Home Numbers
- Compensation in Emergency Conditions

7.4 Information Technologies I/T

The I/T Department provides the following technical support:

- City Computer Network
- GIS
- Map of Land Use in the City
- Record Drawings

7.5 Finance Department

The Finance Department provides the following support:

- Documentation of key water users in the Community
- Purchase/Work Orders
- Disaster Financial Assistance (DFA)
- Properties Pre-Planning of Procedures for Emergency Response under legislated emergency provisions for property encroachment.

7.6 Development Services

The Development Services Department provides the following support:

- Procedures for property encroachment during emergency response.

7.7 New Westminster Police Department and New Westminster Fire & Rescue Services

Both Police and Fire provide critical services during emergencies. During major emergencies, Police and Fire representatives administer their duties with regard to their respective areas within the EOC. During lesser events, Police or Fire may provide assistance when requested. Requirement for their assistance is determined by the need for specialized or additional resources to deal with the extent of a specific event.

7.8 Risk Management

Development of risk management procedures is in progress.

NEW WESTMINSTER

PART 8 – ROLES & RESPONSIBILITES OF OTHER MUNICIPALITIES & GOVERNMENT AGENCIES

July 2009

8.0 General

The municipality does not function alone and in order to effectively respond and recover from major emergencies or disasters that occur either within city water operations or through an external event or threat. There are opportunities for the department to undertake enhanced preparedness activities in collaboration with the other municipalities, the MV, other senior levels of government and non-government agencies.

8.1 Interaction with Metro Vancouver Municipalities

Mutual Aid Agreements are in place with other municipalities for fire fighting and police services.

8.2 Interaction with Metro Vancouver Regional District Emergency Programs

Metro Vancouver has established a 24-hour control centre phone number for emergencies. To report an emergency or for further information, see ***Annex A*** for MV emergency contact number. This department will either assist you or connect you to the appropriate department that you require.

8.3 Threat Assessments

Threat assessments will be forwarded to the NWPS, Fraser Health Authority and the CAO, based upon the threat level. An EOC will be established to respond to events as required. Additional resources and expertise may be called upon as needed, including:

- EMBC
- Fire
- Ministry of Health
- Ministry of Environment
- BCWWA
- Ministry of Transportation and Infrastructure
- Work Safe BC
- BC Hydro

NEW WESTMINSTER

PART 9 – RESOURCES TO SUPPORT RESTORATION OF WATER UTILITY OPERATIONS

July 2009

9.0 General

The purpose of this section is to provide an outline of the infrastructure that is available in the municipality, both internally and externally, to support the continuity of operations during events.

9.1 Internal Resources

City Computer Water Model
A computer water model was created in 2008 and regularly updated to assess the system capacity. The model is a hydraulic and geographic representation of the cities 220km of watermain, 14 PRV stations, and Metro Vancouver supply connections. Refer to the record drawings for the system as-built drawings or contact IT Department GIS Services for any available computer record drawings.

Record Drawings
Water system as-built are available in three formats:

- Paper;
- Microphyche; and
- Digital.

Paper copies are stored offsite at a secured facility. Microfiche records are located in the engineering department and digital copies can be provided by the IT GIS Department.

Facilities with Back up Resources

- EOC;
- City Hall;
- Fire Hall; and
- Works Yard.

Vehicle and Specialized Equipment List

- Backhoe x 1;
- Service Trucks x 3; and
- Mobile Water Emergency Unit (21,000 US gallons/day), see ***Annex G***.

9.2 External Resources

Special Equipment, Contractors, Operations or Services

- **Badger Daylighting LP (Vacuum Truck)**
  Toll free 1-800-465-4273
  All Districts 778-874-7015

- McRae's (Vacuum Truck)
  Toll free: 1-888-894-4411
  All districts: 604-856-8344
  Fax: 604-856-0763

- Winvan Paving Ltd.
  220 Edworthy Way, New Westminster, B.C., V3L 5G5
  Tel: 604-522-3921
  Fax: 604-522-4524

- Fraser River Pile Dredge (GP) Inc.
  1830 River Drive, New Westminster, B.C, V3M 2A8
  Tel: 604-522-7971
  Fax: 604-521-7530

- PW Trenchless Construction Inc.
  11618-130 Street, Surrey, B.C, V3R 2Y3
  Tel: 604-580-0446
  Fax: 604-589-4698

- Sandpiper Contracting Ltd
  20058 92a Avenue, Langley, B.C V1M 3A4
  Tel: 604-888-8484
  Fax: 604-888-1101

Professional Services

- First available contact, engineering services.

Courier Companies

- First available contact, courier services. The contact numbers are as follows:
  Atlas. 604.875.1111
  Populator. 1.888.744.712
  FedEx. 1.800.463.339
  UPS. 1.800.463.339

10.0 Water System Description

The City water distribution system services 58,500 residents, along with local businesses and industrial properties. The distribution system consists of: 220 kilometres of pipes, 12 pressure reducing valves (PRVs), and multiple supply connections from Metro Vancouver divided into eight pressure zones. Refer to the ***City Master Water Study*** dated April 2008, prepared by Earth Tech, ***Figures 2.1 to 2.3*** (a copy of the Figures are attached and known as ***Figures 10.1 to 10.3***) for the City overall piping system, system hydraulic grade line and pressure zone boundaries.

Water is supplied to the City of New Westminster by Metro Vancouver's Seymour and Coquitlam Lake sources, which provide a direct supply to the City and an indirect supply through the Metro Vancouver's Westbernco Reservoir (near 10th Avenue and Massey Street). The Westburnco reservoir is the only storage reservoir in the City and it supplies potable water and fire protection to the majority of the City.

The Greater Vancouver Water District which operates under the Metro Vancouver is responsible for the quality, safety and reliability of the supply of drinking water to the City. Water is brought to New Westminster by gravity and pumped depending on variable conditions with supply from the Coquitlam, Seymour and Capilano reservoirs. The Metro Vancouver Water System can supply water to the City from the Central Park, Burnaby Mountain, or Coquitlam routes. Water primarily enters the Westburnco Reservoir located at Churchill Avenue and Massey Street. It is then both pumped and gravity fed throughout the City. The Metro Vancouver water mains are described as follows:

- **Central Park Main (8th Avenue):** This 22 inch main was built in 1931 and connects the Westburnco and Central Park Reservoirs using 8th Avenue as a route through the City.
- **McBride Street Main:** This 28 inch main was built in 1950 and connects the Westburnco Reservoir with the Royal Avenue/Queensborough Main using McBride Street.
- **Sherbrooke Street Main:** This 36 inch main was built in 1977 connecting the Westburnco Reservoir to the Sapperton Main extending along Sherbrooke Street to Brunette. This main also connects with the Braid Street Main, built in 1980 along 8th Avenue and Rousseau Street.
- **Braid Street Main:** This 30 inch main was built in 1937 connecting the Westburnco Reservoir with the Sapperton Main.
- **Queensborough/Royal Avenue Main:** This 26 inch main was built in 1949, extended across the arm of the Fraser River, along Stanley Street in 1952 and again along Ewen Avenue in 1961.
- **Annacis Island Main:** This 34 inch main was built in 1961 from the Central Park Reservoir along 21st Street, across the Queensborough Bridge, along Wood Street, along Salter Street and to Annacis Island.

- **Sapperton Main #2:** This 54 inch main was built in 1994, connecting the Coquitlam water source passing through Hume Park and up Holmes Street and along to Westburnco.
- **South Burnaby Main #2:** This 54 inch main was built in 1997 from Westburnco along 10th Avenue and eventually to Central Park in Burnaby.
- Should a failure of any of these distribution lines occur, the procedure will be to shut off the areas affected, repair leaks, reconnect, pressurize small sections of the network, test for other leaks and repeat the process until the system is repaired.

The City water mains branch off the Metro Vancouver mains, forming a highly robust looped system.



City of New Westminster

Master Water Study

Legend

- GVRD Connections
- PRV
- GVRD Water Mains

Pipe Diameter (mm)

- <= 100
- 150
- 200 & 250
- >= 300

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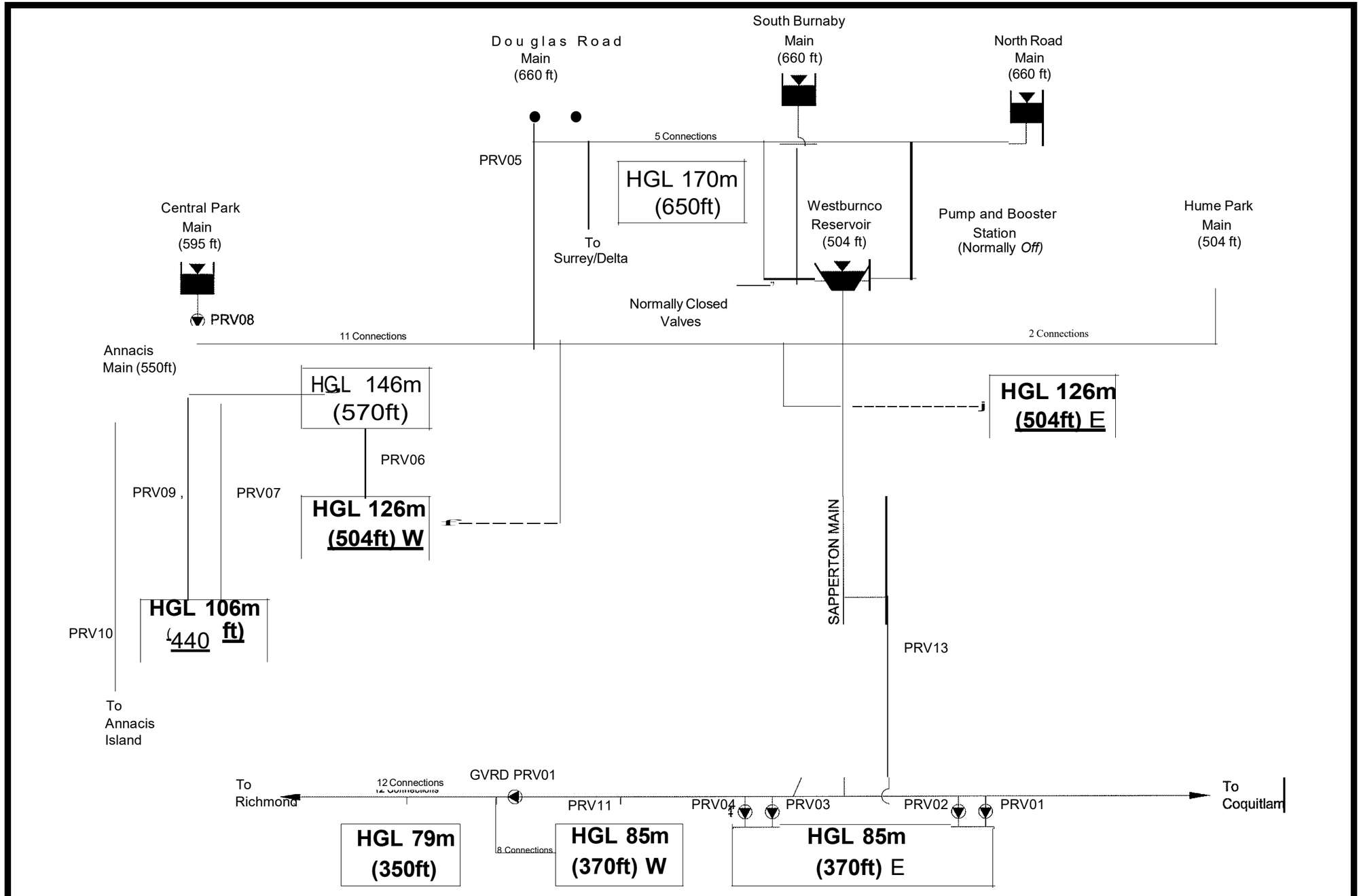
A 1:f/CO International ltd. Company

M M Meters
0 125 250 500 750 1,000

Project No.	Date
97871	April 2008

Water System Overview

FIGURE 10.1



© EarthTech
A Tyco International Ltd. Company

Project No. 97871

Date April 2008

City Of New Westminster

Master Water Study

Legend

PVR - GVRD Main

Reservoir - CNW Main

Tank

Zone HGL in Geodeticm and GVRD Datum

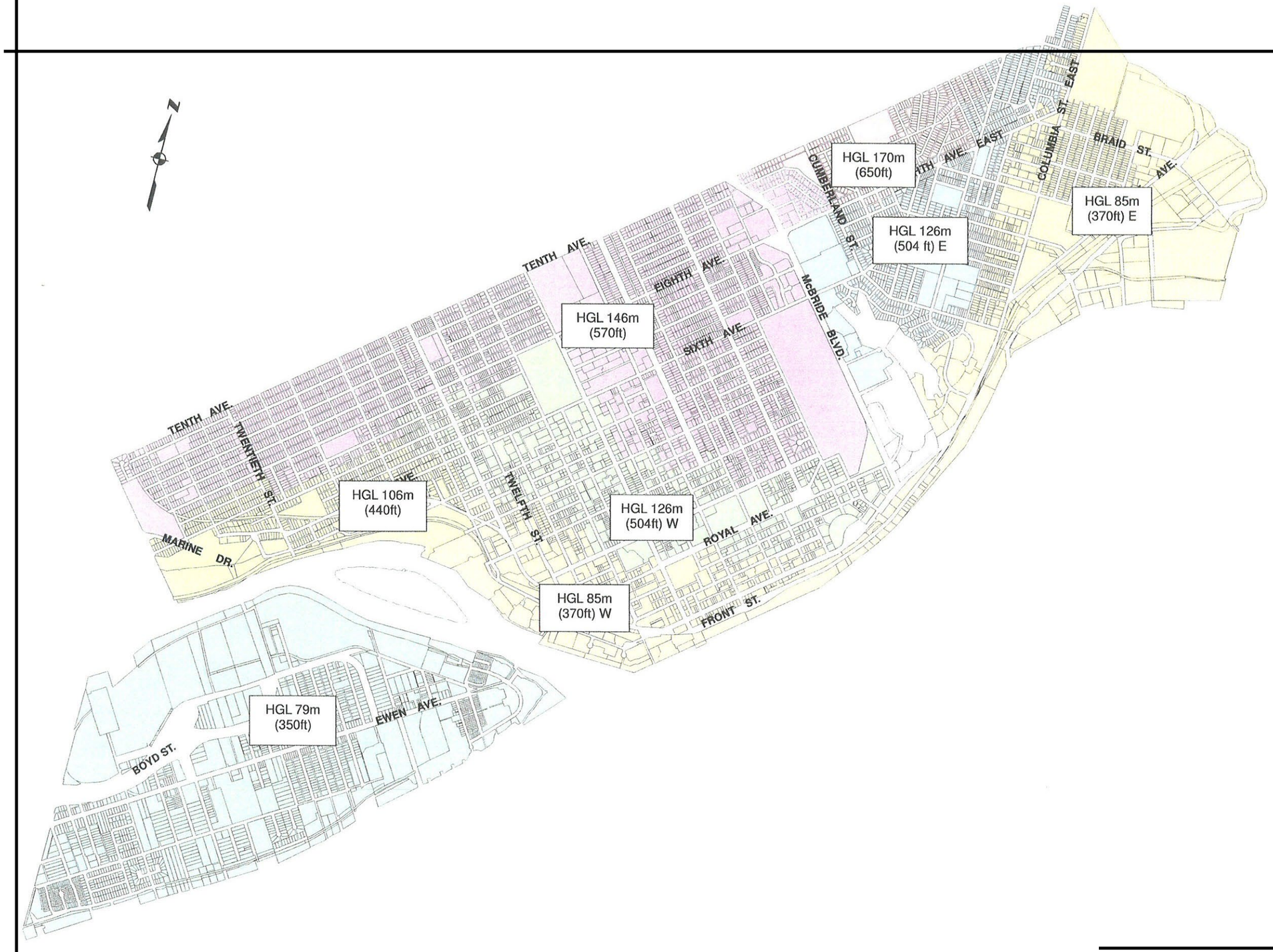
Note: 0.0m Geodetic = 91.37ft GVRD Datum

Water Network HGL and Model Schematic

FIGURE 10.2

City of New Westminster

Master Water Study



Legend

- HGL 85m (370ft)W
- HGL 79m (350ft)
- HGL 106m (440ft)
- HGL 126m (504ft)E
- HGL 126m (504ft)W
- HGL 146m (570ft)
- HGL 170m (650ft)
- HGL 85m (370ft)E

® EarthTech

A"tf/CO International Ltd. Company

0 125 250 500 750 1,000 Meters

Project No. 97871

Date April 2008

Pressure Zone Boundaries

FIGURE 10.3

ANNEX A

EMERGENCY CONTACT NUMBERS

EMERGENCY CONTACT NUMBERS

Refer to the ***City Emergency Contacts*** for updates and completed list of emergency numbers.

Name	Home #	Office #	Cellular #	Pager #
Engineering Services Department				
Director of Engineering Lisa Leblanc		604-527-4589	778-773-2253	
Manager, Eng. Operations Gabe Beliveau		604-526-4691 604-517-5409	604-219-8545	
Supervisor, Water Branch Wes Halliday		604-526-4691 604-517-5416	604-830-6955	
Eng. Operations (24hours)	604-519-1026			
Towing Services (24 hours)	604-519-1026			
Emergency Operations Center (EOC)				
Designated Phone Numbers When EOC Activated				
Director of EOC		604-636-4755		
Operations Chiefs		604-636-4748		
Logistics Chiefs		604-636-4757		
Finance / Administrator Chief		604-636-4758		
Public Information Officer		604-636-4756		
New Westminster Police Department				
Police Chief: Dave Jansen		604-529-2501	604 868 0987	
Deputy Chief: Paul Hyland		604-529-2502	604 290 5043	
New Westminster Fire & Rescue Services				
Acting Fire Chief: Erin Williams		604-636-4326	604-841-7310	
Acting Deputy Chief: Brad Davie		604-636-4453	604-830-6950	
Asst Deputy Chief: Jeff Gill		604-636-4336	604-834-3498	
Asst Deputy Chief : TBA				

Other City Contacts				
Parks Department: TBA				
Buildings & Facilities: Tobi May			778-222-5210	
Electrical Services: Colin Milaney			604-880-8505	
Electrical Services: Derek Bickerstaffe			604-790-0401	
Communications: Blair Fryer		604-527-4688	604-817-3160	
External Support Groups/Agencies				
Metro Vancouver, Water Dept.	604-444-8400 or 604-444-8401			
MV Water Quality Laboratory				
Fraser Health Authority **Lloyd Struck**		604-870-7909		
Ministry of Environment	Emergency Contact 1 800 663-3456			
Ministry of Public Safety and Solicitor General		604-660-2421 1 800 663 7867		
Ministry of Transportation and Infrastructure		(604) 660-8300		
Workers Compensation Board	1 888 621 7233 (during regular hours) 1866 922 4357 (after hours)			
Environment Canada	1-800 668 6767 or 819 997 2800			
Port Authority		604-525-6655	604-219-8249	

NOTE: This part is not for Distribution

ANNEX B

SYSTEM PRIORITIES

SYSTEM PRIORITIES

It will be imperative that the Emergency Water Team establish recovery priorities as soon as sufficient damage information is available. Recovery priorities will be established based on the impact of the incident. The following table provides overall system priorities with general information regarding pressure regulating valves.

Table B1: System Priorities General information

SYSTEM PRIORITY	GVWD CONNECTIONS AND PRVs	GVWD SOURCE	ELEV (m)	CONNECTED TO	PRESSURES			FAILURE CONSEQUENCE
					Inlet m (psi)	Outlet m (psi)	HGL (m)	
Metro Vancouver Trunk Mains								
High	South Burnaby Main	Coquitlam Reservoir		504E, 504W, 370E, 370W, 350, Westburnco Reservoir				Primary City Source
High	Hume Park Main	Coquitlam Reservoir		504E, 504W, 370E, 370W, 350, Westburnco Reservoir				Primary City Source
High	Sapperton Main	Westburnco Reservoir		370E, 370W, 350				City Supply Trunk
Medium	Sherbrooke Street Main	Westburnco Reservoir		370E, 370W, 350				Feed to Sapperton Main
Medium	Braid Street Main	Westburnco Reservoir		370E, 370W, 350				Feed to Sapperton Main
High	Douglas Road Main	Seymour Reservoir		650, 570, 440, Westburnco Reservoir, McBride Main				Primary City Source
Medium	McBride Street Main	Douglas Road/North Road Mains		Justice Institute, Victoria Hill FF, Surrey/Delta				Closed to Surrey/Delta
Low	North Road Main	Seymour Reservoir		650,570,Westburnco Reservoir, McBride Main				Supplements Douglas Road
Low	Central Park Main	Seymour Reservoir		650,570,Westburnco Reservoir, McBride Main				Supplements Douglas Road
Low	Annacis Main	Seymour Reservoir		440				Fire Flow to Krugar Paper

SYSTEM PRIORITY	GVWD CONNECTIONS AND PRVs	LOCATION	ELEV (m)	CONNECTED TO	PRESSURES			FAILURE CONSEQUENCE
					Inlet m (psi)	Outlet m (psi)	HGL (m)	
650 Zone (HGL 170)								
Medium	Westburnco Booster Pump	10th Ave and 1st St		Hume Park Main (Coquitlam)	ADD HGL 176 (250)			Loss of Source. Impact 1 Zone
Low	GVWD 1	McBride Blvd and 10th Ave	92	Douglas and North Road Main		84 (119)	176	Loss of one feed. Minimal impact
Low	GVWD 2	Cumberland St and 10th Ave	107	Douglas and North Road Main		69 (98)	176	Loss of one feed. Minimal impact
Low	GVWD 3	Massey St and 10th Ave	123	Douglas and North Road Main		53 (75)	176	Loss of one feed. Minimal impact
Low	GVWD 4	Westburnco and 10th Ave	125	Douglas and North Road Main		51 (72)	176	Loss of one feed. Minimal impact
Low	GVWD 5	Burnaby St and 10th Ave	100	Douglas and North Road Main		76 (108)	176	Loss of one feed. Minimal impact
570 Zone (HGL 146)								
High	CNW PRV 05	1st St. and Ovens	90	Douglas Road Main (Seymour)	175 (249)	53 (75)		Loss of Source. Impact 3 Zones
High	CNW PRV 08	16th St and London St	92	Central Park Main (Seymour)	165 (235)	52 (74)		Loss of Source. Impact 3 Zones
Low	GVWD 6	16th St and London St	95	CNW PRV 05 and 08		50 (71)	145	Loss of one feed. Minimal impact
Low	GVWD 7	16th St and 8th Ave	78	CNW PRV 05 and 08		67 (95)	145	Loss of one feed. Minimal impact
Low	GVWD 8	12th St and 8th Ave	82	CNW PRV 05 and 08		63 (90)	145	Loss of one feed. Minimal impact
Low	GVWD 9	12th St and 8th Ave	82	CNW PRV 05 and 08		65 (92)	147	Loss of one feed. Minimal impact
Low	GVWD 10	8th St and 8th Ave	92	CNW PRV 05 and 08		53 (75)	145	Loss of one feed. Minimal impact
Low	GVWD 11	B/W 8th and 6th St on 8th Ave	93	CNW PRV 05 and 08		56 (80)	149	Loss of one feed. Minimal impact
Low	GVWD 12	6th St and 8th Ave	94	CNW PRV 05 and 08		51 (73)	145	Loss of one feed. Minimal impact
Low	GVWD 13	6th St and 8th Ave	94	CNW PRV 05 and 08		57 (81)	151	Loss of one feed. Minimal impact
Low	GVWD 14	4th St and 8th Ave	91	CNW PRV 05 and 08		54 (77)	145	Loss of one feed. Minimal impact
Low	GVWD 15	1st St and 8th Ave	74	CNW PRV 05 and 08		79 (112)	153	Loss of one feed. Minimal impact

Low	GVWD 16	1st St and Ovens Ave	77	CNW PRV 05 and 08		68 (97)	145	Loss of one feed. Minimal impact
Low	GVWD 17	6th St and 6th Ave	98	CNW PRV 05 and 09		45 (64)	143	Loss of one feed. Minimal impact
504E Zone (HGL 126)								
Low	GVWD 18	Amess St and 10th Ave	56	Hume Park Main		74 (106)	130	Loss of one feed. Minimal impact
Low	GVWD 19	Colby St and Holmes St	30	Hume Park Main		99 (142)	129	Loss of one feed. Minimal impact
Low	GVWD 20	York St and East 8th Ave	101	Hume Park Main		28 (40)	129	Loss of one feed. Minimal impact
Low	GVWD 21	Cumberland St and East 8th Ave	86	Hume Park Main		42 (60)	128	Loss of one feed. Minimal impact
SYSTEM PRIORITY	**GVWD CONNECTIONS AND PRVs**	**LOCATION**	**ELEV**	**CONNECTED TO**	**PRESSURES**		HGL (m)	**FAILURE CONSEQUENCE**
					Inlet m (psi)	Outlet m (psi)		
504W Zone (HGL 126)								
High	GVWD 22	Bushby St and Royal Ave	46	Sapperton Main (Coquitlam)		45 (65)	91	Loss of 1 of 2 feed to internal loop
High	GVWD 23	Leopold Pl and Royal Ave	46	Sapperton Main (Coquitlam)		46 (65)	92	Loss of 1 of 2 feed to internal loop
High	GVWD 24	6th St and Royal Ave	48	Sapperton Main (Coquitlam)		77 (110)	125	Loss of 1 of 2 feeds to Zone
High	GVWD 25	Merivale St and Royal Ave	63	Sapperton Main (Coquitlam)		61 (87)	124	Loss of 1 of 2 feeds to Zone
Medium	CNW PRV 06	8th St and 6th Ave	82	PRV 05		37 (53)	119	Backup Fireflow Low Pressure
440 Zone (HGL 106)								
High	CNW PRV 07	16th St and 7th Ave	60	570 Zone (PRV 05 and 08)	75	48 (68)	108	Main Feed to Zone
Medium	CNW PRV 09	20th St and Hamilton St	54	570 Zone (PRV 05 and 08)	89 (126)	42 (60)	96	Backup For Low Pressure
Medium	CNW PRV 10	21st St and River Dr	13	Annacis Main (Seymour)	140	88 (125)	101	Low Pressure to Krugar Paper
370E Zone (HGL 85)								
Medium	CNW PRV 03	Columbia St East and Brunette Ave	11	Sapperton Main (Coquitlam)		75 (107)	86	
Medium	CNW PRV 04	Richmond St and Jamieson Court	17	Sapperton Main (Coquitlam)		67 (95)	84	
Medium	CNW PRV 13	Braid St and Columbia St East	41	Sapperton Main (Coquitlam)		40 (57)	81	
370W Zone (HGL 85)								
High	CNW PRV 11	Richmond St and Jamieson Court	16	Sapperton Main (Coquitlam)		63 (89)	79	

High	MV PRV 01	McBride Blvd and Royal Ave	46	Sapperton Main (Coquitlam)		37 (53)	83	
Low	GVWD 26	7th St and Royal Ave	46	Sapperton Main (Coquitlam)		39 (56)	85	
Low	GVWD 27	10th St and Royal Ave	17	Sapperton Main (Coquitlam)		66 (94)	83	
Low	GVWD 28	Quayside Dr and Royal Ave	3	Sapperton Main (Coquitlam)		81 (116)	84	
Low	GVWD 29	Quayside Dr and Rialto Court	3	Sapperton Main (Coquitlam)		81 (116)	84	
Low	GVWD 30	Quayside Dr and Rialto Court	3	Sapperton Main (Coquitlam)		81 (116)	84	

SYSTEM PRIORITY	GVWD CONNECTIONS AND PRVs	LOCATION	ELEV	CONNECTED TO	PRESSURES		HGL (m)	SYSTEM PRIORITY
					Inlet m (psi)	Outlet m (psi)		
350W Zone (HGL 79)								
Low	GVWD 28 & 29	Phillips St and Ewen Ave	1	Sapperton Main (Coquitlam)		77 (110)	78	Loss of one feed. Minimal impact
Low	GVWD 30	Gifford St and Ewen Ave	1	Sapperton Main (Coquitlam)		77 (110)	78	Loss of one feed. Minimal impact
Low	GVWD 31 & 32	Jardine St and Ewen Ave	1	Sapperton Main (Coquitlam)		77 (110)	78	Loss of one feed. Minimal impact
High	GVWD 33	Queensborough Community Center	1	Sapperton Main (Coquitlam)		77 (110)	78	Main Feed to Center
Low	GVWD 34 & 35	Pembina St and Ewen Ave	1	Sapperton Main (Coquitlam)		77 (110)	78	Loss of one feed. Minimal impact
Low	GVWD 37	Johnston St and Ewen Ave	1	Sapperton Main (Coquitlam)		77 (110)	78	Loss of one feed. Minimal impact
Low	GVWD 38	Furness St and Ewen Ave	1	Sapperton Main (Coquitlam)		77 (110)	78	Loss of one feed. Minimal impact
Victoria Hill Zone (HGL)								
	CNW PRV 12		47					

Until system priorities are established in the PWERP reference:

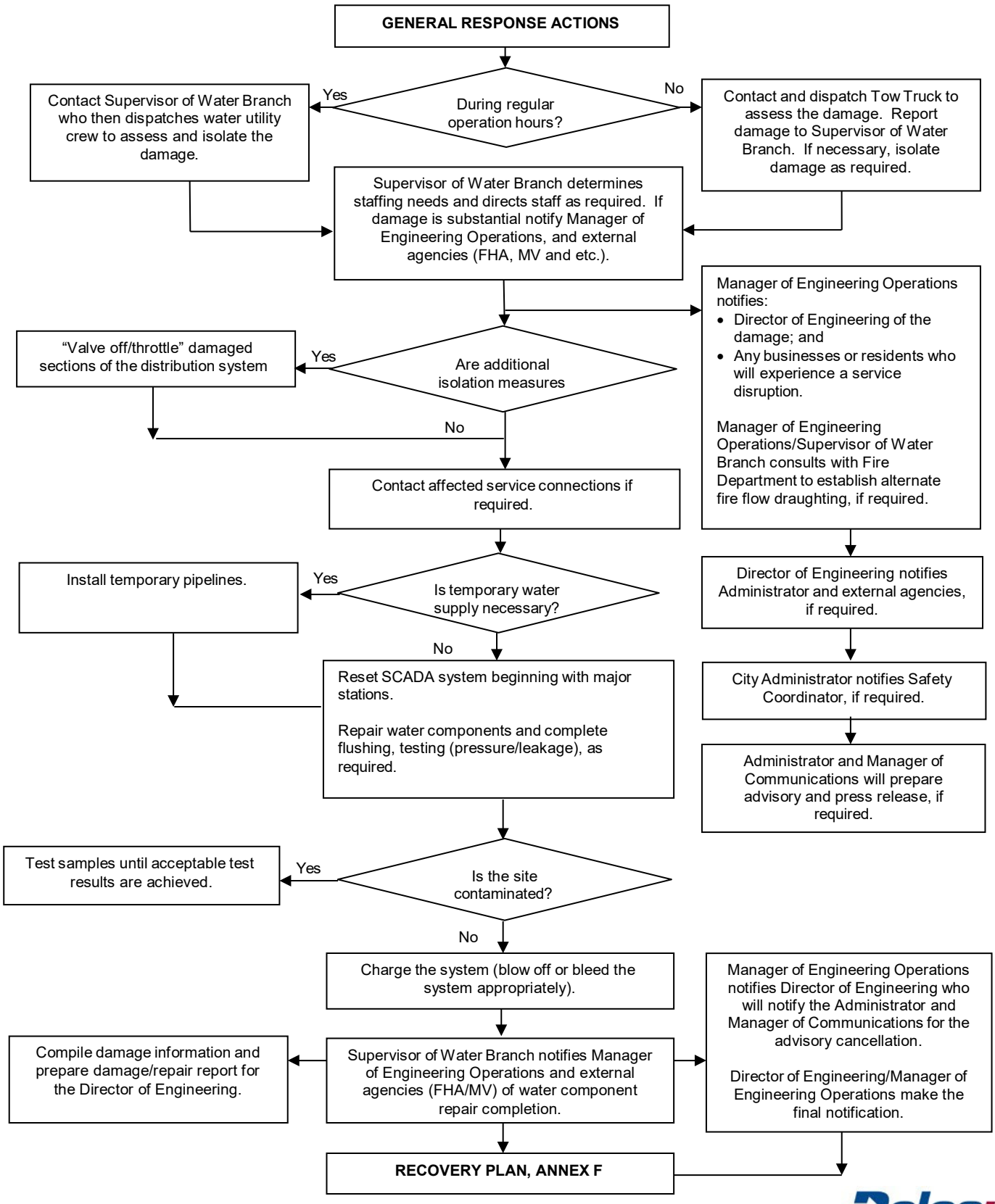
1) 2008 Civic Facility Condition Assessment Report
2) Upcoming 2009 or 2010 City Hazard Risk Assessment

ANNEX C

THREAT SPECIFIC PLAN

ANNEX C1
GENERAL RESPONSE FOR SYSTEM COMPONENT FAILURES
(VALVES, PRV, PIPELINES, ETC.)

GENERAL RESPONSE SEQUENCE FLOWCHART FOR SYSTEM COMPONENT FAILURES (VALVES, PRV, PIPELINES, ETC.)



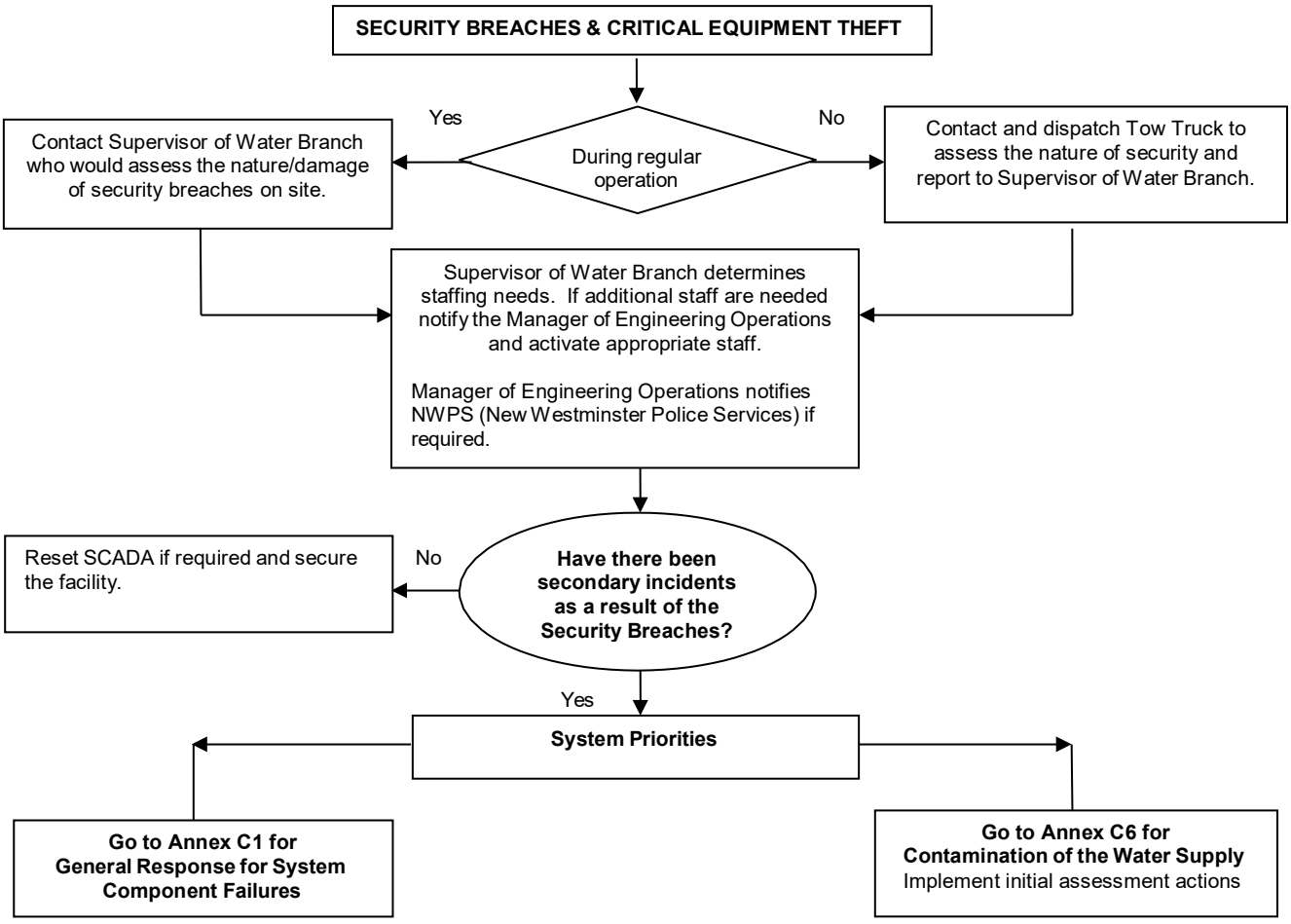
GENERAL RESPONSE CHECKLIST
FOR SYSTEM COMPONENT FAILURES
(VALVES, PRV, PIPELINES, ETC.)

	Actions	Date/ Time	Initial
1	Operations Clerk records: *Reported By*:_____ *Contact Number*:_____ *Location*:_____ *Description*:_____		
2	Operations Clerk contacts: _____*Supervisor of Water Branch if the incident occurs during normal business hours; or* _____*Tow Truck if the incident occurs after normal business hours.*		
3	Water crew / Tow Truck dispatches to incident.		
4	Supervisor of Water Branch receives damage assessment report		
5	Notify Manager of Engineering Operations		
6	Notify Director of Engineering		
	Notify Fire Department		
7	If required, notify: _____*Administrator;* _____*Manager of Communication;* _____ *CAO officials; and* _____*Safety Coordinator.*		
8	Contact effected service connections (*Address*): *1.*_____; *2.*_____; *3.*_____; *4.*_____; *5.*_____;		
9	Identify system priorities (refer to ***Annex B***): *1.*__; *2.*__; *3.*__; *4.*__; *5.*__;		

	Issue advisory (refer to ***Annex E***): *Yes*_____*Type of Advisory*_____ *No*_____		
9	Notify other agencies of the incident: _____*Fraser Health Authority, Officer Name:*_____ _____*Metro Vancouver, Officer Name:*_____		
10	Repair water component.		
11	Is the water system contaminated? *Yes*_____ *No*_____		
12	Water crew completes water component repair.		
13	Notify City Department of completion of water repair: _____*Director of Engineering;* _____*Manager of Engineering Operations;* _____*Manager of Communication;* _____*Administrator;* _____*Safety Coordinator; and* _____*Others.*		
14	Notify other agencies of completion of water repair: _____*Fraser Health Authority, Officer Name:*_____ _____*Metro Vancouver, Officer Name:*_____		
15	Issue Advisory Cancellation.		
16	Submit damage/repair report to Director of Engineering.		
17	Director of Engineering approves damage/repair report.		

ANNEX C2
SECURITY BREACHES AND CRITICAL EQUIPMENT THEFT RESPONSE

SECURITY BREACHES AND CRITICAL EQUIPMENT THEFT RESPONSE SEQUENCE FLOWCHART

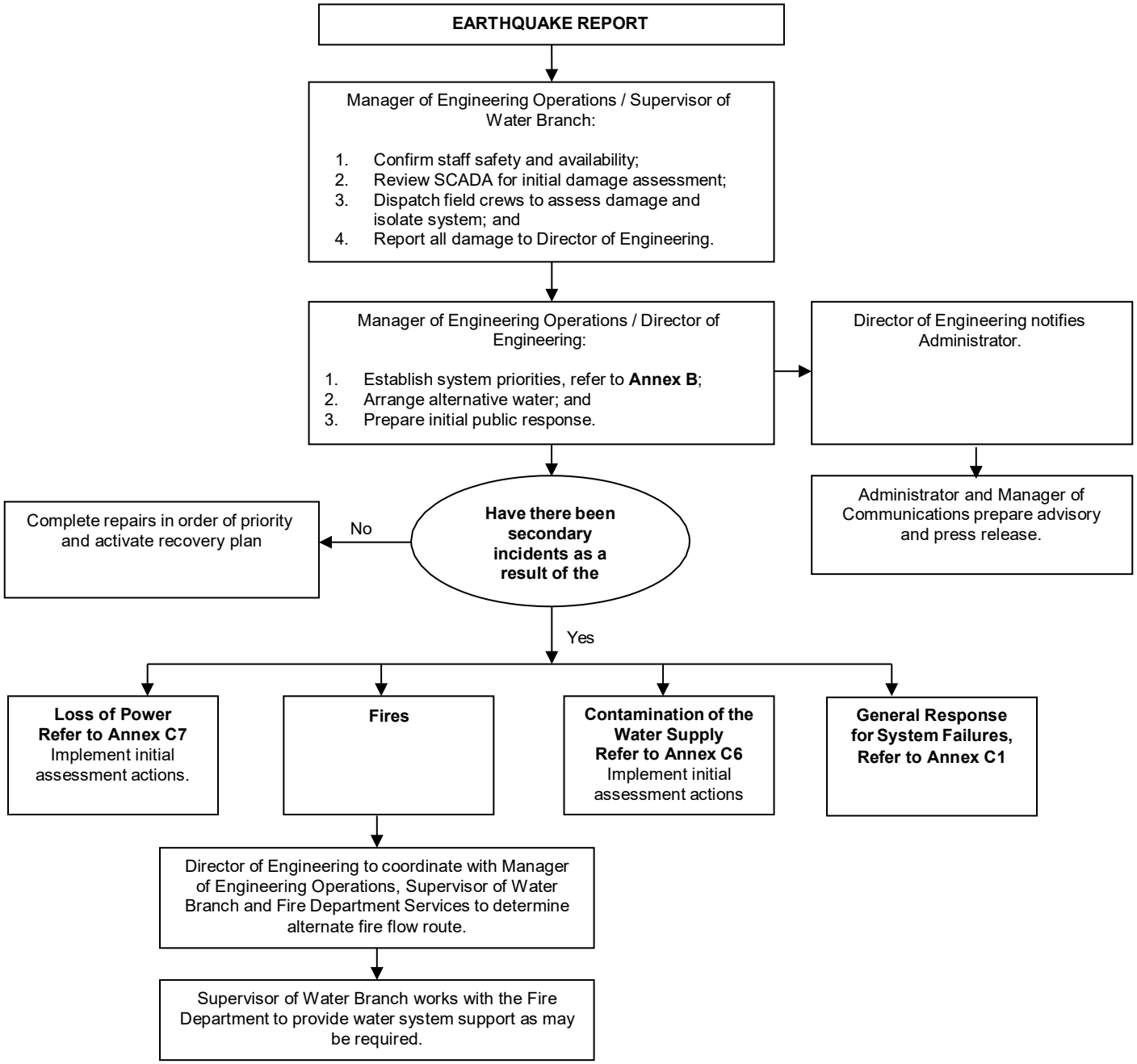


SECURITY BREACHES AND CRITICAL EQUIPMENT THEFT RESPONSE CHECKLIST

	Actions	Date/ Time	Initial
1	Operations Clerk records: *Reported By*:_____ *Contact Number*:_____ *Location*:_____ *Description*:_____		
2	Operations Clerk contacts: _____*Supervisor of Water Branch if the incident occurs during regular operation hours; or* _____*Tow Truck if the incident occurs after regular operation hours.*		
3	Water crew / Tow Truck dispatches to incident. Complete Damage Assessment Form in ***Annex D***.		
4	Supervisor of Water Branch receives damage assessment report. Are additional staff needed? _____*Yes, notify Manager of Engineering Operations;* _____*No*		
5	If required, notify City: _____*Manager of Engineering Operations;* _____*Director of Engineering;* _____ *Fire Department;* _____*Police Services;* _____*Administrator;* _____*Manager of Communication;* _____*Safety Coordinator; or* _____ *Others*_____		
6	Have there been secondary incidents as a result of the Security Breaches? _____*Yes, review system priorities (**Annex B**);* *See **Annex C1** for General Actions of System Component Repairs;* *See **Annex C6** for Contamination of Water Supply;* _____*No, reset SCADA if required and secure the facility.*		

ANNEX C3
EARTHQUAKE RESPONSE

EARTHQUAKE RESPONSE SEQUENCE FLOWCHART



Earthquakes will cause damage to the water distribution system resulting in an interruption of service to customers. The magnitude of the damage and the disruption of service will be based on whether the subject event is a 100 year event (accelerations approximately 10% of gravity for firm soil sites and 20% of gravity at soft soil sites) or 475 year event (accelerations approximately 23% of gravity for firm soil sites and 35% of gravity for soft soil sites). The following table summarizes the types of damage that could be expected:

Summary of potential damage

COMPONENT	POTENTIAL DAMAGE	ESTIMATED DURATION
Pipeline	100 year event – 20 to 30 breaks	Approximately 1-3 days per break
	475 year event – 200 to 300 breaks	weeks to months[1]
GVWD Supply	Potential loss of supply through landslides	Depends on number of locations
PRV Stations	**Structural** – differential movement between walls and roof and/or walls and floor. **Non-structural** – Equipment and piping that is not anchored or braced will slide and/or rock breaking connections.	Depends on magnitude of damage

[1]Depending on the level of provincial and federal assistance provided and the degree of other regional damage.

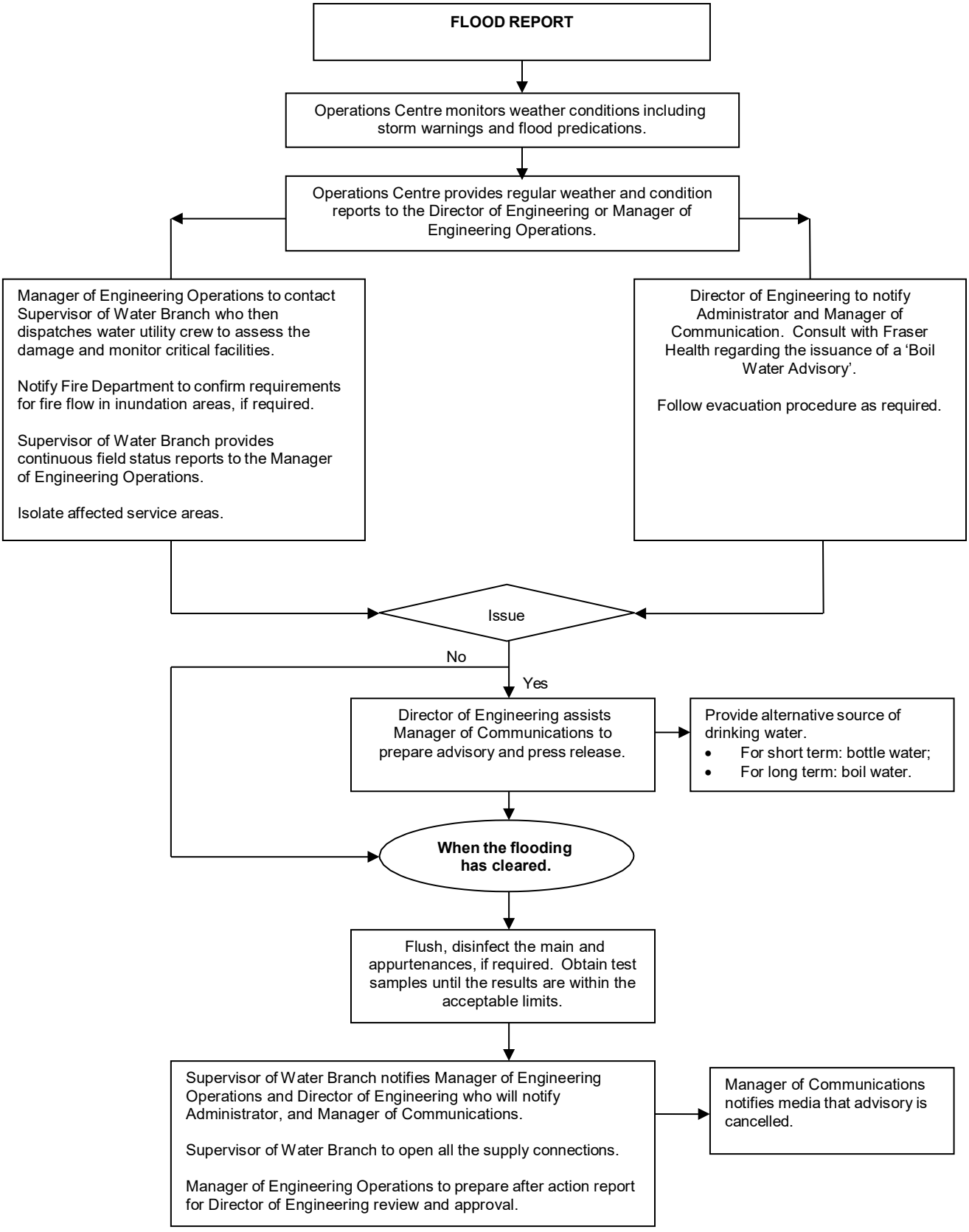
EARTHQUAKE RESPONSE CHECKLIST

	Actions	Date/ Time	Initial
1	Operations Clerk records: *Reported By*:_____ *Contact Number*:_____ *Location*:_____ *Description*:_____		
2	Operations Clerk contacts Supervisor of Water Branch / Manager of Engineering Operations.		
3	Supervisor of Water Branch / Manager of Engineering Operations: • Confirm staff safety and availability; • Review SCADA for initial damage assessment; • Dispatch field crews to assess damage and isolate system; and • Report all damage to Director of Engineering.		
4	Manager of Engineering Operations / Director of Engineering: • Establish system priorities (see Annex B); • Arrange alternative water; and • Prepare initial public response.		
5	If required, notify City: _____ *Fire Department;* _____ *Police Services;* _____ *Administrator;* _____ *Manager of Communication;* _____ *Safety Coordinator; or* _____ *Others*_____		
6	If required, notify the following external agencies: _____*Fraser Health Authority, Officer Name*_____; _____*Metro Vancouver, Officer Name*_____; _____ *Ministry of Transportation and Infrastructure, Officer Name*_____; _____*Ministry of Environment, Officer Name*_____; _____*Workers Compensation Board, Officer Name*_____; _____ *Others*_____.		
7	Issue advisory (refer to ***Annex E***)?		

	*Yes*_____*Type of Advisory*_____ *No*_____		
8	Have there been secondary incidents as a result of the earthquake? _____*Yes, see:* ***Annex C1*** *for General Response for System Failures;* ***Annex C6*** *for Contamination of Water Supply;* ***Annex C7*** *for Loss of Power; and* *Fires: coordinate with Fire Department Services to determine alternate fire flow route and system support as may required* _____*No, complete repairs in order of priority and activate recovery plan (****Annex F****).*		

ANNEX C4
FLOOD RESPONSE

FLOOD RESPONSE SEQUENCE FLOWCHART



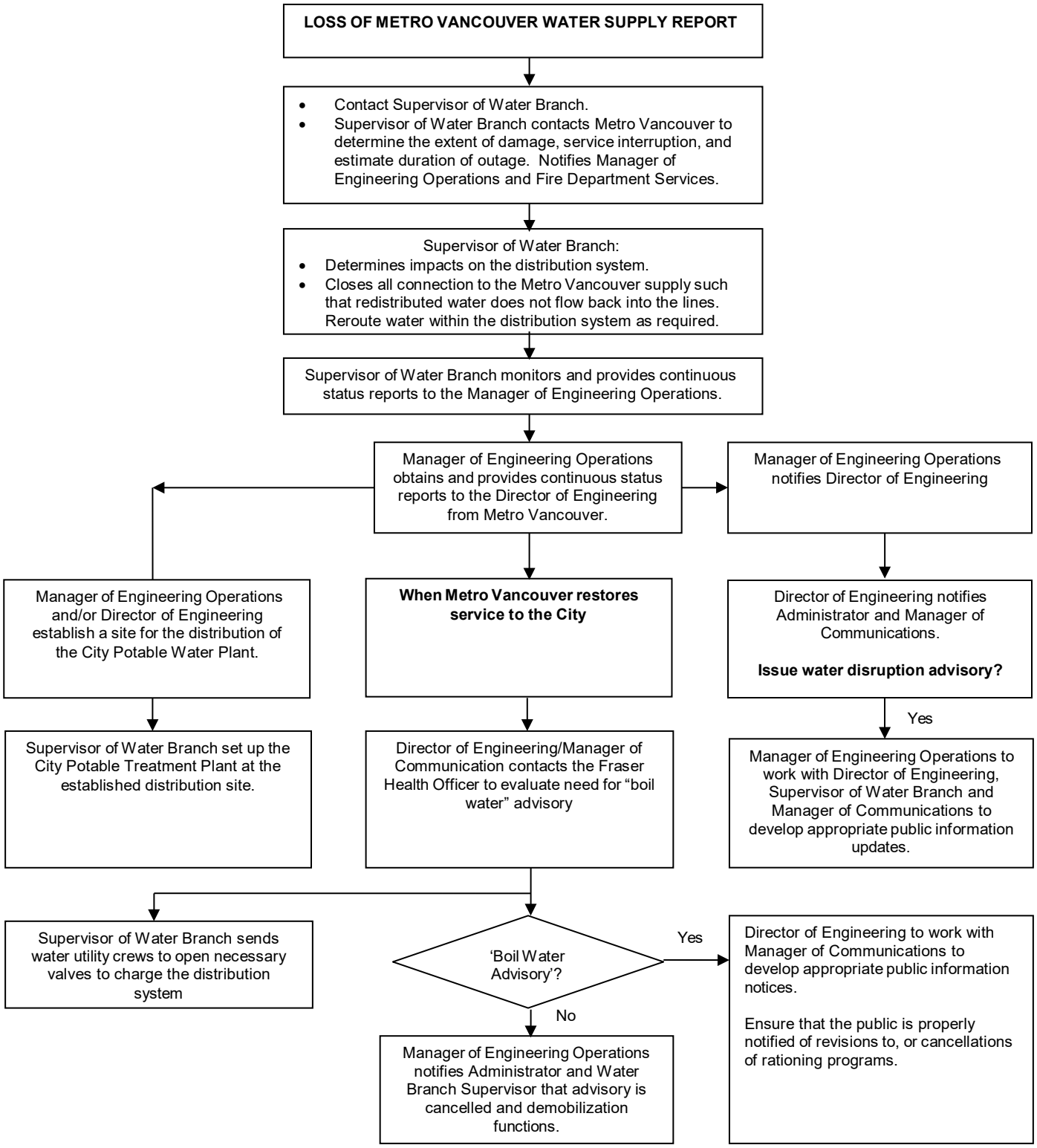
FLOOD RESPONSE CHECKLIST

	Actions	Date/ Time	Initial
1	Operation centre monitors weather conditions and provides condition reports the Director of Engineering or Manager of Engineering Operations.		
2	Director of Engineering / Manager of Engineering Operations received report: *Reported By*:_____ *Contact Number*:_____ *Location*:_____ *Description*:_____		
3	Supervisor of Water Branch received report from Manager of Engineering Operations and dispatches water crew to incident.		
4	Close connections to affected areas.		
5	If required, notify City: _____*Manager of Engineering Operations;* _____*Director of Engineering;* _____ *Fire Department;* _____*Police Services;* _____*Administrator;* _____*Manager of Communication;* _____*Safety Coordinator; or* _____ *Others*_____		
6	If required, notify the following external agencies: _____*Fraser Health Authority, Officer Name*_____; _____*Metro Vancouver, Officer Name*_____; _____ *Ministry of Transportation and Infrastructure, Officer Name*_____; _____*Ministry of Environment, Officer Name*_____; _____*Workers Compensation Board, Officer Name*_____; _____ *Others*_____.		
7	Follow evacuation procedure as required.		

8	Issue 'Boil Water Advisory'? *Yes_____, coordinate with Manager of Communications for advisory and press release;* *Provide alternative source of water drinking water:* • *For short term: bottle water; and* • *For long term: boil water.* *No_____.*		
9	When the flooding has cleared, flush and disinfect the main and appurtenances if required. Obtain test samples until the results are within the acceptable limits. *Test Sample Location:_____;* *No. of Test Sample:_____;* *Test Results: Unacceptable_____Acceptable_____.*		
10	Issue Advisory Cancellation? *Yes_____* *N/A_____*		
11	Submit damage/repair report to Director of Engineering.		
12	Director of Engineering approves damage/repair report.		

ANNEX C5
LOSS OF METRO VANCOUVER WATER SUPPLY RESPONSE

LOSS OF METRO VANCOUVER WATER SUPPLY RESPONSE SEQUENCE FLOWCHART



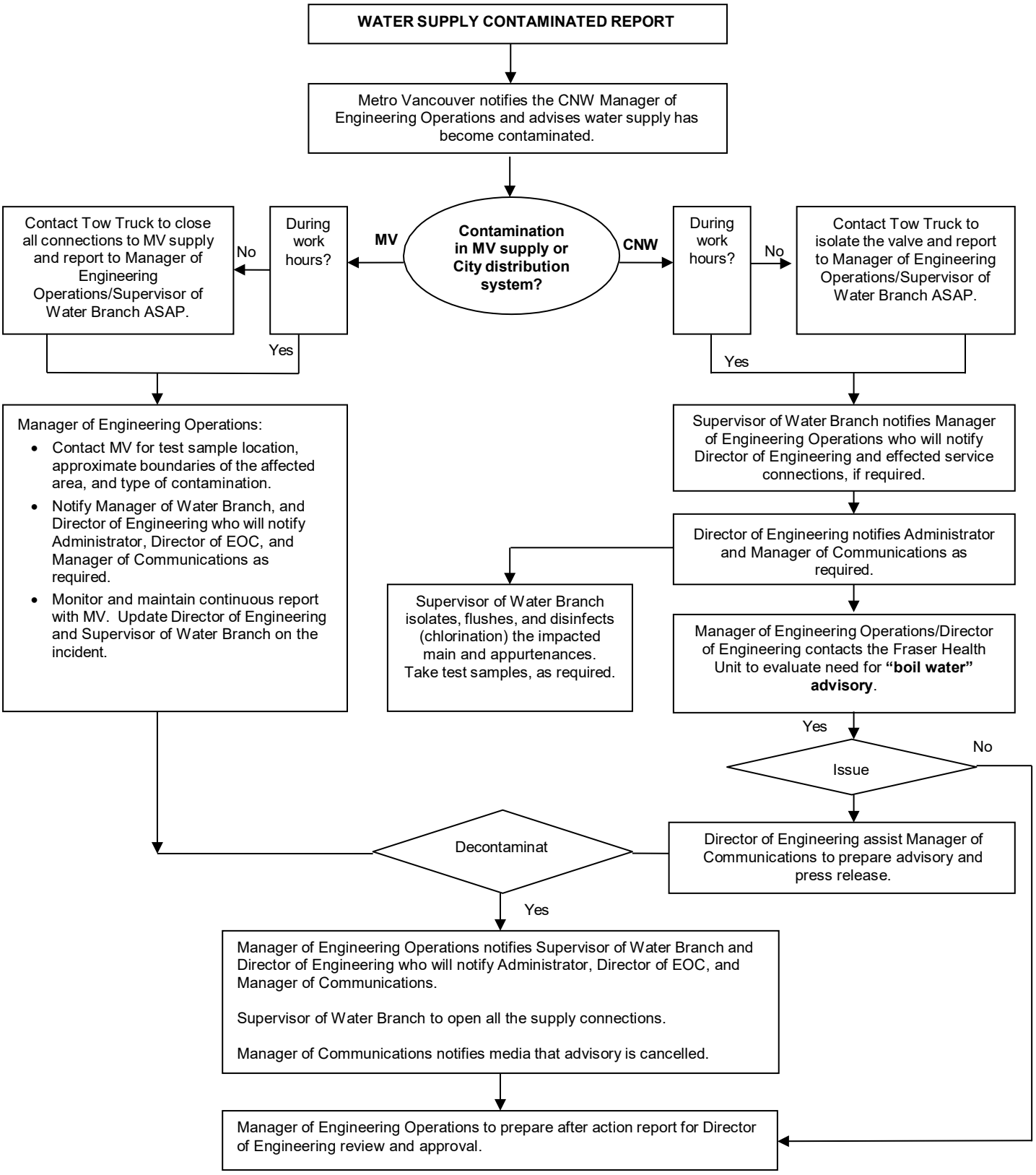
LOSS OF METRO VANCOUVER WATER SUPPLY
RESPONSE CHECKLIST

	Actions	Date/ Time	Initial
1	Operations Clerk records: *Reported By*:_____ *Contact Number*:_____ *Location*:_____ *Description*:_____		
2	Supervisor of Water Branch receives incident report and contacts MV to determine the followings: • *Extent of damage:*_____; • *Service Interruption:*_____; *Complete Annex C10 and contact Affected service connections, if required;* • *Duration of outage:*_____.		
3	Are there any impacts on the distribution system? _____*Yes, list the impacts and close all connection to MV supply as shown below:* • _____; • _____; • _____; _____*No, close all connection to the MV supply such that redistributed water does not flow back into the lines. Reroute water within the distribution system as required.*		
4	If required, notify City: _____*Manager of Engineering Operations;* _____*Director of Engineering;* _____ *Fire Department;* _____*Police Services;* _____*Administrator;* _____*Manager of Communication;* _____*Safety Coordinator; or* _____ *Others*_____		

5	Monitor and provide continuous status reports to the Manager of Engineering Operations / Director of Engineering from MV. *Report Status:*_____ _____		
6	If required, notify the following external agencies: _____*Fraser Health Authority, Officer Name*_____; _____*Metro Vancouver, Officer Name*_____; _____ *Ministry of Transportation and Infrastructure, Officer Name*_____; _____*Ministry of Environment, Officer Name*_____; _____*Workers Compensation Board, Officer Name*_____; _____ *Others*_____.		
7	Is water 'Disruption Advisory' required? *Yes* _____*Ensure appropriate public information advisory and updates from MV.* *No*_____		
8	Is this a long or short term disruption? _____*Long term, establish and set up the City Potable Treatment Plant at the established distribution site:*_____; _____*Short term, maintain continuous status report with MV until water supply is restored.*		
9	Supervisor of Water Branch / Manager of Engineering Operations informed from MV of water supply restore.		
10	Is 'Boil Water Advisory' required? *Yes* _____*coordinate with Manager of Communications to develop appropriate public information notices.* *No*_____*, notify Manager of Communications, Administrator (if required) that advisory is cancelled and demobilization functions. Ensure that the public is properly notified of cancellation.*		
11	Water crew to open necessary valves to charge the distribution system.		

ANNEX C6
WATER SUPPLY CONTAMINATED RESPONSE

WATER SUPPLY CONTAMINATED RESPONSE SEQUENCE FLOWCHART



WATER SUPPLY CONTAMINATED RESPONSE CHECKLIST

	Actions	Date/ Time	Initial
1	Operations Clerk records: *Reported By*:_____ *Contact Number*:_____ *Location*:_____ *Description*:_____		
2	Operations Clerk contacts: _____*Supervisor of Water Branch if the incident occurs during regular operation hours; or* _____*Tow Truck if the incident occurs after regular operation hours.*		
3	Water crew / Tow Truck dispatches to incident. Complete Damage Assessment Form in ***Annex D***.		
	Supervisor of Water Branch received assessment report. Is the contamination in MV supply or City distribution system? _____*MV supply, go to Item 4;* _____ *City, go to Item 10;*		
4	Close connections to MV supply.		
5	If required, notify City: _____*Manager of Engineering Operations;* _____*Director of Engineering;* _____ *Fire Department;* _____*Police Services;* _____*Administrator;* _____*Manager of Communication;* _____*Safety Coordinator; or* _____ *Others*_____		
6	If required, notify the following external agencies: _____*Fraser Health Authority, Officer Name*_____*;* _____*Metro Vancouver, Officer Name*_____*;* _____ *Ministry of Transportation and Infrastructure, Officer Name*_____*;* _____*Ministry of Environment, Officer Name*_____*;*		

	_____*Workers Compensation Board, Officer Name*_____; _____ *Others*_____.		
7	Contact MV for the followings: • *Test sample location:*_____; • *Boundaries of the affected area:*_____; • *Type of contamination:*_____;*and/or* • *Others:*_____; Monitor and maintain continuous report with MV. Update Director of Engineering on the incident.		
8	Obtain mutual aid assistance as required. *Type of mutual aid:*_____.		
9	Is the water supply decontaminated? *No_____, ensure that appropriate public information notices (advisory) from MV;* *Yes_____, open all the supply connections.*		
10	**Contamination in City distribution system**. If required, notify City: _____*Manager of Engineering Operations;* _____*Director of Engineering;* _____ *Fire Department;* _____*Police Services;* _____*Administrator;* _____*Manager of Communication;* _____*Safety Coordinator; or* _____ *Others*_____		
11	If required, notify the following external agencies: _____*Fraser Health Authority, Officer Name*_____; _____*Metro Vancouver, Officer Name*_____; _____ *Ministry of Transportation and Infrastructure, Officer Name*_____; _____*Ministry of Environment, Officer Name*_____; _____*Workers Compensation Board, Officer Name*_____; _____ *Others*_____.		

12	Isolate, flush, and disinfect the main and appurtenances. Obtain test samples. *Test Sample Location:*_____; *No. of Test Sample (s):*_____;		
13	Issue 'Boil Water Advisory'? *Yes*_____, *coordinate with Manager of Communications for advisory and press release;* *No*_____.		
14	Is the water distribution decontaminated? *No*_____, *continue to flush and disinfect the main and appurtenances until test results are within acceptable levels;* *Yes*_____, *open all the supply connections.*		
15	Issue Advisory Cancellation? *Yes*_____ *N/A*_____		
16	Submit damage/repair report to Director of Engineering.		
17	Director of Engineering approves damage/repair report.		

WATER QUALITY REQUIREMENTS

This plan deals with the threat of contamination of the water supply. There are two types of contamination:

- chemical contamination; and
- Bacteriological contamination.

Either form of contamination could require the issuance of an advisory. A sample "Boil Water" or a "Do Not Consume" advisory is included in **Annex E**.

Bacteriological Contamination

A serious situation involves contamination of the water supply with microorganisms capable of causing disease. For example, the bacteriological quality of the water supply system could be affected by:

- contamination of the source water;
- disinfection failure;
- transmission or distribution system failure (with suspected contamination); or
- accidental or deliberate contamination of the system.

Microbiological Testing

An important consideration in the type and degree of treatment required for a water supply is the bacteriological quality of the source water. In effect, the more contaminated the source water is, the more treatment is required to render the supply safe for human consumption. Samples of untreated water are collected at the water supply intakes daily at specified locations in the Metro Vancouver distribution system. The City is required to take samples at prescribed locations and times. Testing is carried out by the Metro Vancouver Laboratory. The BCSDWA requires that laboratories analyze samples for two groups of indicator organisms, coliform bacteria and heterotrophic plate count bacteria (HPC). Testing for the coliform group of organisms, which is used to monitor the effectiveness of disinfection, is usually referred to as the total coliform level or count. Samples are encouraged to grow colonies of bacteria under controlled conditions (sampling, transportation and testing) and the numbers of colony forming units are counted after a specific time. The presence of colony forming units of coliform group bacteria in a sample indicates that disinfection has not been adequate but does not in itself provide an indicator that the water is unsafe to drink.

The coliform group includes the e-coli organism, which is present in the intestinal tract of humans and other animals and provides an indicator that there is fecal material in the water that could be harmful to human health. A second test for e-coli or fecal coliforms is carried out to determine if the samples contain harmful bacteria. The presence of any fecal coliforms indicates the water is unsafe for human consumption.

The testing for HPC is useful in monitoring disinfection and assessing changes in finished water quality during distribution.

The BCDWPA Regulation requires utilities to meet the following criteria:

(a)	Fecal Coliform		0 units/100 ml.
(b)	Total Coliform	one sample	0 units/100ml.

More than one sample within 30 day period, 90% must have 0 total coliforms/100ml and no sample may contain more than 10 coliforms/100ml.

If a sample from the municipal distribution system analyzed by the Metro Vancouver lab is fecal coliform positive, Metro Vancouver will notify the Water Branch Supervisor.

Chemical Contamination

The monitoring program for chemical and physical characteristics of the water in the City distribution mains is shown in the following table. Except where otherwise noted, approximately 10 percent of the sample sites will be sampled for the following parameters at the frequency shown.

Contamination Sampling

PARAMETER	LOCATION	FREQUENCY
Free Chlorine Residual	All	Tests run when bacteriological samples are taken.
Copper*	Selected taps in public buildings (e.g., schools)**	Semi-annually
Haloacetic acids	Municipal sites—cross section, representative of all sources, minimum sample--one	Quarterly
Iron	Representative municipal sites – unlined iron and steel mains.	Semi-annually
Lead*	Selected taps in public buildings (e.g., schools)	Semi-annually
Odour	Any or all sites	On Complaint basis
pH	Municipal sites – cross section, representative of all sources, minimum sample--one	Semi-annually
Taste	Any or all sites	On Complaint basis
Temperature	All	Tests run when bacteriological samples are taken.
Trihalomethanes	Municipal sites-- cross section, representative of all sources, minimum samples--three	Quarterly
Turbidity	Municipal sites--all	Collected with bacteriological samples
Vinyl Chloride	Municipal sites where PVC pipe is used in the distribution system—minimum of one per potentially affected system	Semi-annually
Zinc*	Selected taps in public buildings (e.g., schools)	Semi-annually

*At the point of consumption on flushed samples
**Details of sampling to be worked out with Health Regions

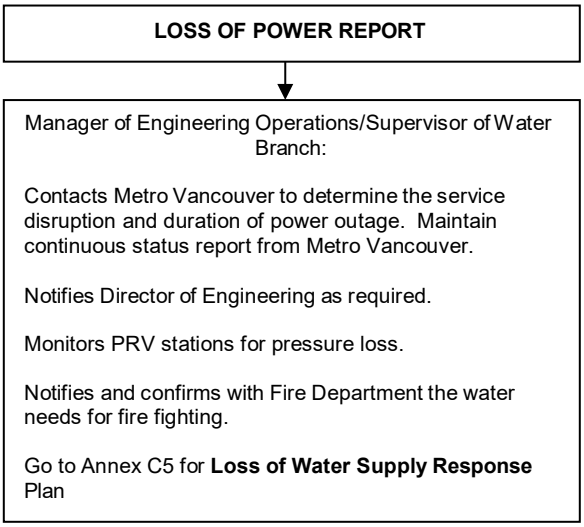
Notification Requirements for Unusual Situations Affecting Water Potable

SITUATION	NOTIFYING AGENCY	AGENCY NOTIFIED	TIME FRAME FOR NOTIFICATION
Metro Vancouver Fecal Positive Sample	MV	MV, MHO City of New Westminster[1]	Immediate
City of New Westminster Fecal Positive Sample	MV	City of New Westminster[1]	Immediate
Chemical Contamination -- Metro Vancouver	MV	MV MHO City of New Westminster[1]	Immediate
Chemical Contamination – City of New Westminster	City of New Westminster	Public Health	Immediate
Turbidity > 5 NTU	MV	MV MHO City of New Westminster[1]	Immediate
Disinfection Failure—Source Water (Primary Disinfection)	MV	MV MHO City of New Westminster[1]	Immediate
Disinfection Failure—Re-chlorination (Secondary Disinfection)	MV	MV MHO City of New Westminster[1]	Immediate, in any situation in which the BCSDWR or GCDWQ may not be met.
Loss of Pressure Due to High Demand	City of New Westminster	Public Health Metro Vancouver	Immediate
Line Break— City of New Westminster [2]	City of New Westminster	Public Health	As required by the Health Regions
Line Break— Metro Vancouver [3]	MV	City of New Westminster	As required by the Municipalities
Line Break— City of New Westminster [2]	City of New Westminster	Public Health	Immediate
Line Break— Metro Vancouver [3]	MV	MV, MHO City of New Westminster[1]	

[1]City of New Westminster to notify Public Health
[2]With no suspected contamination
[3]With suspected contamination

ANNEX C7
LOSS OF POWER RESPONSE

LOSS OF POWER
RESPONSE SEQUENCE FLOWCHART

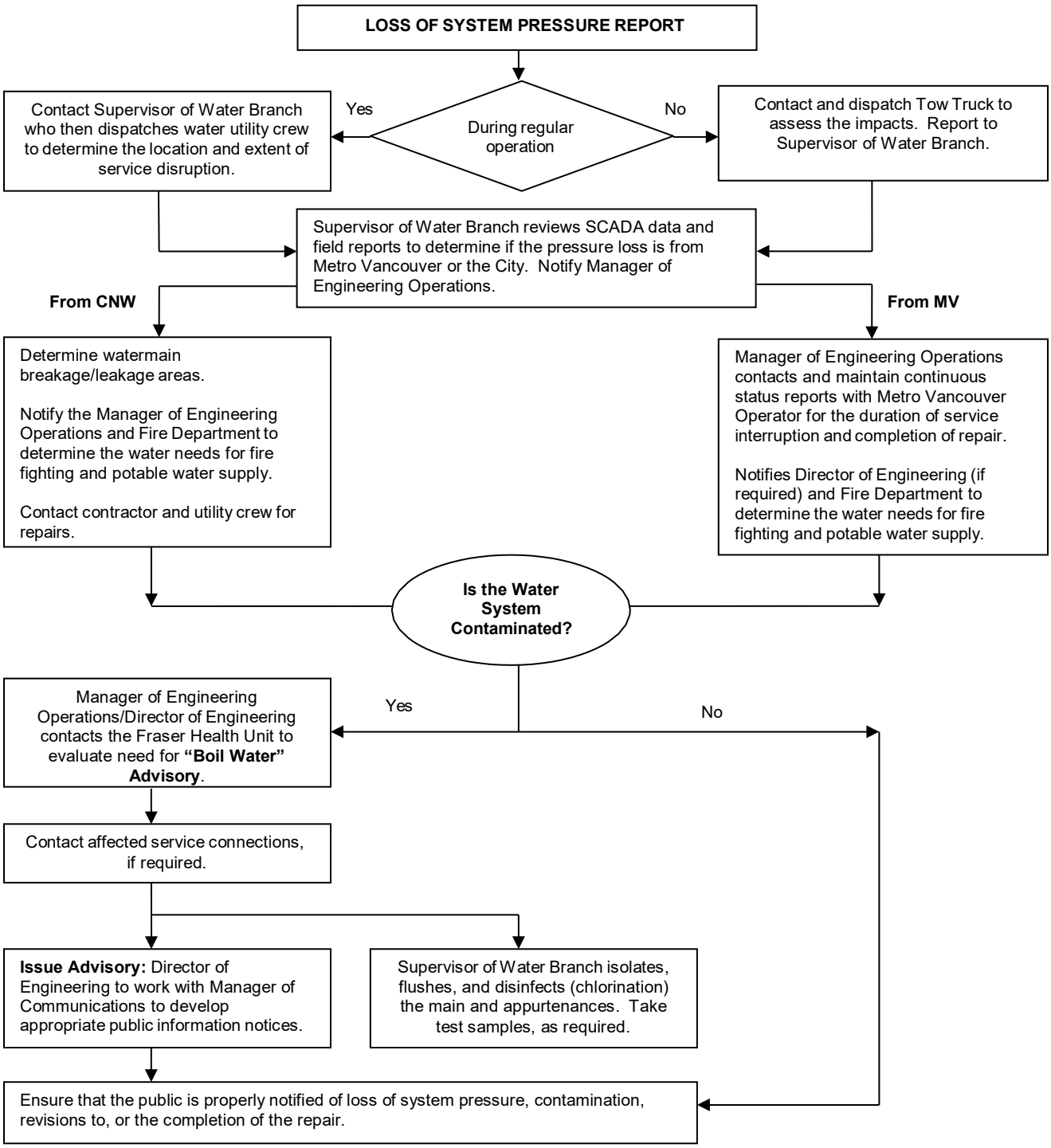


LOSS OF POWER RESPONSE CHECKLIST

	Actions	Date/ Time	Initial
1	If required, contact MV for the followings: *Disruption area:*_____*; and* *Duration of power outage*_____. Maintain continuous status report from MV.		
2	If required, notify City: _____*Manager of Engineering Operations;* _____*Director of Engineering;* _____ *Fire Department and confirm the water needs for firefighting;* _____ *Police Services;* _____*Administrator;* _____*Manager of Communication;* _____ *Others*_____		
3	Monitor PRV stations for pressure loss.		
4	Go to Annex C5 for Loss of Water Supply Response Plan, if required.		

ANNEX C8
LOSS OF SYSTEM PRESSURE RESPONSE

LOSS OF SYSTEM PRESSURE
RESPONSE SEQUENCE FLOWCHART



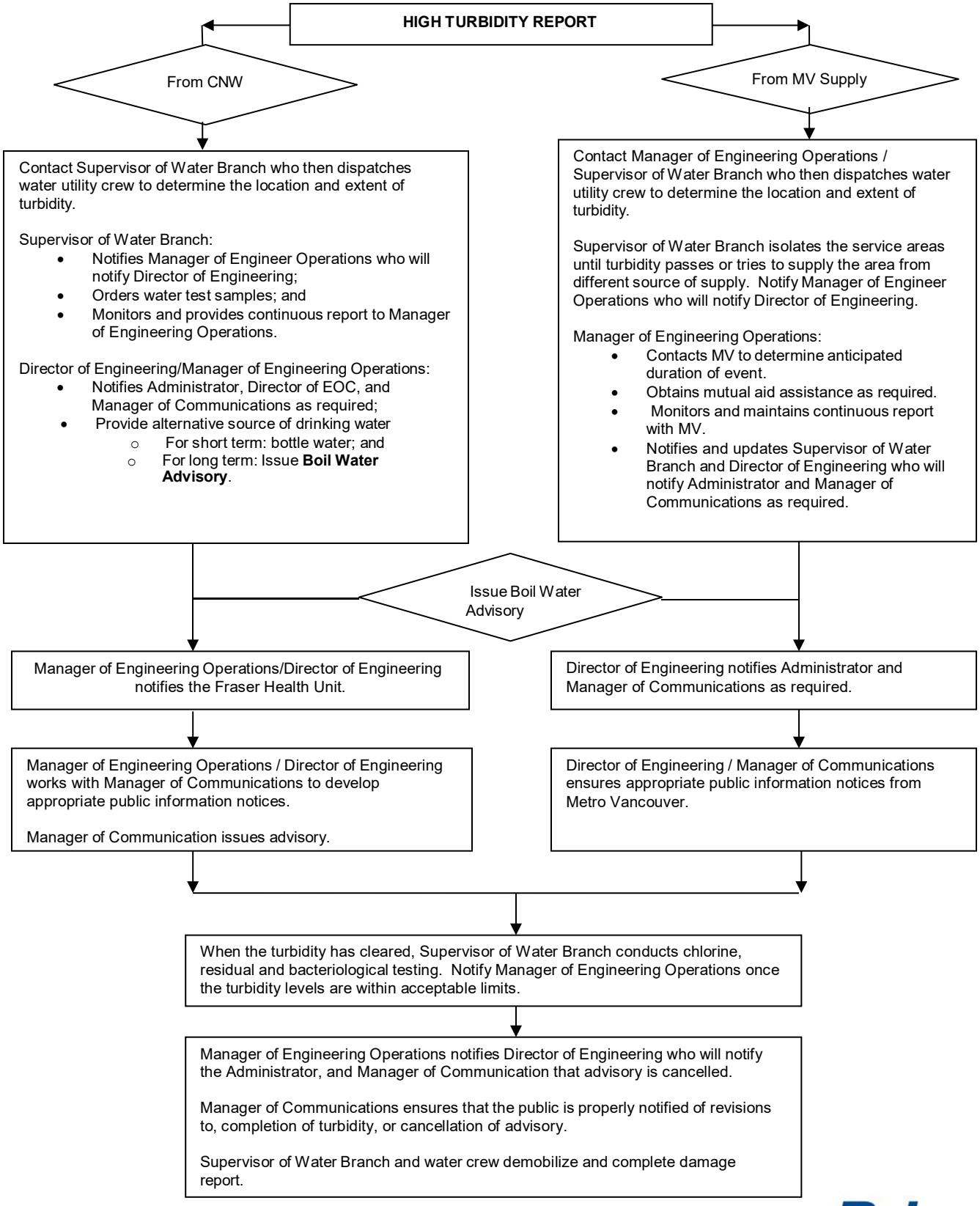
LOSS OF SYSTEM PRESSURE RESPONSE CHECKLIST

	Actions	Date/ Time	Initial
1	Operations Clerk records: *Reported By*:_____ *Contact Number*:_____ *Location*:_____ *Description*:_____		
2	Operations Clerk contacts: _____*Supervisor of Water Branch if the incident occurs during regular operation hours; or* _____*Tow Truck if the incident occurs after regular operation hours.*		
3	Water crew / Tow Truck dispatches to incident. Complete Damage Assessment Form in ***Annex D***.		
4	Supervisor of Water Branch reviews SCADA data and field assessment reports to determine if the pressure loss is from MV or the City system.		
5	If required, notify City: _____*Manager of Engineering Operations;* _____*Director of Engineering;* _____ *Fire Department;* _____*Police Services;* _____*Administrator;* _____*Manager of Communication;* _____*Safety Coordinator; or* _____ *Others*_____		
6	If required, notify the following external agencies: _____*Fraser Health Authority, Officer Name*_____*;* _____*Metro Vancouver, Officer Name*_____*;* _____ *Others*_____.		
7	The pressure loss is from: _____*MV, contact MV and determine the followings:* • *Duration of service interruption*_____*;* • *Completion of repair*_____. *Maintain continuous status reports with MV.*		

	_____*City system. Determine watermain breakage/leakage areas and perform repairs.*		
8	Is the water system contaminated? *Yes*_____*contact Fraser Health to evaluate the need for 'Boil Water Advisory';* *No*_____		
9	If required, contact affected service connections (complete C10).		
10	Issue 'Boil Water Advisory' (refer to ***Annex E***)? *Yes*_____*Work with Manager of Communication to develop appropriate public information notices.* *Isolate, flush, and disinfect the main and appurtenances. Take test samples until results are achieved.* *No*_____		
11	Charge the water system (completion of water repair).		
12	Issue Advisory Cancellation? *Yes*_____ *N/A*_____		
13	Submit damage/repair report to Director of Engineering.		
14	Director of Engineering approves damage/repair report.		

ANNEX C9
HIGH TURBIDITY RESPONSE

HIGH TURBIDITY
RESPONSE SEQUENCE FLOWCHART



HIGH TURBIDITY RESPONSE CHECKLIST

	Actions	Date/ Time	Initial
1	Operations Clerk records: *Reported By*:_____ *Contact Number*:_____ *Location*:_____ *Description*:_____		
2	Water crew / Tow Truck dispatches to incident.		
3	Supervisor of Water Branch reviews field assessment reports to determine if the high turbidity is from MV or the City system.		
4	If required, notify City: _____*Manager of Engineering Operations;* _____*Director of Engineering;* _____ *Fire Department;* _____*Police Services;* _____*Administrator;* _____*Manager of Communication;* _____*Safety Coordinator; or* _____ *Others*_____		
5	If required, notify the following external agencies: _____*Fraser Health Authority, Officer Name*_____; _____*Metro Vancouver, Officer Name*_____; _____ *Others*_____.		
6	The high turbidity is from: _____*MV. Isolate the service areas until turbidity passes or try to supply the area from different source of supply.* *Contact MV and determine anticipated duration of event:*_____ _____ *Maintain continuous status reports with MV.* _____*City system. Order test samples and provide alternative source of drinking water.* *For*_____*short term, provide bottle water if required;* *For*_____*long term, issue 'Boil Water Advisory'.*		

7	Issue 'Boil Water Advisory' (see ***Annex E***)? *Yes_____. Work with Manager of Communications to develop appropriate public information notice or ensure that appropriate public information notices from MV.* *No_____*		
8	When the turbidity has cleared, conduct chlorine, residual, and bacteriological testing until the turbidity levels are within acceptable limits. If required, notify: *_____Manager of Engineering Operations;* *_____Director of Engineering;* *_____ Fire Department;* *_____Police Services;* *_____Administrator;* *_____Manager of Communication;* *_____Safety Coordinator;* *_____Fraser Health Authority, Officer Name_____;* *_____Metro Vancouver, Officer Name_____;or* *_____ Others_____.*		
9	Issue Advisory Cancellation? *Yes_____* *N/A_____*		
10	Submit damage/repair report to Director of Engineering.		
11	Director of Engineering approves damage/repair report.		

ANNEX C10
AFFECTED SERVICE CONNECTIONS NOTIFICATION LIST

AFFECTED SERVICE CONNECTIONS NOTIFICATION LIST

	Address	Date/ Time	Initial
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
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36			
37			

ANNEX D

DAMAGE ASSESSMENT FORM

City of New Westminster – Utility Damage Assessment Form

Utility: _____ Notification Date/Time: _____

Prepared by: _____ Phone Number: _____

Contact Person: _____ Phone Number: _____

Fax Number: _____

Area or Zone Served: _____ Population: _____

Number of Service Connections: _____ Percent of System Damaged: _____

Approximate Number of People without Water: _____

Without water under pressure _____ Without drinking water _____

Emergency Staging Area: _____

Repair Completed Date: _____ Time: _____

Primary Water System Damage

	Check Appropriate Damage Categories		
Facility	**Leak**	**Break**	**Severe or Out of Service**
Supply (MV)			
City Distribution System			
PRV Station			
Service Connection			

Types and Description of Problems (prioritize problems beginning with most severe. Make reference to Maps. Maps should be used as much as possible): _____

_____

_____

_____

Location of Outage (pressure zone): _____

Duration of Outage: _____

Resources Requested (note: immediate or delayed need):

Material: _____

Equipment: _____

Personnel: _____

Other Emergency Coordination Needs (Law Enforcement, Fire, Health, etc.): _____

_____

Drinking Water Needs: _____

Form Completed By: _____

ANNEX E

ADVISORY NOTIFICATIONS

BOIL WATER ADVISORY

General

The Drinking Water Act requires the water purveyor to notify all users of the waterworks system of an existing or potential health hazard when in the opinion of a Medical Health Officer the quality of water in the system is or may be a health hazard. Metro Vancouver will issue a “boil water” advisory when the contamination is within their distribution system. Upon issuance of the advisory or order, the Metro Vancouver will contact the City of New Westminster notifying that a “boil water” advisory or order has been issued.

When contamination is found in the City of New Westminster distribution system, the Manager of Engineering Operations will consult with the Medical Health Officer and determine if they will recommend the issuance of a “boil water” advisory. If an advisory is to be issued it must be authorized by the Director of Engineering.

Upon approval of the Director of Engineering, the advisory and accompanying press release is to be provided to the Manager of Communications who will be responsible for issuing the advisory. Immediate notification of all radio and television stations will be the most effective method of quickly notifying the public. This should be followed by an entry on the City website, and hand delivered notices to the individual properties serviced by the system in the affected area. The use of maps in notices and on the website is encouraged. The advisory should follow the format for news releases and situation reports in the City Public Information Plan. In addition to normal news release content, the information in the following two subsections should be included.

Content for a Boil Water Advisory

BOIL WATER ORDER Date:

City of New Westminster

FAILURE TO FOLLOW THIS ADVISORY COULD RESULT IN STOMACH OR INTESTINAL ILLNESS. Due to _____**(Reason)**_____, the City of New Westminster advises the public that the water supply in certain areas has become contaminated and may not be safe for human consumption. In order to ensure the safety of the water supply, all water must be boiled rapidly for at least one minute before being used for drinking, brushing teeth, washing food, etc. This is the preferred method to assure that the water is safe to drink.

An alternative method of purification for residents that do not have gas or electricity available is to use fresh liquid household bleach (Clorox, Purex, etc.). To do so, add 8 drops (or 1/8 teaspoon) of bleach per gallon of clear water or 16 drops (or 1/4 teaspoon) per gallon of cloudy water. Mix thoroughly and allow to stand for 30 minutes before using. A chlorine-like taste and odour will result from this purification procedure and is an indication that adequate disinfection has taken place.

The areas involved in this advisory are as follows:

_____

_____

_____

Note: It may be necessary to give only very general locations at the beginning with more exact locations identified when more information becomes available, recognizing that is preferable to overstate the size of the area involved.

Optional:

Potable water is available at the following locations:

_____

Please bring clean water container (5 gallons maximum capacity). Emergency water treatment and quality testing are being conducted by _____ to resolve this water quality emergency problem. The _____ will notify residents as soon as the water is safe to drink.

For more information call:

(Contact person): _____
(Name, title, and phone of responsible representative)

Public Health Department: _____
(Name, title, and phone of responsible representative)

Content for a Boil Water Advisory Press Release

FOR IMMEDIATE RELEASE: CONTACT: _____

DATE: _____ PHONE: _____

BOIL WATER ADVISORY

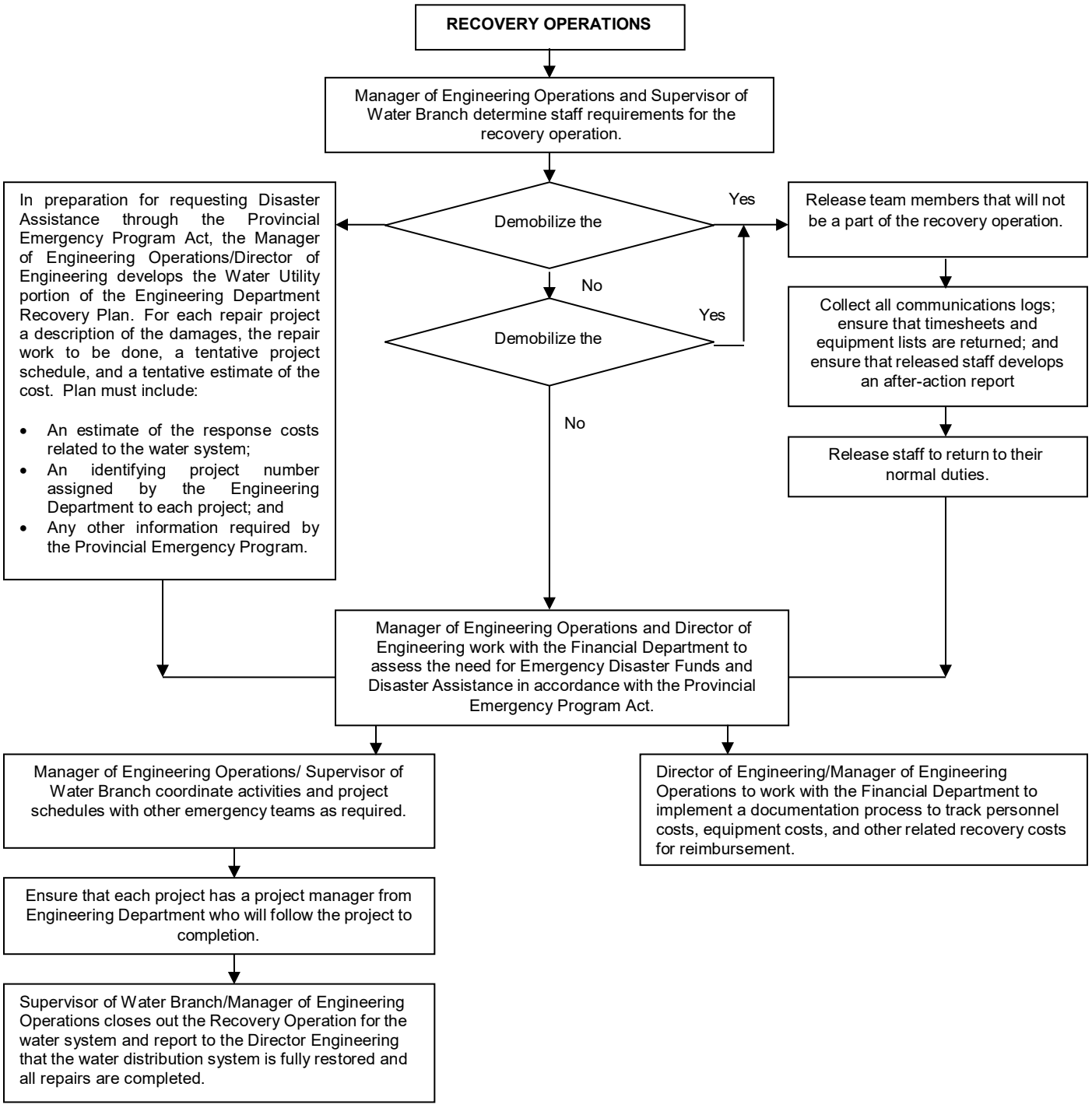
The City of New Westminster advises that there is a possibility of contamination in the _____ water distribution system. Several recent test samples have revealed the presence of _____. However, the laboratory results indicated that the possible contaminant is NOT fecal origin. Water Utility personnel have not been able to identify any reason or incident that would have caused the positive test results. Water samples will be taken daily until the contaminant is identified and the problem is resolved.

To ensure adequate public safety, you are advised to choose one of the following options for tap water used for drinking and cooking purposes:

1. Commercially available bottled water, or
2. Boil all tap water for at least 1 minute at a full, rolling boil.

ANNEX F

RECOVERY PLAN


RECOVERY OPERATIONS
Manager of Engineering Operations and Supervisor of Water Branch determine staff requirements for the recovery operation.
Demobilize the
Yes
Release team members that will not be a part of the recovery operation.
No
Demobilize the
Yes
Collect all communications logs; ensure that timesheets and equipment lists are returned; and ensure that released staff develops an after-action report
No
Release staff to return to their normal duties.
In preparation for requesting Disaster Assistance through the Provincial Emergency Program Act, the Manager of Engineering Operations/Director of Engineering develops the Water Utility portion of the Engineering Department Recovery Plan. For each repair project a description of the damages, the repair work to be done, a tentative project schedule, and a tentative estimate of the cost. Plan must include:
• An estimate of the response costs related to the water system;
• An identifying project number assigned by the Engineering Department to each project; and
• Any other information required by the Provincial Emergency Program.
Manager of Engineering Operations and Director of Engineering work with the Financial Department to assess the need for Emergency Disaster Funds and Disaster Assistance in accordance with the Provincial Emergency Program Act.
Manager of Engineering Operations/ Supervisor of Water Branch coordinate activities and project schedules with other emergency teams as required.
Director of Engineering/Manager of Engineering Operations to work with the Financial Department to implement a documentation process to track personnel costs, equipment costs, and other related recovery costs for reimbursement.
Ensure that each project has a project manager from Engineering Department who will follow the project to completion.
Supervisor of Water Branch/Manager of Engineering Operations closes out the Recovery Operation for the water system and report to the Director Engineering that the water distribution system is fully restored and all repairs are completed.

Assistance Programs

Financial assistance is available through the Provincial Emergency Program. Eligibility information is provided below taken from the ***Compensation and Disaster Financial Assistance Regulations*** based on the Provincial Emergency Program Act.

Eligible Public Works

"…eligible public works includes streets, roads, bridges, dams, breakwaters, wharves, dikes, levees, drainage facilities, flood control and irrigation systems and publicly owned sewer and water utilities.

All claims for assistance must comply with the requirements of Part 3, Division 4 – Process for Payment of Assistance, of the **Provincial Emergency Program Act**

Recovery Plans

In accordance with Part 3, Division 4, Section 33(3) the Engineering and Operations Department must develop and submit a Recovery Plan specific to the event for which assistance is being requested. A single recovery plan will be developed by the Manager of Engineering Operations and Water Branch Supervisor reviewed by Director of Engineering covering all damaged facilities. The Recovery Plan must include:

1. An estimate of the response costs for the Department;
2. For each project listed in the plan there will be a description of the damage received, the work proposed to be done to repair those damages, and an estimate of the cost to complete the work to restore the facility to pre-event condition complying with all local codes and standards.
3. An identifying project number for each project that can be used to track all costs and related information for the project.

Submission of the Recovery Plan

The Department Recovery Plan must be submitted to the Provincial Emergency Program approved by them. Any work undertaken prior to this approval may ultimately be determined as ineligible. If, after the plan is approved, the Department determines that additional funds will be needed to complete any project, notify the Provincial Emergency Program in writing of the increases needed by project stating the amount required and the reason for the increase.

Payment of Claims

All claims for financial assistance for projects outlined in the Recovery Plan may be submitted to the Provincial Emergency Program:

1. On the completion of the project, or
2. If the project is phased, at the end of each phase.

Reimbursements

In accordance with the Provincial Emergency Program Act, the Public Works and Development Services Department is eligible for the following reimbursements as they apply to the water

distribution system (reference Schedule 5 of the ***Compensation and Disaster Financial Assistance Regulations***).

1. For emergency response activities, 100 percent of the amount of the accepted claim. Emergency response activities for the water distribution system include:
    - Measures taken to reduce the extent of damage by the removal of hazardous materials, valuable chattels, and assets from the area of immediate risk, including the provision of storage space and transportation costs.
    - Measures taken to determine the area and extent of the disaster.
    - Containment of the disaster including the provision of essential services, equipment, material, and labour for protective works, both for individual protection and for that of publicly owned institutions and utilities.
    - The establishment and implementation of special security measures.
    - The establishment and operation of any one or more of special communications facilities, special registration and inquiry services, emergency control headquarters, and protective health and sanitation facilities.

2. For general administrative claims arising out of individual projects within a recovery plan, the percentage of the amount of the accepted claim, up to a maximum of 10 percent, that the Provincial Emergency Program determines is appropriate.

3. All other claims, 80 percent of the amount by which the amount of the accepted claim exceeds $1,000. These include:
    - Structural repair or replacement of a public facility.
    - Repair to or replacement of eligible materials including books, paper, and other records essential to the Engineering Department's functions and operations.
    - Clean up and debris removal.
    - The deductible amounts of insurance costs.
    - The costs of inspection, appraisal, planning or design if the services for which the costs are incurred are essential to the Water Branch Department's ability to determine the costs of repair, rebuilding, or replacement. This excludes costs incurred by the permanent staff of the Water Branch Department. This may include the cost of temporarily filling positions of full-time staff while those full-time staff are engaged in conducting disaster assistance surveys and assessments if documentation is available specifying the positions being filled, the persons employed and the actual time during which they were so employed.
    - Replacing Water Branch Department stores or materials that are damaged or destroyed in responding to emergencies or in repairing public facilities damaged in disasters.

ANNEX G

MOBILE WATER EMERGENCY UNIT
SPECIFICATIONS & OPERATION PROCEDURES

MOBILE WATER EMERGENCY UNIT SPECIFICATIONS & OPERATION PROCEDURES

General

- Clean drinking water is one of the most essential needs after a disaster
- In a major earthquake, there will almost certainly be a disruption in potable water supply through breaks and contamination
    a. An act of terrorism on our water supply
    b. A natural contamination of our water supply
- Bottled water would need to be transported and distributed to 2.5M people in Metro Vancouver
    a. Bottled water to New Westminster residents alone will be $50,000 to $100,000 per day
- In New Orleans, it took 5 days to get potable water to some victims
- City Staff observed chaotic responses when the GVWD issued a boil water alert late in 2006

Unit Specifications

The Mobile Water Emergency Unit:

- May draw water from any source, including:
    a. Canada Games Pool (3.4 million liters)
    b. Fraser River
    c. Brunette River
    d. Natural spring at old Labatt site
- Produces 75,000 liters of water per day (1.3 liters per person per day for New Westminster residents)
- Has seven different filtering mechanisms and technologies:
    a. Sand filtration
    b. Ozone injection (oxidizes and decomposes organic and inorganic contaminants at a higher rate that chlorine and has been used in large municipal water systems since 1903)
    c. UV radiation
    d. Carbon filtration
    e. Multi-Media filtration
    f. Reverse osmosis
    g. Micro Z filtration(a very light, high quality, granular zeolite filter media which features microscopic mineral projections that allow particulate matter to penetrate deeply)
- Was manufactured by the Key Water and Air International and Arkfeld Manufacturing and Distribution Company (since 1917).
- Is 6.5 meters long x 2.75 meters high x 2.75 meters wide approximately

Operation Procedures

Startup

1. Open entrance door
2. Put on indoor and outdoor lights (switches on left side of door)
3. Turn down trailer jack
4. When using generator open (2) air vents
5. When using generator push top breakers at fuse box to the left (when using outside power breakers to the right)
6. Start generator; turn key to the right (for cooling fan in generator compartment and fuel pump) pull choke and push and hold back starter switch) and push back choke
7. When generator is running (are vents open?) Switch breakers marked lights/outlets towards the middle
8. When using outside power push top breakers at fuse box to right and switch breakers marked light/outlets towards the middle.
9. Now we have light: open back doors by pulling on steel cables inside doors
10. Open doors marked water outlet and water inlet by pushing latch upwards inside the trailer
11. Attach the grey hose at the water inlet side
12. attach the long blue hose to the main connections at the water outlet side
13. When using Reverse Osmosis attach the short blue hose to the R.O. Connection
14. Put the grey hose with the locator pin and filter in water source
15. Note: pin not needed when using pool water
16. Open all the circle-loop valves
17. Note: Keep valves towards equipment closed)
18. Push breaker marked main pumps towards the middle, self-priming pump running
19. Push red switch above pumps to left (ON) variable speed pump running

ATTENTION: Are all valves in line open?
Except for R.O. Outlet valve when NOT in use!

Shut Down

1. Remove or disconnect blue hoses from water receiving device (leave grey hose in water source)
2. When R.O. (system ‘f’) was used turn green knob in off position
3. Close inlet valve and outlet valve (Leave valve in loop open)
4. Push red button (off) on system ‘c’ under the “C” mark
5. Push the switches on oxygen generator and ozone generator to off position
6. Open valve in loop and close valves to and from system ‘c’
7. Open valve in loop and close valves to and from system ‘a’
8. Open valve in loop and close valves to and from system ‘b’
9. Open valve in loop and close valves to and from system ‘d’
10. Open valve in loop and close valves to and from system ‘e’
11. Open valve in loop and close valves to and from system ‘g’
12. Unplug electrical cord from system ‘g’

ATTENTION: Are all valves in line and open and the valves to the treatment device closed?

13. Push red switch above pumps to right (off)
14. Push breaker marked main pumps towards outside
15. Close outlet valve at end of loop by water outlet (keep water in loop)
16. Push all breakers (R.O./heater; Ozone Generator; Timers#1 & #2/UV & light/outlets towards outside and leave indoor and outdoor lights on
17. Shut off generator: Push starter switch on bottom (Marked Push to Stop) and turn key back in vertical position
18. Leave air vents open till generator is cooled down
19. Remove grey hose from water source and remove filter
20. Disconnect hoses and replace plugs in outlet and inlet
21. Close doors marked water outlet and water inlet
22. Store hoses filters and pin
23. Close air vents
24. Turn off lights
25. Close entrance doors
26. Turn up trailer jack

Return back to storage facility for maintenance
Open Generator cover and air vents form more cool-down