



THE MUNICIPALITY OF THE VILLAGE OF LIONS BAY

**COUNCIL STRATEGY COMMITTEE
OF THE VILLAGE OF LIONS BAY
HELD ON TUESDAY, JANUARY 23, 2018 at 7:00 PM
COUNCIL CHAMBERS, 400 CENTRE ROAD, LIONS BAY**

AGENDA

- 1. Call to Order**
- 2. Adoption of Agenda**
- 3. Public Participation**
- 4. Minutes**
 - A. Council Strategy Committee Meeting – May 2, 2017 (Page 3)
THAT the Council Strategy Committee Meeting Minutes of May 2, 2017 be approved as circulated.

 - B. Council Strategy Committee Meeting – January 16, 2018 (Page 5)
THAT the Council Strategy Committee Meeting Minutes of January 16, 2018 be approved as circulated.
- 5. Business Arising from the Minutes**
- 6. Unfinished Business**
- 7. Reports**
 - A. Staff
 - i. Core Services Review (Page 7)
THAT Council direct the Public Works Manager to post for and hire a full-time Public Works Operator; and

THAT Council direct the Chief Financial Officer to secure an additional lease vehicle when we renew our current lease agreement.

 - B. Mayor
 - i. Community Signage Plan (Page 69)

 - C. Council – None

D. Committees – None

8. **New Business**
9. **Public Questions & Comments**
10. **Adjournment**



THE MUNICIPALITY OF THE VILLAGE OF LIONS BAY

**COUNCIL STRATEGY COMMITTEE
OF THE VILLAGE OF LIONS BAY
HELD ON TUESDAY, MAY 2, 2017 at 3:00 PM
COUNCIL CHAMBERS, 400 CENTRE ROAD, LIONS BAY**

MINUTES

In Attendance:

Council: Councillor Fred Bain
Councillor Jim Hughes
Councillor Ron McLaughlin (Acting Mayor)

Staff: Chief Administrative Officer Peter DeJong
Chief Financial Officer Pamela Rooke
Municipal Accountant Hayley Cook
Office Coordinator Shawna Gilroy (Recorder)

Regrets: Mayor Karl Buhr

Guests: Bill Cox, BDO Canada LLP

Public: 0

1. Call to Order

Acting Mayor McLaughlin called the meeting to order at 3:00 p.m.

2. Approval of Agenda

Moved/Seconded

THAT the agenda be approved as submitted.

CARRIED

3. Public Participation

None

4. Minutes

A. Council Strategy Committee Meeting – April 18, 2017

Moved/Seconded

THAT the Council Strategy Committee Meeting Minutes of April 18, 2017 be approved as circulated.

CARRIED

5. Business Arising from the Minutes

None

6. Unfinished Business

None

7. Reports

None

8. New Business

A. Audit Report – Bill Cox, BDO Canada LLP

Mr. Cox noted that the audit is 99% complete, and proceeded to review the BDO letter with Council. He advised that there were no concerns within the final report. Mr. Cox then discussed the financial statements, providing high level comments and explanations to various sections.

Moved/Seconded

THAT the Village of Lions Bay’s 2016 Audited Financial Statements be referred to the May 2, 2017 Council meeting.

CARRIED

9. Public Questions & Comments

None

10. Adjournment

Moved/Seconded

THAT the meeting be adjourned.

CARRIED

The meeting was adjourned at 3:42 p.m.

Mayor

Corporate Officer

Date Approved by Council:	
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THE MUNICIPALITY OF THE VILLAGE OF LIONS BAY

**COUNCIL STRATEGY COMMITTEE
OF THE VILLAGE OF LIONS BAY
HELD ON TUESDAY, JANUARY 16, 2018 at 4:00 PM
COUNCIL CHAMBERS, 400 CENTRE ROAD, LIONS BAY**

MINUTES

In Attendance:

Council: Mayor Karl Buhr
Councillor Fred Bain
Councillor Jim Hughes
Councillor Ron McLaughlin

Regrets: Councillor Norm Barmeier

Staff: Chief Administrative Officer Peter DeJong
Chief Financial Officer Pamela Rooke
Public Works Manager Nai Jaffer
Office Coordinator Shawna Gilroy (Recorder)

Guests: Planning Consultant Steven Olmstead (via Skype)

Public: 0

1. Call to Order
Mayor Buhr called the meeting to order at 4:15 p.m.

2. Adoption of Agenda
Moved/Seconded

THAT the agenda be adopted as submitted.

CARRIED

3. Public Participation

4. Review and Approval of Minutes of Prior Meetings

5. Business Arising from the Minutes

6. Unfinished Business

7. Reports

8. New Business

9. Public Questions & Comments

10. Closed Council Meeting

Moved/Seconded

THAT the meeting be closed to the public on the basis of matters to be considered under the following sections of the *Community Charter*:

90 (1) A part of a council meeting may be closed to the public if the subject matter being considered relates to or is one or more of the following:

d) the security of the property of the municipality;

k) negotiations and related discussions respecting the proposed provision of a municipal service that are at their preliminary stages and that, in the view of the council, could reasonably be expected to harm the interests of the municipality if they were held in public;

CARRIED

The meeting was closed to the public at 4:15 p.m.

Councillor Hughes arrived at 4:16 p.m.

The meeting was re-opened to the public at 5:42 p.m.

11. Reporting Out from Closed Portion of Meeting

Council reported out that the information report titled “Village of Lions Bay OCP Amendment – Development Permit Areas” be received by Council, publicised and made available to the public on the website, and that a public information and consultation meeting be scheduled for January 30, 2018 at 7:00 pm in Broughton Hall, Lions Bay.

12. Adjournment

Moved/Seconded

THAT the meeting be adjourned.

CARRIED

The meeting was adjourned at 5:43 p.m.

Mayor

Corporate Officer

Date Approved by Council:	
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THE MUNICIPALITY OF THE VILLAGE OF LIONS BAY

Type	Request for Decision		
Title	Core Service Level Review – Service Level Enhancement		
Author	Naizam Jaffer	Reviewed By:	Peter DeJong
Date	January 12, 2018	Version	
Issued for	January 23, 2018 Council Strategy Committee Meeting		

Recommendation:

- (1) THAT Council direct the Public Works Manager to post for and hire a full-time Public Works Operator; and
- (2) THAT Council direct the Chief Financial Officer to secure an additional lease vehicle when we renew our current lease agreement.

Attachments:

- (1) Core Service Level Review Direction Request Report - April 4, 2017 CSC Meeting
- (2) Core Service Level Review.

Key Information:

The Core Service Level Review (CSLR) was prepared to assist and improve Council and the community's understanding of the services provided by the Public Works Department. As a secondary benefit, the CSLR enables Council and staff to make informed strategic choices regarding those services.

The vast majority of the tasks Public Works carries out include *mandatory* services that are mandated through provincial or federal legislation, *essential* services that are crucial to the operation of the Village, and best management practice (*BMP*) services which are technically derived through industry standards and practices designed to maintain the expected useful life of infrastructure. There are very few tasks that are considered *discretionary* within the scope of the Municipality's Public Works activities, these are:



THE MUNICIPALITY OF THE VILLAGE OF LIONS BAY

Boulevard Maintenance,
 Street Decorations,
 Street Litter Pickup,
 Community Event / Volunteer Support,
 Kayak Rack Maintenance,
 Christmas Tree Disposal, and
 Doggie Bag Dispensers.

Determining the appropriate level of staffing for Public Works is a challenge faced by many municipalities, and in particular, smaller municipalities. The impact of an under resourced Public Works department generally leads to an inability to proactively maintain the municipality's infrastructure with the majority of staff time spent on corrective and emergency repairs as opposed to scheduled maintenance activities.

To fulfil the staff resource allocation requirements of CSLR inclusive of the aforementioned discretionary items, the mandatory, essential, and BMP services would require the Public Works Department to be staffed to a level of 7.6 full time equivalents (FTE). Over the last eight years, the resource allocation has remained relatively constant at 4.6 FTE. As such, there will always be Village programs that do not meet the levels of service associated with them. Without additional staff this situation will not change.

At its April 4, 2017 Regular Meeting, Council resolved THAT staff prepare for the addition of one FTE and truck. In preparation for this additional level of service, staff have reviewed the deficiencies highlighted in the CSLR and propose the allocation of this resource as follows:

Activity	Purpose	FTE
Hydrant Maintenance	Ensure hydrants are in good working condition.	0.30
Valve Exercising	Ensures that valves can be easily located and operated in case of emergency.	0.14
Bridge Inspection & Washing	Preserves bridge integrity and safety and improves the functional condition of the bridge with the aim of preventing, delaying, or mitigating deterioration.	0.15
Sign Maintenance	This BMP service level is not being met	0.05
Sewer Lateral Inspections	This BMP service level is not currently carried out	0.04
Facilities Inspection	Maintains the quality of the facility, prevents injury, and mitigates risk.	0.02



THE MUNICIPALITY OF THE VILLAGE OF LIONS BAY

Trails Inspection	Ensures user safety and mitigates risk and liability.	0.05
Invasive Species Control	Encourages natural species, mitigates risk, and restores ecological balance.	0.05
Administration and Training	Administrative duties including timesheet entry, records management, mandated EOCP and WorkSafeBC training, safety talks, daily briefings, and other such activities.	0.16
Fleet & Equipment Maintenance	Ensures safe and reliable equipment that meets regulatory requirements. Mitigates risk.	0.04
Total		1

When you look closely at the CSLR, there is very little in the way of discretionary tasks that can be carved away to redirect to other areas. The most significant of these is boulevard maintenance at various locations throughout the municipality. Typically, this activity is the responsibility of the adjacent homeowner and governed by a boulevard maintenance bylaw. Residents not maintaining their boulevards would receive a demand letter with a time frame for them to comply with the bylaw. Moving to this model of boulevard maintenance would likely be seen as a reduction in service by the residents of the Village but ultimately, Council must decide whether this current resource allocation is to continue or change.

Options:

- (1) Do nothing: While this is a potential option which would have no immediate impacts on existing service levels, in the long term it is likely to result in deteriorating asset condition and effectiveness.
- (2) Direct the additional resources to other activities: An additional FTE and truck, regardless of where their time is allocated, will require 0.20 of their time to be allocated to Administrative and Fleet tasks. Of the highlighted tasks in the table above, Facilities Inspection, Trails Inspection, and Invasive Species Control could be considered non-critical and would free up 0.12 of time. The remaining allocations are essential to ensure the health and safety of the community.
- (3) Allocate the additional FTE as outlined in this report thereby meeting some of the key deficiencies in regulatory requirements and best infrastructure maintenance practices.



THE MUNICIPALITY OF THE VILLAGE OF LIONS BAY

Preferred Option:

Option 3 is the preferred option. A review of the Core Service Areas is contained within the April 4, 2017 Council Report and indicates the challenges faced by Public Works in meeting some of the mandatory and essential activities given our current FTE complement. The most notable mandatory deficiency is the requirement for annual fire hydrant inspections per the National Fire Code of Canada which is not being conducted at present.

The addition of a FTE to Public Works will provide further benefits by increasing workforce flexibility. Where larger tasks that require the full complement of employees (with the exception of the water operator) are scheduled, a sick or injured employee can lead to these tasks being deferred or cancelled outright. The additional FTE will enable these works to continue as planned.

Legal Considerations:

None, unless Council wishes staff to draft a boulevard maintenance bylaw.

Follow Up Action:

Upon adoption of the 2018 budget, direct staff to post and hire a Public Works Operator and secure an additional vehicle through our lease provider.



THE MUNICIPALITY OF THE VILLAGE OF LIONS BAY

Type	Direction Request		
Title	Core Service Level Review		
Author	Naizam Jaffer	Reviewed By:	Peter DeJong
Date	March 25, 2017	Version	
Issued for	April 4, 2017 Council Strategy Committee Meeting		

Recommendation:

THAT Council provide direction to staff with respect to the issues outlined in this report.

Attachments:

(1) Core Service Level Review

Key Information:

The Core Service Level Review (CSLR) represents a management assessment of current Public Works service levels in relation to:

- the alignment of programs and practices to best management practices (BMP's) and legislated maintenance requirements, and
- the effectiveness of current staffing levels in meeting these BMP's and legislated maintenance requirements.

Within the CSLR, services provided by Public Works are segregated into broad categories typical to Public Works. The services within each category or Core Service Area (CSA) are broken down into three sub-categories: Mandatory, Essential, or Discretionary. Services are described in relation to BMP's and legislated maintenance requirements as is the level at which the service is currently being provided. Where a service is "not in place," is it marked with NIP and where it is "partially in place" it is marked with PIP. The following is a summary which indicates the disposition of each of the CSA's:

CSA: Administration

Many of the tasks under this category are involuntary and conducted to meet regulatory training and safety requirements. This function is being conducted at an acceptable level based upon the existing staff complement. Any increase in resource allocation will inherently necessitate an increase to this CSA.

The current resource allocation directed towards customer service requests is 8 hours per week which is, at times, insufficient. Turnaround times for building permits, tree cutting applications, damage deposit returns, etc. can be extended by several weeks dependent upon staff workloads.

CSA: Roads & Bridges

This CSA is severely deficient and key services are not being conducted, most notably, bridge inspection and maintenance. Other areas of concern include pedestrian walkway inspections, shoulder maintenance, fence and guard rail maintenance, and utility right of way maintenance.

Significant resources have been directed towards boulevard vegetation management in order to provide clear and safe passage wide enough for emergency services, larger vehicles such as garbage trucks, and to improve sightlines for traffic safety. In most municipalities this function is the responsibility of the adjacent homeowner. Where maintenance of boulevards is not being carried out, staff in those municipalities issue demand letters to owners requiring that they comply with this maintenance.

Moving to this model of vegetation management would likely require a bylaw solution and may well be seen as a reduction in service by the residents of the Village.

CSA: Traffic & Lighting

Key components of this CSA receive very little attention:

1. Sign maintenance and inspection: Sign installations have been based upon request with little discretion or thought put into the demonstrated need for a sign. Maintenance and retro-reflectivity checks are not being conducted which presents a concern from a liability perspective.
2. Street light maintenance: an inspection and routine maintenance program for this service does not exist.

CSA: Creeks & Drainage

In steep sloped terrain, the open watercourses that dot the community act as municipal drains diverting water away from properties and infrastructure. The importance of a well-documented watercourse inspection and maintenance program cannot be overstressed. Currently the level of service in this critical area is below standard.

CSA: Water Treatment and Quality

This CSA is being maintained at an appropriate level.

CSA: Water Storage and Distribution

Two primary deficiencies exist within this CSA: hydrant and valve maintenance.

1. Hydrants are not receiving the required maintenance as outlined in the National Fire Code of Canada and the Underwriters Laboratory. This presents liability issues for the Village.
2. Valve maintenance is, for the most part, being conducted on a reactionary basis. Valves are not being exercised to ensure operability, especially during periods of critical need.

CSA: Wastewater Collection & Treatment

The key deficiency in this CSA is with respect to service and main line inspections. The recent purchase of a push camera provides the equipment to do some inspection; however, larger diameter lines will require contracted inspection services. Since their installation, the Village's sewer lines have not been inspected.

CSA: Facilities Maintenance and Management

As the Village's facilities age, more frequent and through maintenance is required. This level of service is not being attained. Inspections and documentation are lacking.

CSA: Parks and Open Spaces

The most notable deficiency within this CSA is trails inspection and maintenance. The trails throughout the Village are, for the most part, on public lands and the Village is aware and encourages their use. The trails map and trail signage bears the Village of Lions Bay coat of arms, and in many cases these were created through financial support

by the Village. As such, it is difficult to distance the Village from liability or risk pertaining to trails inspection and maintenance.

Further to this, reliance upon volunteers to maintain trails creates additional liabilities pertaining to their competence, particularly concerning the use of equipment, and in effecting repairs or risk mitigation upon trails.

Under the *Occupiers Liability Act* municipalities have a duty of care to inspect and maintain the trail system under their jurisdiction and to ensure the trails are reasonably safe to use. The Village's lack of documentation and knowledge of the dangers present on any given trail is a liability, particularly considering the Village is aware of their use by residents and visitors alike.

CSA: Fleet & Equipment

The key deficiency in this CSA pertains to mandatory documentation and record keeping under the *Commercial Vehicle Safety Act*. Equipment and vehicles are being properly maintained.

CSA: Waste Collection Services

The services within this CSA are being conducted at an appropriate level.

Documentation

The documentation of daily maintenance activities provides proof that a level of service or duty of care is being provided. Public Works has a number of initiatives planned in order to achieve best management practices in records management, both from a historical tracking perspective and a liability management perspective.

Resource Allocation

As mentioned in the report, there is no "right" standard or ratio of employees to infrastructure. The estimated staff complement required to meet best management and legislated services is in excess of 7 full time equivalent staff. Given the financial consideration of staff salaries and equipment cost, the reality is that there are limits to the Village's ability to fund increases in permanent staff.

What is clear is that the current level of staffing is having a noticeable effect on the condition of the Village's infrastructure. Public Works has not been preventively maintaining this infrastructure on a comprehensive basis and lacks an asset management plan that identifies its infrastructure, its worth, its maintenance requirements, and the service levels and staffing

resources required to maintain it. This is, in some respects, due to the lack of funding for such efforts, but is also related to the historical lack of managerial focus on these efforts.

Financial Implications

A balance between staffing, cost, and level of core services to be achieved needs to be struck. The reality of the current situation is that staff are unable to attend to all but the most basic of services. A reorganization of services and focus will not alleviate the fact that Public Works is understaffed but it may impact the level of service that can be accomplished.

Adding an Operator 1 = \$83,250 / year **including** benefits
Adding a Lease Truck = \$12,600 / year (5 year lease)

Desired Result:

To provide more with less – to do the critical tasks that prolong infrastructure life.

Options to Pursue Desired Result:

- (1) Reorganize the General Leger accounts to match the CSLR categories (this will enable better tracking of activities);
- (2) Review provision of boulevard vegetation management provided (would likely require change to bylaws re. maintenance of boulevards);
- (3) review and assess level of service for trails including insurance coverage for volunteers, increased liability insurance for Village, and prepare a work program / standard of care; and
- (4) prepare for the addition of one full time equivalent employee (FTE) & truck during the 2018 budget process by adding that cost now to the 5 year financial plan.

Follow Up Action:

Public Works and Finance to work together to develop an appropriate General Leger costing system to help delineate service levels and better quantify the cost of these services. This will help Council better understand the true cost of services.

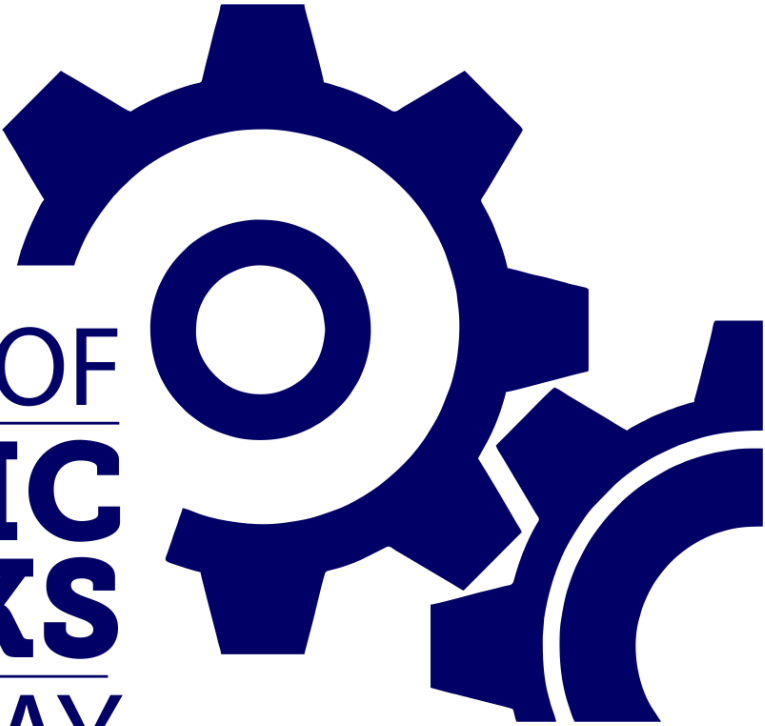
Public Works to develop a trail inspection and maintenance program for implementation in the 2018 budget year. In the interim, Public Works and the CAO to develop a risk management policy applicable to trail volunteers.

Public Works to begin records management initiatives, developing inspection forms, electronic time sheets with daily record keeping logs, and additional measures to improve the tracking of maintenance activities performed on of the Village's infrastructure assets.

VILLAGE OF

**PUBLIC
WORKS**

LIONS BAY



Core Services Levels

March 12, 2017

Version 3

TABLE OF CONTENTS

TABLE OF CONTENTS.....	3
OBJECTIVE	4
INTRODUCTION	4
CORE SERVICES.....	4
ASSET DETERIORATION	5
DOCUMENTATION.....	6
RESOURCE ALLOCATION.....	6
PUBLIC WORKS SERVICES.....	8
CSA: ADMINISTRATION	9
CSA: ROADS & BRIDGES	10
CSA: TRAFFIC & LIGHTING.....	16
CSA: CREEKS & DRAINAGE	17
CSA: WATER TREATMENT & QUALITY	19
CSA: WATER STORAGE & DISTRIBUTION.....	21
CSA: WASTEWATER COLLECTION & TREATMENT.....	26
CSA: FACILITIES MAINTENANCE & MANAGEMENT	28
CSA: PARKS & OPEN SPACES	30
CSA: FLEET & EQUIPMENT	34
CSA: WASTE COLLECTION SERVICES	35
REFERENCES.....	36
LEGAL FRAMEWORK & BMP'S.....	37
CORE SERVICE LEVELS	40

OBJECTIVE

The objective of this document is to improve upon the strategic management of municipal infrastructure assets through the identification, review, and confirmation of core services delivered by the Village of Lions Bay's Public Works Department. The approach taken herein aims to provide an understanding of the processes leading to infrastructure decline and the legislated and best management practices designed to extend the useful life of municipal infrastructure.

INTRODUCTION

Public Works is central to the health and safety of the residents of the Village of Lions Bay. Moreover, these services, some of which include the treatment and distribution of potable water, the repair and maintenance of streets and bridges, and winter snow and ice control are essential to the **community's** overall well-being and continuity.

A cornerstone of the Public Works department and the services it provides, lays the broad range of taxpayer funded infrastructure assets. As custodians of this infrastructure it is incumbent upon Public Works to demonstrate maintenance practices that are pertinent, efficient, and sustainable. Only through these maintenance practices can infrastructure assets continue to support the social, economic and environmental needs of the community.

Federal and provincial downloading, increasingly rigorous legislation, stricter standards, increased community expectations, and a tightening economy make the task of maintaining and managing the **Village's** infrastructure assets within fixed resources a formidable challenge. This core service level review takes into consideration the services provided by Public Works and enables Council to make informed, balanced, and consistent decisions when determining the resources allocated to the delivery of Public Works services.

"Public works is the combination of physical assets, management practices, policies, and personnel necessary for government to provide and sustain structures and services essential to the welfare and acceptable quality of life for its citizens" – APWA

CORE SERVICES

Contextually, the term "Core Services" has varied interpretations and definitions. For the purposes of this report, the term refers to the maintenance activities performed on the Village's infrastructure assets. The overarching goal of these activities is to maximise asset/infrastructure life expectancy, manage risk, and meet desired levels of service in a sustainable manner.

Core services and the costs thereof, provide the foundation upon which to build an asset management plan that takes into account the total costs of the **Village's** assets, inclusive of core services, over their entire useful life. Together, core services and asset management planning

synchronously demonstrate sound stewardship and financial sustainability of the Village's infrastructure.

In the broadest of sense, there are two categories of services provide by the Public Works department — discretionary and core services. Though each can be broken down into many sub-categories, this report focuses primarily upon the latter of the two.

Core services can be broken down into three classes:

Mandatory – services that are mandated through provincial or federal legislation.

Essential – services that are crucial to the operation of the Village, the interruption of which would endanger life, health, or personal safety of the residents and staff.

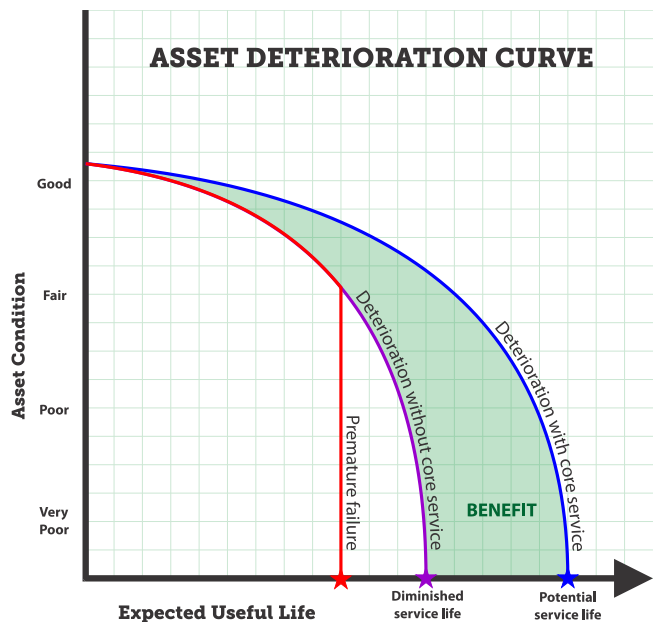
Best Management Practice (BMP) – services which are technically derived through industry standards and practices designed to maintain the expected useful life of an asset.

For the services identified herein, each has been segregated as per the aforementioned elements, namely: Core – Mandatory, Core – Essential, Core – BMP, and Discretionary. Also identified are services where maintenance programs are “not in place” (NIP) or where maintenance programs are “partially in place” (PIP).

ASSET DETERIORATION

Core services are indispensable in ensuring maximum longevity and maximum potential of the capital investment in municipal infrastructure. In the absence of core services, asset service life is diminished and infrastructure deteriorates to levels that compromise service delivery and result in financial losses in the form of premium repair costs, significant rehabilitation costs, and ultimately, premature replacement. Left for too long, the absence of core service may lead to catastrophic premature failure resulting in significant financial losses, and health and safety risks to the residents of the community and to staff.

Prolonging the life of infrastructure assets provides a clear benefit in that each additional year of service delays the onset of capital outlay and increases the amortization period in order to build reserves for the inevitable costs of asset refurbishment or replacement. In essence, core services act to extend the service live of an asset by slowing deterioration. The benefit achieved can vary dependent upon the asset class being maintained; overall however, core services forestall costly reactionary expenditures and build a resiliency within any asset class.



Often times the immediate benefits of core services are not understood as they are not plainly visible nor can they be easily quantified or measured. This inadvertently leads to a diminished incentive to invest in core service — this is especially true when political imperatives or financial constraints arise. Deferring core services eventually leads to a self-fulfilling cycle of deterioration; cash outlays for costly refurbishment lead to further reductions in core service budgets thereby creating a the proverbial negative feedback loop.

This is compounded in smaller municipalities where there may be a lack of capacity or know-how and the burden of core services falls directly upon the taxpayer thereby resulting in funds being diverted to the most critical of needs and discretionary services to the detriment of core services.

DOCUMENTATION

Core services provide for a standard of care to the **Village's** infrastructure and public amenities. These services, duly performed and documented, are evidence of the **Village's** duty of care and commitment to safety.

Documentation of core services provides a historical record of the **Village's** duty of care as well as providing effective risk management. In addition, accurate, timely and thorough documentation provides verification that standards, policies, and procedures are being followed, and that regular inspections and the requisite repairs or maintenance are being performed.

“Documentation serves to fully explain, in as much detail as possible, what has taken place. It eliminates the possibility of forgetting the specifics of an event that could help to provide a robust defence” – Barb Szychta

RESOURCE ALLOCATION

The ideology behind core services is the systematic application of engineering knowledge and principles to infrastructure in order to ensure appropriate functionality and to diminish the rate of deterioration. The regular and timely inspection of infrastructure assets coupled with appropriate **core services provides the framework for the Public Works department's annual maintenance plan.** Provision of these services requires resources in the form of budgets and manpower.

Determining the appropriate resourcing for Public Works is a challenge faced by many municipalities – there **is no “right” standard** or ratio of employees to the infrastructure maintained. That said, the impact of an under resourced Public Works department generally leads to an inability to proactively **maintain the municipality's infrastructure with the majority of staff time spent on corrective and emergency repairs** as opposed to scheduled maintenance activities.

Compounding the impact of an under-resourced Public Works department is a gradual but cumulative resource constraint caused by regulatory compliance challenges, which widely result in heavier workloads. Two such examples over the last decade include:

- i. **Water Quality** – changing regulations with respect to water quality have resulted in an increased requirement for staff to sample, monitor, and report upon drinking water parameters.
- ii. **Worker Safety** – tightening regulations and requirements in all aspects of worker safety require additional staff resources to perform the same level of maintenance or require more time to complete tasks.

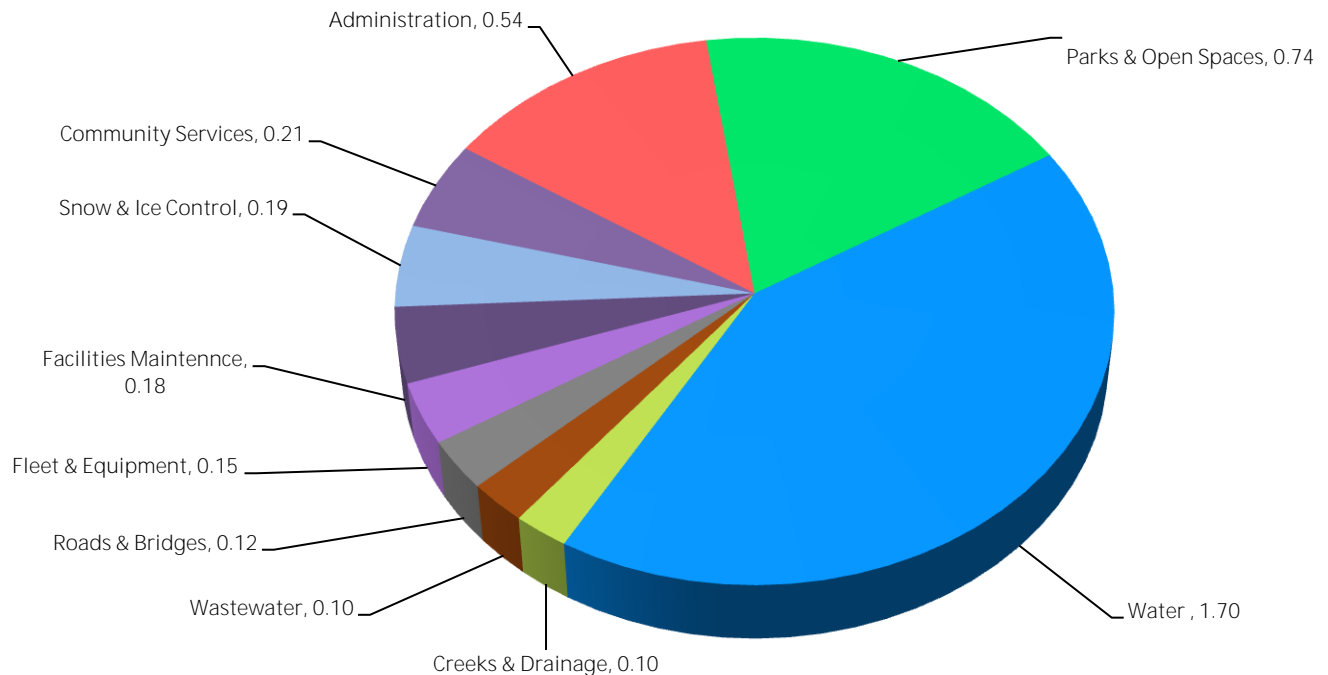
Under this constant and mounting pressure to perform more within existing resource allocations, many municipalities find no other recourse but to defer core services to the detriment of their infrastructure. Through natural progression, the deferment of core services leads to a reactionary maintenance regime with staff waiting for the next failure to occur.

Over the last eight years, the resource allocation in terms of full time equivalents (FTE) for the Village's Public Works department has remained relatively constant at 4.6 FTE, exclusive of the Public Works Manager position.

	2017*	2016	2015	2014	2013	2012	2011	2010	2009	Averages
PW Manager	1	0.9	1	0.5	0.7	1	1	0.9	0.9	0.9
Full-time Staff	4	3.7	4	4	3.6	2	2.3	3.4	3.9	3.4
Part-time Staff	0.8	0.7	0.6	0.9	0.6	1.9	2.6	1.5	0.7	1.1
Staff FTE Count	4.8	4.4	4.6	4.9	4.2	3.9	4.9	4.9	4.6	4.6
Total FTE Count	5.8	5.3	5.6	5.4	4.9	4.9	5.9	5.8	5.5	5.5

The following pie chart indicates staff resource allocations for the 2016 budget year:

2016 Public Works Staff Allocations (FTE)



PUBLIC WORKS SERVICES

The Public Works Department provides a full range of traditional services to the residents of the Village of Lions Bay. While the majority of these services are completed internally through Village staff, select external service providers are used to supplement service delivery efforts. Under these circumstances, Public Works staff assumes the role of contract administrators to ensure these services are delivered in accordance with contractual obligations and to the benefit of the Village of Lions Bay. Public Works services account for 48% of the **Village's** annual operating and capital budget; of this, water accounts for 46%. The following is a general description of the Public Works services provided:

- ◆ Provision and treatment of potable water for domestic use and fire flows
- ◆ Operations and maintenance of the water storage and distribution network
- ◆ Maintenance of bridges, streets, boulevards, and public rights of ways
- ◆ Maintenance and repair of traffic control devices and street lighting
- ◆ Inspection and management of the **Village's** watersheds
- ◆ Maintenance and repair of the Villages storm water management infrastructure
- ◆ Winter street safety including snow and ice control
- ◆ Operations and maintenance of Village owned fleet and equipment
- ◆ Facilities maintenance and repairs for Village owned buildings
- ◆ Preparation of plans and construction supervision of infrastructure improvement projects
- ◆ Engineering review of residential and development proposals
- ◆ Preparations for, and cleanup after, community and special events
- ◆ Maintenance of trees, shrubs, and flower beds
- ◆ Maintenance of the Lions Bay Community School field and parking lot
- ◆ Operation and maintenance of the Kelvin Grove wastewater treatment facility
- ◆ Maintenance and repair of the Kelvin Grove sewer collection network
- ◆ Management and reporting of the **Village's** solid waste and recycling collections services
- ◆ Maintenance and repair of parks and open spaces, parks landscape features, playgrounds, and park facilities

The vast majority of services provided by the Public Works Department can be classed as core services. **Core services are generally segregated into Core Service Areas (CSA)'s or sub-departments** within the Public Works umbrella of services. The **Village of Lions Bay's CSA's** for Public Works are as follows:

- ◆ Administration
- ◆ Roads & Bridges
- ◆ Traffic & Lighting
- ◆ Creeks & Drainage
- ◆ Water Treatment and Quality
- ◆ Water Storage and Distribution
- ◆ Wastewater Collection & Treatment
- ◆ Facilities Maintenance and Management
- ◆ Parks and Open Spaces
- ◆ Fleet & Equipment
- ◆ Waste Collection Services

CSA: ADMINISTRATION

The Administration core service area pertains to the Public Works internal business functions required in carrying out operational tasks. Examples of internal business functions or services include records management, training, and safety meetings while services include such tasks as water quality reporting, payroll entry, and WorkSafe BC accident reporting. In general, this CSA assists in ensuring the **department's** programs and services are carried out efficiently, effectively, within budget, and in accordance with applicable legislation and regulations.

Service: Human Resources [Core – Mandatory]

Employees are a vital component of the infrastructure management system and require consistent and sustained attention in order to remain current with legislation, safety and best management practices. Sustained focus upon employees in this regard builds morale, enhances productivity, and improves overall job satisfaction. Key services include:

- ◆ WorkSafe BC mandated safety talks, safety training, hearing tests, and Occupational Health and Safety (OHS) meetings;
- ◆ Environmental Operators Certification Program (EOCP) mandated training including the requirement for operators to remain current with certifications by completing 2.4 continuing **educational units (CEU)'s every two years**;
- ◆ Regular discussion and review of internal policies, collective bargaining issues, and labour relations matters;
- ◆ Daily pre-work briefings and work planning; and
- ◆ End of day debriefing and records management activities.

Service: Finance & Purchasing [Core – Essential]

Services include time entry, budget preparation, budget forecasting, and analytical support to the Finance Department. This area also pertains to managing the procurement of goods and services and administers contractual services such as the Waste Collection Services agreement. Administrative financial functions also include assistance with and preparation of grant applications, tenders, requests for proposals, requests for expressions of interest, public consultations, and contract management amongst others.

Service: Customer Service [Core – Essential]

The Administrative CSA networks with residents and responds to customer concerns, inquiries via phone and email, as well as through face-to-face visits. Services include the preparation of information for dissemination to the public, providing research, analytical and statistical support to the other departments within the Municipality as well as responding to Council as necessary.

Service: Engineering [Core – Essential]

Engineering functions consist of managing the technical aspects of the **Village's** infrastructure and services. Engineering services key elements include the provision of engineering planning, project design review, cost estimation, construction administration and management, infrastructure condition assessments, quality control and assurance, records management, GIS systems

management and development, environmental review and applications, and implementing municipal services and bylaws relating to infrastructure, operations, and maintenance.

Service: Development [Core – Essential]

Included with the portfolio of the Administrative CSA are development and building permit reviews pertaining to utility servicing and encroachments on the municipal boulevard. Also included within this CSA are drawing reviews and the periodic and final inspections of properties to ensure that developments follows the **Village's** long term plans with respect to storm water management, water supply, sanitary services, and transportation.

CSA: ROADS & BRIDGES

Roads and bridges constitute one of the largest classes of assets **the Village's Public Works** Department manages. Numerous studies have confirmed that roads and bridges that receive continuous and systematic preventative maintenance are in better condition than those left without. Roads and Bridges core service are derived from legislative requirements and proven best management practices. Public Works provides core services relating to the maintenance and repair of the Village's paved and natural roads, bridges, pedestrian facilities, and boulevards.

Service: Bridge Inspection [Core – BMP: NIP]

Continuous and systematic inspection and maintenance **of the Village's bridges will extend the service life of this** asset class. British Columbia does not mandate bridge inspections; however, the Canadian Highway Bridge Design Code does stipulate a best practice that includes annual routine inspections or maintenance inspections in addition to a detailed inspection by professional bridge engineers every five years. To this end, two classes **of inspections are carried out on the Village's bridges:**

- i. Maintenance Inspections – annual inspections are conducted by Public Works staff to determine routine maintenance requirements and to visually inspect for common bridge related problems such as cracking, spalling, and corrosion.
- ii. Professional Inspections – quinquennial bridge inspections are performed by qualified professional bridge inspectors with recommendations for repair **being reviewed and incorporated into the Village's** annual budgeting process.

Bridge inspection and repair activities are governed by the Canadian Highway Bridge Design Code and the **Transport Association of Canada's** guidelines.



Service: Bridge Washing [Core – BMP: NIP]

Annually, the accumulation of roadway debris and salt from winter de-icing activities seeps through joint seals, cracks, and crevices resulting in accelerated deterioration of the concrete and steel elements that constitutes the majority of a **bridge's** structure. Bridge washing will extend the service life of structural concrete and steel components in bridges. Each spring, Public Works staff performs **bridge cleaning on the Village's eight bridges**. Spring cleaning of bridges involves manual sweeping, use of air compressors to blow clear cracks and crevices and pressure washing using dechlorinated water. Environmental best management practices for this activity are dictated by the Ministry of Environment and the Department of Fisheries and Oceans.

Service: Bridge Repairs – Minor [Core – Essential: NIP]

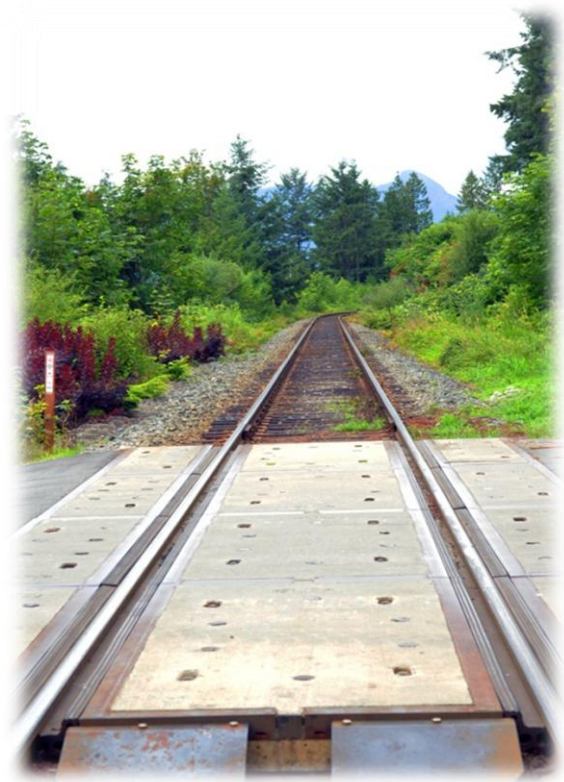
This core service is responsive in nature with activities determined through the bridge inspection and bridge washing services. Repairs include activities such as replacement of wooden guard rails, spot coating of areas exhibiting signs of corrosion, the establishment and maintenance of positive deck drainage, maintaining the functionality of joints, minor sealing or caulking, crack repair, and other minor repairs intended to prolong the functionality of the bridge.

Service: Grade Crossing Inspection & Repairs [Core – Mandatory: PIP]

Each railway grade crossing is inspected biannually. The grade crossing approaches are inspected for deterioration and signage and sightlines are inspected. During the inspection process items such as loose ties, debris within the flangeways, defects to the crossing system, and drainage issues with the rail bed-load are recorded and reported to CN Rail. Maintenance and repairs are scheduled and carried out on an as needed basis in accordance with the Railway Safety Act and Grade Crossing Regulations.

Service: Pedestrian Feature Inspection & Maintenance [Core – Essential: NIP]

The Village of Lions **Bay's** pedestrian features consist of sidewalks on bridges, an asphalt sidewalk in front of the Lions Bay Community School and walking paths along the roadways. Walking paths are demarked by a fog line at the edge of a roadway. Annual assessments are conducted to identify trip and fall hazards with repairs and vegetation management being undertaken as needed. Regular maintenance is on an **"as requested by resident"** basis throughout the year. Public Works conducts an annual inspection of these facilities in the spring with repairs and vegetation management conducted on an as needed basis.



Service: Boulevard Maintenance [Discretionary]

This discretionary service pertains to the maintenance of the public boulevard fronting the residences throughout the Village. In most municipalities, this service is the requirement of the adjacent homeowner with Public Works issuing demand letters for undue care and attention, particularly with respect to sightline and safe passage of vehicles. This service consumes considerable staff resources throughout the growing season.

Service: Shoulder Maintenance [Core – BMP: PIP]

The two primary functions of roads shoulders are to provide side support to the asphalt roadway and to drain water away from the road surface into ditches or other storm water conveyance features. Water left to collect and pool on roadways leads to pavement deterioration such as alligatoring and pothole formation. Maintenance activities include inspections and adjustments to the cross-fall and shape of the shoulder. Failure to provide this service will result in water pooling on top of the road surface and ultimately lead to pavement deterioration and the formation of potholes, edge cracking, and alligator cracking.



Service: Forest Service Road Maintenance [Core – Essential]

Forest service roads facilitate access to the two raw water intakes and key pressure reducing valve stations in the Village. Stormwater management on these roads is controlled by open ditches adjacent to the roadway and cross culverts buried under the road structure. The integrity of these roads relies upon the ability of stormwater to enter the ditch network. Biannual maintenance activities consist of clearing vegetation to facilitate travel, clearing and opening ditches and culverts to facilitate stormwater movement, and grading or filling in of rutted or wash-board areas.

Service: Forest Service Road Rock Scaling [Core – Essential: NIP]

Access to both raw water intakes is along forest service roads within narrow canyons consisting of steep walled slopes that are subject to rock slides. In addition to worker safety concerns, significant slide events block access to this critical water supply infrastructure and pose a risk to the intake lines buried within the roads. Biennial rock scaling involves the scaling and stabilization of the rock faces along both these roads to diminish the risk of slope failures.

Service: Street Sweeping [Core – BMP]

Roadway sediments contain gravel, sands, and finer materials including heavy metals, nutrients, and hydrocarbons that enter natural watercourses. Street sweeping reduces pollutant loading into these receiving waters and minimizes sedimentation within ditches and stormwater conveyance piping. Biannual sweeping of the **Village's** roadways is carried out by a mechanical broom sweeper.

Service: Street Decorations [Discretionary]

This service consists of the annual installation of banners, flags, and decorative lighting at key locations throughout the Village. These decorations provide an ambiance and character to the Village and are a traditional service provided by the Public Works department.



Service: Guardrail & Fence Maintenance & Repair [Core – BMP: PIP]

In steep sloped communities, concrete barriers and guardrails are installed along the side of the road to prevent vehicles from colliding with obstructions such as hydro kiosks or fire hydrants or to keep them from taking a perilous, off-roadway course. Fences and handrails help provide support to pedestrians and delineate unsafe and dangerous features.

Reinforced concrete barriers hardly decay and require minimal routine maintenance. Biennial inspections are carried out to look for vegetative growth that can lead to structural deterioration of the concrete and for destabilization **or undermining of the barrier's** foundations. Repairs or maintenance activities such as pressure washing to remove vegetative growth are conducted as required.

Biennial inspections of fences and handrails consist of visual and structural test for stability, identification of corrosion or deterioration, and for vegetative growth. Repairs to these wood or metal structures are scheduled as required and may include such tasks as painting or staining, replacement or repair of posts, beams, or cross members.

Service: Street Appurtenances & Bus Shelters [Core – BMP: PIP]

Public Works maintains an assortment of street appurtenances such as benches, stairs, concrete planters, information kiosks, and bus shelters. These structures are inspected annually with remedial maintenance measures such as sanding and staining, recoating and corrosion treatment measures, and general cleaning occurring as required.

Service: Pavement Condition Assessment Program [Core – BMP: PIP]

Optimally timed preventative maintenance of asphalt roadways will extend the lifespan of the road. As time passes, preventative techniques lose effectiveness due to the aging process. Corrective measures such as patching and overlays are then used to further extend the life of a roadway until it reaches an advanced stage such that reconstruction becomes necessary. The 2016 Infrastructure Master Plan completed by AECOM provided a pavement quality index of all the roads in the Village. Data derived through this exercise will be assessed and reviewed in order to develop a road network preventative maintenance strategy that will determine asphalt treatment methodology the prioritization of repairs. Pavement condition investigations are optimally carried out on a three to five-year cycle.

Service: Crack Sealing [Core – BMP: NIP]

Crack sealing is a simple but effective method to prolong and protect the life of a road. Cracks or seams in the asphalt are thoroughly cleaned and specialized materials are placed into the cracks to prevent intrusion of water and to reinforce the adjacent pavement. Materials selected depend upon environmental conditions and crack width – include asphalt emulsions, asphalt cement, and different types of rubberized asphalt materials are applied in accordance with strict guidelines and procedures.

Service: Pavement Patching [Core – Essential: PIP]

Patching methodology is dependent upon the types of distress being exhibited in the roadway. Localized failures can be repaired by milling and repaving with little sub-base work required. Larger defects require milling out sections of the asphalt to ensure the sub-base is still functional and then laying new asphalt over the milled area. This contracted service is budget dependent and conducted by contracted services.

Service: Mill & Overlay [Core – BMP: NIP]

As the road surface ages, rehabilitative overlays can be used to provide a new surface using the existing roadway as a base thereby strengthening the roadway and prolonging pavement structure life. Overlays require milling of 25 mm to 50 mm of old asphalt and laying a new course of asphalt over top of the existing road.

Service: Road Reconstruct [Core – Essential: NIP]

Reconstruction is required when remedial measures are no longer effective or other factors such as downhill or soil creep have changed the camber or shape of the road. Partial reconstruction of the roadway involves localized base repairs along with a milling of the existing pavement and replacing it with an overlay. For roads experiencing severe levels of distress, a full reconstruction is required. The old asphalt is completely removed, the sub-base reworked and compacted anew, and a new course of asphalt installed – usually in two separate lifts or layers of between 25-50 mm.

Service: Pest Control & Dead Animal Pickup [Core – Essential]

The **Village's** pest control service is reactive in nature and Public Works staff will only remove pests found on public lands such as parks, playgrounds and Village owned buildings. Small deceased animal carcasses (bird, rodent, raccoon, etc.) are disposed of in the regular waste stream while larger animals are transported into wilderness areas where the carcass is disposed of and allowed to naturally decompose. As incidents warrant, carcasses may be conveyed to a crematorium for disposal.

Service: Street Litter Pickup [Discretionary]

This service is often reactive in nature and generated by public complaints. Public Works staff will collect and dispose of roadside litter and debris. This service is important in maintaining the tidy appearance of Village streets.

Service: Snow & Ice Control [Core – Essential]

Public Works monitors weather forecasts and snow conditions on an ongoing basis and decisions to salt and/or plow are usually temperature-based. Plows are used once accumulations reach 25 mm with initial passes being made to open roadways to traffic flow. Snow and ice control services are prioritized, with heavily trafficked or arterial roadways being the highest priorities. Neighborhood roadways and cul-de-sac streets are cleared as time permits or once the snow event has subsided. Walkways and pedestrian paths to buildings and other facilities such as bridges and stairs are cleared on an as needed basis once time permits. Miscellaneous activities related to this service include preparatory stockpiling of salt and sand, plow and salt spreader servicing and maintenance, and topping up of salt barrels.



Service: Spill Response [Core – Mandatory: PIP]

Public Works responds to spills of known substances and will support Fire Rescue when it comes to unknown or hazardous materials. Initial response involves stopping the leading edge of the spill, blocking access to drainages systems or creeks, and containing the spill using absorbents, pillows, and pads. Spills are reported to the Provincial Emergency Program (PEP) in accordance with the Environmental Protection Act, the Emergency Program Act, and Spill Reporting Regulation. This service is performed on an as needed basis.

Service: Utility Right of Way Maintenance [Core – Essential: PIP]

Right of way (ROW) inspections are conducted annually in the spring with maintenance carried out over the summer months. Municipal **ROW's** are dotted throughout the Village and contain buried infrastructure in the form of water, sewer, or stormwater piping. Keeping **ROW's** clear and accessible is essential to maintaining infrastructure in the event of a blockage or break. Maintenance activities include ditching, surface repair, and vegetation management. **ROW's may act as corridors to facilitate pedestrian traffic between streets or neighbourhoods, in these instances; the ROW is maintained as a trail or pedestrian walkway.**

Service: Roadside Vegetation Management [Core – Mandatory]

Roadside vegetation management is designed to improve line of sight and maintain visibility of stop signs, street name signs and other items related to public safety. Properly managed vegetation is also required to ensure large vehicles such as fire trucks, ambulances, and garbage trucks can safely navigate the **Village's** streets with a clear view of traffic safety devices. Public Works annually trims vegetation at intersections, on corners, and in cul-de-sacs to facilitate the movement of these essential service vehicles throughout the community. Private roadside vegetation in the form of trees, hedges, and shrubs planted within the municipal highway are the responsibility of private residents – Public

Works will issue letters in accordance with regulatory bylaws requiring this material to be trimmed back from the roadway.

Service: Windstorm Cleanup [Core – Essential]

Severe winds generate large volumes of woody debris and green waste. Public Works responds by bucking and chipping all debris. Larger matter is disposed of through contracted green waste services. Upon the end of the storm, and as time allows, roadways are swept using a mechanical broom sweeper. This service is completely reactionary.

CSA: TRAFFIC & LIGHTING

The traffic and lighting core service area pertains to the inspection, maintenance, and repair of all traffic control devices and street lighting in order to provide motorists and pedestrians with safe and efficient roadways. To ensure rapid response to service calls, Public Works keeps an inventory of materials on hand including sign posts, brackets and toggles, and standard signage. Road signage and pavement markings conform to the Transportation Association of Canada (TAC)'s Manual of Uniform Traffic Control Devices for Canada (MUTCDC) which specifies dimensions, retro-reflectivity, symbolism and wording, and line marking paint and thermoplastic specifications.

Service: Sign Installations [Core – Essential]

Traffic signage is installed and maintained to provide clear direction to vehicles, bicycles and pedestrian traffic. Sign installations are based upon a demonstrated need and must conform to the MUTCDC.

Service: Sign Maintenance [Core – BMP: NIP]

The most important aspect of signage is that it should be visible under normal circumstances. To this end, all street and traffic signage within the Village are inspected annually to check for damage, vandalism, appropriate retro-reflectivity properties, and that they are in conformance with MUTCDC. Activities within this core service area include:

- ◆ **Retro-reflectivity checks** – sign retro-reflectivity is measured using a test panel under the natural low lighting conditions experience in the winter months. Retro-reflectivity is affected by sign pole angle with respect to the roadway; as such signs are checked for plumb during the annual inspections. Signs susceptible to specular glare are installed at 93 degrees to the roadway.
- ◆ **Sign cleaning and replacement** – sign retro-reflectivity is impacted by road grime, snow, salt, and fungal growth. As such, Village signs are cleaned on an annual basis at which time signs that have faded or show signs of discolouration are scheduled for replacement. In general, signs have a normal lifespan of approximately 10 years.
- ◆ **Vegetation management** – partial or complete blockage of a sign due to vegetative growth is a common deficiency with respect to visibility. At the time of the annual inspection, vegetation is trimmed back and cleared in order to afford full sign visibility.

Service: Pavement Markings [Core – Essential]

Pavement markings are an essential service and are designed for optimal visibility during wet weather and night-time driving conditions. Paint is applied at a rate of 28-33 liters per lane kilometer and glass beads are added to increase retro-reflectivity. Private contractors are responsible for this service and the quantity of line marking is determined based upon budget allocations. Line marking involves linear (white and yellow lines) and transverse (stop bars, cross walks, hatching and arrows) roadway markings and are governed by the MUTCDC.

Service: Street Lighting Inspections and Maintenance [Core – BMP: NIP]

Street lighting provides safe lighting levels in select areas of the Village. Davit lights installed on wooden hydro poles are maintained by BC Hydro through the Street Light Information Management (SLIM) system. Pole lights in the Kelvin Grove neighbourhood are inspected annually to ensure safe and normal operations. Inspections include checking for vehicular or structural damage, foundation stability, signs of corrosion, checking and lubricating moving parts (bolts, nuts, access panels), and checking for unauthorized 3rd party attachments. Defects are recorded and service requests are made to a 3rd contractor for repairs. Vegetation management consists of clearing vegetation around the base of the mast and clearing vegetation blocking the path of the light.



CSA: CREEKS & DRAINAGE

The creeks and drainage system throughout the Village is designed to rapidly collect and conduct rain and groundwater away from roadways and residences to nearby watercourses thereby alleviating damage and protecting life and property. Over time the use of inferior pipe materials, encroachments, driveway culvert installations with inadequately size pipes, and infilling of open ditches has led to serious defects within this system. This core service area includes labour intensive services such as inspections; periodic sediment removal (ditching); pipe inspection, repair, and replacement; vegetation management, and erosion control.



Service: Creek Inspections [Core – BMP: PIP]

Public Works annually inspects the Village's creek corridors; however, due to the steepness of the terrain, not all areas of the creek can be inspected. The primary objective of these inspections is to

identify areas of slope instability or potential sloughing, snags or deadfall that may block the watercourses or any other defect or potential cause of blockages. Inspection of the creek corridors includes a visual inspection of Ministry of Transportation and Infrastructure (MOTI) structures – defects are directed to the appropriate MOTI area managers.

Service: Drainage System Inspections [Core – BMP]

Water can cause widespread damage to roadways by weakening the asphalt surface and eroding support from the roadway edges. Regular inspections identify when cleaning or repairs are required in order to keep the system functioning at an optimal level. Annual spring inspections identify maintenance requirements which are then conducted over the summer months and in preparation for the fall rains.

Service: Drainage System Sediment Removal [Core – Essential]

Sediments trapped at the bottom of an open ditch contain heavy metals, roadway debris, and other pollutants. Periodic removal of these sediments not only reinstates the design carrying capacity of the ditch but also helps to remove these pollutants before they are flushed downstream into receiving waters thereby negatively impacting water quality. Roadside drainage systems are maintained on an annual basis.

Service: Culvert Inspection & Maintenance [Core – Essential: NIP]

Biennial culvert inspections via contracted closed circuit television (CCTV) service providers are completed to ensure the pipes are sound and continue to function as designed. Headwalls and inlet structures are inspected annually each summer with any repairs being accomplished prior to the fall rains. Culvert remedial measures such as root cutting and culvert clearing are conducted on an as needed basis. Headwalls and inlet deficiencies are corrected as required to maintain functionality.



Service: Catch Basin & Manhole Inspections & Maintenance [Core – Essential: PIP]

Annual inspections are completed to ensure these structures are visible, sound, and continue to function as designed. Remedial measures are conducted on an as needed basis and include activities such as concrete repairs, clearing of debris to ensure easy access, and checking the benching for damage and blockage.

Service: Flood Response [Core – Essential]

Public Works monitors weather forecasts and conditions on an ongoing basis throughout the rainy season. Routine inspections are performed before and during heavy rain events in order to ensure positive drainage and reduce overland flow on roadways and the possibility of loss of life and property. Pre-storm event inspections focus on the ditch line and screens which are designed to trap

larger materials before entering the enclosed culvert. Locating and addressing deficiencies such as obstructions and debris that may get carried downstream and block a culvert is an essential function of these pre-storm inspections.

CSA: WATER TREATMENT & QUALITY

The objective of this core service area is the annual production of between 400 to 600 million litres of potable drinking water which complies with federal and provincial water quality standards while continually meeting system demand at all times. Regulatory monitoring and reporting is required in order to meet the BC Drinking Water Protection Act and the Drinking Water Protection Regulation requirements for the **Village's** two water systems; Magnesia Creek and Harvey Creek. In addition to this, Public Works staff ensures that treated water meets the strict water quality parameters set out in the federal Guidelines for Canadian Drinking Water Quality. Public Works staff assures the safety and quality of the drinking water by monitoring select contaminant levels, turbidity levels, chemical usage, and treated water quality.

Service: Treatment Plant Operation & Maintenance [Core – Mandatory: PIP]

This core service pertains to the operation, maintenance, and repair of the two water production facilities. Raw water is initially treated by Ultraviolet (UV) light in order to inactivate pathogenic organisms and then followed up by the injection of chlorine in a liquid state (sodium hypochlorite) for disinfection. Plants are kept clean and free of clutter in order for operators to safely and effectively perform routine maintenance. Maintenance activities at each water treatment facility include daily instrumentation checks to ensure proper signal, input/output, flow rates, volumes, pressure, etc.; maintenance and adjustments of the chemical feeds and Ultraviolet (UV) light reactors as well as record keeping and reporting activities. Security checks are conducted to ensure locks, hatches, doors, lighting, and alarms are functional. Annual inspections and checks involve excising all valves inside the plant to ensure proper operation; checking and cleaning of control and electrical panels; and general building checks.

Service: Data Management & Recording [Core – Mandatory]

The core service of water treatment quality generates a considerable volume of complex data through a wide variety of monitoring and reporting requirements. This data is generated through instrumentation readings, field testing results, and laboratory analysis of water samples. Data is collected and entered into a central repository for review and analysis. Periodically, the data is manipulated and provided for incorporation into reports and other documentation.

Service: Instrument Calibration [Core – Essential]

The Division provides verification that instruments used to adjust and monitor chemical feed, chlorine residual analysis, and turbidity readings are accurate. Calibration test kits and bench-top equipment is checked in accordance to manufacturer recommendations and standards. Instrumentation includes redundant chemical feed pump, inline chlorine analysers, inline turbidity meters, and UV reactors.



Service: UV Reactor Maintenance [Core – Essential]

Trojan Ultraviolet (UV) light reactors at each of the treatment plants represent a critical disinfection process within the Village's potable water system. Inspection and preventative maintenance tasks are designed and carried out in order to provide the specified dose of UV light to correctly deactivate pathogenic organisms. Periodic manual cleaning of the lamps supplements the automatic cleaning cycle and enhances the effectiveness the lamps. UV lamps are typically replaced when the intensity drops to 70% of the new lamp intensity or after approximately 5000 hours of use.

Service: Chemical Feed Systems Maintenance [Core – Essential]

The chemical feed system provides metered doses of sodium hypochlorite into the water distribution system to maintain chlorine residual. This service involves daily checks include recording chemical use, feed pump operation and settings and injection and supply line checks. Biennial servicing includes chlorine injection pump overhaul and manifold maintenance including replacement of O-rings, check valves, and diaphragms as required. Cleaning of injection and supply lines is conducted on a quarterly basis to prevent crystallization, air bubble, and impurity build up. Chemical ordering, transport, and transfers are managed as part of this core service.

Service: Intakes [Core – Essential]

Due to their criticality and the predisposition of issues from debris torrents and vegetation, raw water intakes are inspected on a weekly basis. The screens on each of the intakes act as the first line of debris removal from the raw water supplies. Inspections ensure the screens are clear and the intakes are operating as designed.

Service: Settlement Chambers [Core – Essential]

Settlement chambers are installed downstream of the intake at each of the two raw water supplies. Settlement chambers provide the second line of defence for sediment and debris by slowing the flow of water such that larger sediments and debris settle to the bottom of the chamber. Periodically, the chambers are cleared of debris through the opening of a bypass valve that facilitates a flushing action to remove materials from the bottom of the chamber. Once a year, a vacuum truck is hired to completely clear the chambers.



Service: Basket Filters & Strainers [Core – Essential]

Inline basket filters and strainers provide a further line of defence against sediment and debris. These appurtenances are located downstream of the settlement chambers, further limiting the amount of debris and sediment that reaches the treatment plants. These inline basket filters are maintained monthly with repairs conducted as required.

Service: SCADA Operation & Maintenance [Core – Essential]

The **Village's** water treatment facilities are monitored and partially controlled through a supervisory control and data acquisition (SCADA) system. Peripheral devices communicate through programmable logic controllers (PLC)'s over standard copper telephone lines to the Works Yard. Daily checks ensure accurate operations – equipment repair, programming, and maintenance are outsourced to a 3rd party. An annual inspection of the overhead telephone lines is conducted in order to ensure they are free of vegetative encumbrances.

Service: Distribution System Monitoring & Protection [Core – Mandatory]

Public Works performs mandated daily, weekly, and biannual water testing throughout the distribution network: Coliform samples are submitted for lab analysis on a weekly basis, daily turbidity levels and chlorine residuals are taken throughout the network, and biannual samples are analysed for metals, salts, disinfection by-products, and other contaminants. Special sampling is conducted as necessary in response to emerging contaminants through Vancouver Coastal Health. Water chemistry and microbiological results are used to optimize chemical feed rates and assess the need to perform distribution system maintenance

Service: Customer Inquiries [Core – Essential]

Public Works responds to complaints of atypical water quality at residences. Additionally, staff answers customer inquiries about water quality and provides the data for the mandated annual Drinking Water Quality Report.

CSA: WATER STORAGE & DISTRIBUTION

This core service area is dedicated to the continuous delivery of treated water at adequate pressure to meet domestic, commercial, and firefighting requirements through a network of water storage facilities, water mains, pressure reducing valves (PRV)'s, and fire hydrants.

Service: Water Storage Facility Inspection [Core – Essential: PIP]

Water storage facilities provide a reserve supply of water to compensate for water use during peak demand periods and for firefighting purposes. Secondary purposes include provision of reserves during intake blockages and detention/contact time for disinfectants to neutralize pathogenic organisms. Water storage facilities are regularly inspected to keep them in good operating condition and to prevent serious problems from developing. Monthly inspection of these



facilities involves:

- ◆ Macro inspection of the tanks interior to look for coating issues, biological film growth, and roof leaks,
- ◆ Exterior tank inspection to look for spalling or deterioration of concrete as well as for signs of corrosion to metal components,
- ◆ Visual inspection of the vents, drains, access hatches to ensure security against intrusion small animals, insects, organics, and
- ◆ Visual inspection of the overflow to determine if water level controls are functioning normally, and
- ◆ Visual Inspection of flow control valves, altitude valves and sensing lines related to filling of the tanks.

Service: Water Storage Facility External Cleaning [Core – BMP: NIP]

Biennial cleaning of the exterior of storage facilities includes pressure washing and scraping to remove moss and other vegetative growth which can accelerate deterioration of the concrete. Spring and summer vegetation control is performed to keep the immediate area clean and free of bushes and trees.

Service: Water Storage Facility Internal Cleaning [Core – Essential]

Biennial cleaning of water storage facilities is performed in order to remove accumulated sediments and biofilm growth. Cleaning occurs during winter months where supply is abundant and consumption is at its lowest. Man-entry is performed in accordance with WorkSafe BC confined space entry procedures. Sediment samples are collected and sampled for metals and other contaminants. Post cleaning inspections of internal surfaces and joints are conducted to ensure proper functioning of the storage facility. Disinfection of the storage facility is completed in accordance with Vancouver Coastal Health requirements. It is important to note that this service may be performed by using divers and a pool-like vacuum to remove sediment buildup; however, post cleaning inspections are not as thorough or effective as with a complete evacuation of the storage facilities.

Service: Water Loss Control Program [Core – BMP]

Water losses account for approximately 26% of the **Village's** daily water production. While it is not possible to completely eradicate water leaks within the system, Public Works strives to minimise water losses through pressure management and active leakage control:

- ◆ **Pressure Management** – Public Works manages water pressure throughout the network via PRV stations. Pressures are kept at the minimum possible in order to extend pipe longevity and reduce leakage,
- ◆ **Active Leakage Control** – Public Works performs annual draw down testing to determine overall leakage rates throughout the **Village's** storage and distribution system. A biannual leak detection program involves checking each residential lot and each fire hydrant using acoustic methods to actively locate leaks. Continual monitoring of consumption rates for spikes in water use may also trigger active leak investigations.

Service: Residential Control Valves & Service Lines [Core – Essential: PIP]

The Village has approximately 529 residential service connections that require inspections and maintenance. Public Works staff ensures that control valves and standpipes are kept visible in order to facilitate leak testing and efficient municipal side replacements. Service leaks identified during biannual leak detection processes are scheduled for immediate repair or replacement by the responsible party.

“Approximately 25 to 30 percent of all drinking water produced in Canada is lost (or unaccounted for) in distribution systems as a result of leakage” – Guy Félis

Service: New Service Installations [Core – Essential]

New services are provided as properties redevelop or as empty lots are developed. Public Works installs new services at a standard size of 38 mm to facilitate residential fire sprinkling. A routine installation involves utility locates, excavation and trenching from the main to the property line, making a tap at the main and running a new service line with a curb stop and stand pipe. The excavation is backfilled, compacted and paved.

Service: Main Repairs [Core – Essential]

The Village has approximately 17 kilometers of water mains that vary in size and materials. Aging infrastructure and shifting ground puts tension on underground water lines and causes them to break or separate. Since main breaks release large volumes of water and can damage personal property or create hazardous situations if not immediately addressed, Public Works strives to respond to main breaks in minutes during normal working hours and within an hour for non-business hours. Main repairs are conducted on an as needed basis and involve locating existing utilities, excavation, repair, backfilling, compaction, and finish paving. AWWA watermain repair and disinfection methods are adhered to and discharge of chlorinated water is treated with sodium thiosulfate to minimize impacts to the environment.

Service: Isolation & Blow-Off Valve Inspections & Maintenance [Core – BMP: PIP]

The Village has approximately 250 inline sliding gate watermain valves throughout the distribution network. This service is designed to ensure valves are visible and operate properly to reduce the area of service disruption during system repairs and to facilitate flushing operations. Valve boxes are located and inspected for damage or defect. Valves are operated to ensure they open completely and seat properly when closed. Repairs are generated through the inspection and exercising program and typically involve replacement of O-rings and gland packing – any issues beyond this require complete valve replacement.

Service: Air Relief Valve Inspections & Maintenance [Core – BMP: PIP]

Air valves provide for the escape of air trapped within the system and also allow air to enter the main when it is draining or when negative pressures occur. Maintenance of air valves includes a biannual check – once in the spring and once in the winter – to ensure positive drainage so that backsiphonage does not occur. Annual maintenance involves rotating the in-service valves with a stock valve. The removed in-service valve is inspected for orifice blockage or float malfunction and repairs are

conducted as necessary. The valve is then cleaned, lubricated, cleared of any corrosion, and recoated, after which, they are put into stock for rotating in-service.

Service: Hydrant Inspection & Maintenance [Core – Mandatory: PIP]

The Village of Lions Bay has 72 hydrants dispersed throughout the distribution network. Biannual inspections of fire hydrants consist of:

- i. Operating Check (springtime inspection)
 - ◆ Removing vegetation for a radius of 1.5 meters around the hydrant,
 - ◆ Checking hydrant caps to ensure easy operation,
 - ◆ Checking and ensuring the isolation valve box is visible and that the isolation valve operates normally,
 - ◆ Checking flow and recording pressures
- ii. Maintenance (fall maintenance)
 - ◆ Disassembly of the fire hydrant, checking threads, seals, etc. and replacing worn parts,
 - ◆ Lubrication of moving parts and reassembly,
 - ◆ Recording pressure and documenting repairs and any issues found,
 - ◆ Painting of hydrants is on an as needed basis.

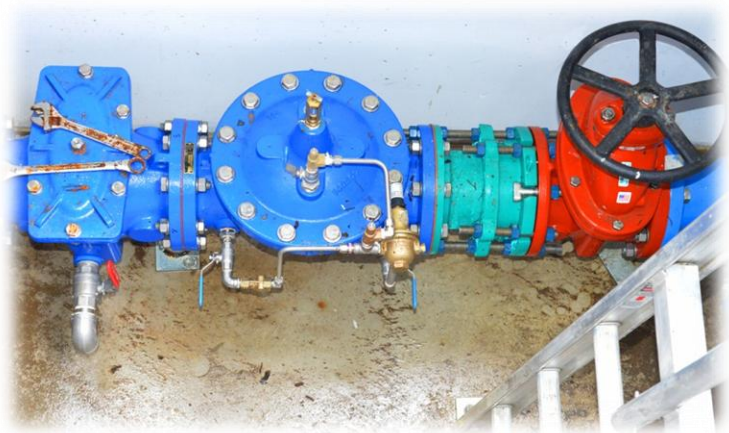
Additional maintenance is required if the hydrant has been in use for firefighting purposes. Inspection and maintenance activities are in accordance with the National Fire Code of Canada and the Underwriters Laboratory.

Service: Pump Station Inspection and Maintenance [Core – Essential]

The Village owns and operates a pressure boosting pump station at Timbertop Drive. This dual pump system is designed to augment water pressure within the distribution system to provide the residents with a continually optimized water supply. Monthly inspections include checking for operational issues such as leakage, corrosion, and overheating. Each pump is rotated into service on a quarterly basis. During this manual switch over, the pumps are inspected for accuracy of pressure output and vibration issue. Basket filters are also cleaned during this quarterly pump switch.

Service: PRV & Fill Station Inspection and Maintenance [Core – Essential]

PRV stations are spread geographically throughout the Village and provide the ability to control system pressures. Fill stations are located at water storage facilities and provide for the rapid filling of these facilities in a safe and controlled manner. Bi-monthly inspections take place to identify leaks or fluctuations in desired pressure – sensing line filters and inline strainers are inspected and cleaned during these inspections.



Annual tear-down and inspection of valves ensures good operating conditions and identifies any corrective maintenance required. PRV and fill station valve maintenance require confined-space safe entry procedures and appropriate staffing levels for maintenance in accordance with WorkSafe BC regulations.

Service: Gas Detector Calibration [Core – Mandatory: PIP]

Gas detectors monitor the atmosphere in confined spaces for such issues as oxygen deficiency and the presence of toxic gases. They are critical to any confined space entry program and must be routinely calibrated and tested. Gas detectors are “bump” tested prior to each **day’s** use and are calibrated monthly using a manufacturer recommended calibration kit

Service: Water Service Turn On/Off [Core – BMP]

Residents may require a turn on or turn off during the course of renovations, plumbing repairs, service line leaks, or for extended absences. Public Works accommodates this service during normal working hours at no cost to the residents. After hours requests are charged at the appropriate rates set out in the **Village’s** bylaws. Improper operation of the residential curb stops or shut-offs can result in line or valve damage.

Service: Water Main Flushing – Water Quality [Core – Mandatory]

Public Works may flush water from a main in response to water quality monitoring results. This service consists of opening hydrants and blow off valves in specific areas of the **Village’s** distribution network until the pre-selected water quality criteria are met. These criteria may include establishing a detectable disinfectant residual, the reduction or elimination of colour or turbidity, or the expulsion of water of poor quality.

Service: Water Main Flushing – Comprehensive Flushing [Core – Mandatory]

A comprehensive biannual flushing campaign is carried out in the spring and fall for the purposes of cleaning the entire watermain system. Predetermined fire hydrants are fully opened to generate the appropriate flows required in order to remove excess sediment and scour the mains. Precautionary measures include pre/post checks of the drainage system and treatment of discharged chlorinated water with sodium thiosulfate to minimize impacts to the environment. Water samples are taken at the start of flushing and at 5 minute increments to analyze for turbidity and chlorine residual. All sample results are recorded and analyzed for future consideration.

Service: Watermain Bridge Inspection and Maintenance [Core – BMP: PIP]

Watermain bridges or pipe crossings facilitate the movement of water through a pipeline across natural barriers such as a creeks or ravines. The Village has several watermain bridges that are suspended under bridges or extend across creeks as dedicated watermain bridges. A biannual inspection of these facilities is conducted to identify corrosion or settlement of the structures.

CSA: WASTEWATER COLLECTION & TREATMENT

This core service area pertains to the operation, maintenance, and repair of the sanitary sewer collection and wastewater treatment plant (WWTP) servicing the residents of the Kelvin Grove neighbourhood. The Village of Lions Bay possesses a permit enabling the discharge of treated wastewater into the receiving waters of Howe Sound.

Service: Inspection Chamber Maintenance [Core – BMP: NIP]

Sewer inspection chambers provide access to the lateral lines for inspection or unstop activities. Inspection chambers also provide for a quick determination of private site blockages since a blockage upstream of the inspection chamber will not facilitate the passing of effluent past the inspection chamber. That said, a blockage downstream of the inspection chamber does not imply Village complicity in the blockage but merely indicates a blockage on the municipal side of the service line.

Service: Lateral Inspection [Core – BMP: NIP]

CCTV inspections of the municipal side of a sewer service lateral are a best management practice designed to locate and identify issues prior to the formation of blockages. Lateral impediments can consist of a buildup of sediment; fats, oils, or grease; root intrusion through joints; or structural defects in the lines itself. Public Works conducts annual sewer lateral inspections each summer with defects or deficiencies on the public side repaired prior to the fall.

Service: CCTV Inspection [Core – BMP: NIP]

Similar to lateral inspections, main line inspections are a best management practice designed to locate and identify main line issues prior to the formation of blockages. Triennial closed circuit televising (CCTV) of the main sewer lines is conducted to verify the condition of sewer mains and to look for the development of issues including root intrusion, line separation, and/or accumulation of debris.

Service: Sewer Main Repairs [Core – Essential]

Sewer repairs are conducted on an **'as needed basis'** and predominantly through the investigative CCTV process. Flow restrictions caused by fully or partially collapsed pipe, root infestation, or any other anomalies will instigate sewer line repair. Sewer line repairs typically require full depth excavation of the line and replacement of the damaged portion of line.

Service: Manhole Inspection & Maintenance [Core – Essential]

Manhole inspections are conducted annually in order to identify debris, obstructions, infiltration, or any structural deterioration. The program involves inspection of the manhole frame and lid, barrel, ladder rungs, and benching. Deficiencies are scheduled on an **'as needed basis'** and may include remedial measures such as parging, or sealing of cracks and joints to prevent infiltration or cleaning obstructions from the benching.

Service: Sewer Lateral or Main Blockage Unstop [Core – BMP]

In the event of a sewer blockage on the municipal side of a lateral, Public Works will first attempt to clear the blockage using a sewer snake or other manual line clearing tools. If this procedure proves

unsuccessful, Public Works will contract a third party to vacuum or hydra-jet the lateral. Once cleared, the line is inspected for defects or damage and repairs are scheduled if required. Any discharges or sanitary sewer overflows (SSO)'s are reported to the Provincial Emergency Program. After remedial measures have alleviated the problem, the affected area is cleaned up and treated with calcium hypochlorite for disinfection.

Service: New Service Lines [Core – Essential]

New sanitary sewer lines are installed as part of the building permit process. Requests for new lines to a lot with an existing service must also include a disconnection and cap at the invert of the sewer main. New services are installed complete with a sanitary inspection chamber at the property line. The cost for this service is borne by the requestor.

Service: WWTP Inspection & Monitoring [Core – Mandatory]

The Village of Lions Bay's secondary WWTP consists of a rotating biological contactor (RBC) plant situated within Kelvin Grove Park. The treatment process utilizes a rotating shaft that spins a fixed media disk in a wastewater well. Bacterial growth attaches to the disks and the rotation of the shaft alternately exposes this biomass to wastewater and then oxygen in the atmosphere. Biweekly inspections are performed to check for damage to the media disks, misalignment or excessive shaft deflection, motor torque loading (excessive heat), and for clogging of weirs or orifice areas. At the time of inspection, grease fittings and bearings are lubricated. Inspection and maintenance activities are mandated and governed by the operating permit as well as a variety of legislative acts and regulations.



Service: WWTP Dewatering and Maintenance [Core – Mandatory]

As the RBC media discs rotate through the wastewater and atmosphere, bacterial decomposition of the organic components of the wastewater takes place. This creates additional bacterial growth which separates or sloughs off the media discs and settles at the bottom of the wastewater well. As this **material builds up, it reduces the effectiveness of the bacteria on the RBC's by competing with the resources contained within the wastewater.** Annual dewatering or removal of this material is essential in maintaining the effectiveness of the treatment process. Annual dewatering of the plant involves the removal of the roof, pressure washing of the interior well, and vacuuming out the sediment accumulations from the bottom of the wastewater well. During this maintenance activity, a detailed inspection of the bearings, shaft, motor and media disc occurs with repairs or maintenance performed as needed.

Service: WWTP Flow Meter Inspection and Calibration [Core – Mandatory]

This service involves a monthly inspection of the flow measurement weir, transducer, and data logger. Calibration is performed as required and monthly data is downloaded and incorporated into a tracking spreadsheet. The meter room is kept clean and free of clutter in order for operators to safely and effectively perform maintenance activities.

Service: WWTP Effluent Quality Monitoring and Reporting [Core – Mandatory]

Quarterly sampling of treated effluent occurs in accordance with the Kelvin Grove WWTP operating permit. Quarterly sampling of effluent for five-day biochemical oxygen demand and total suspended solids are recorded and submitted via annual report to the Ministry of the Environment due in May of each year.

Service: WWTP Outfall Inspection [Core – Mandatory]

Quinquennial inspection of the WWTP effluent outfall pipe, per the Kelvin Grove WWTP operating permit, is performed by certified divers or remotely operated vehicles. Video footage of the inspection is reviewed and analyzed with remedial measures budgeted and scheduled as required.

Service: Beach Water Quality Testing & Reporting [Core – Mandatory]

Water quality at the **Village's** three public beaches is tested on a weekly basis during the summer months between May and September. Samples are taken to a Vancouver Coastal Health (VCH) laboratory and tested for the presence of E. coli. If elevated counts are detected VCH will advise Public Works to post warning signs indicating the water does not meet health standards for recreational water use including swimming or wading.

CSA: FACILITIES MAINTENANCE & MANAGEMENT

Public Works provides facilities operations and maintenance for the **Village's** public buildings to ensure these assets are safe, clean and well maintained for residents and employees. These facilities are a key element in the **Village's** overall infrastructure and asset management strategy. Similar to other Public Works infrastructure assets, core services pertaining to facilities act to mitigate deterioration and prolong asset life.



Service: Building Inspection - Internal [Core – BMP: NIP]

Public Works conducts annual visual inspections of each facility throughout the Village. Inspections include core components of the facility:

- ◆ Structure – concrete, steel and wood components
- ◆ Roof system -- surface material, condition, age and remaining useful life
- ◆ Building envelope – roof and sidewalls including windows and doors

- ◆ Interior finishes – floors, walls and ceilings
- ◆ Heating, ventilation and air conditioning
- ◆ Electrical system and components
- ◆ Plumbing system and fixtures
- ◆ Fire suppression and life safety systems
- ◆ Landscaping
- ◆ Hardscape - walks, roadways, drives, parking areas
- ◆ Storm water drainage

Defects are documented and repairs scheduled.

Service: Building Inspection - External [Core – BMP: NIP]

Managed by Public Works, a triennial building survey and assessment is conducted on each Village facility by external parties. Full inspections and assessments check for structural problems or defects, as well as to assess and value the remaining service life and building value. Information gathered facilitates accurate asset valuation and long term replacement planning.

Service: On Demand Building Maintenance [Core – Essential]

Building and system repairs are conducted on demand via internal request from Village staff or through facility users. General repairs within the skill set of Public Works will be performed as needed or scheduled at the earliest available time. Outside contractors are hired when specialized skills are needed to complete necessary maintenance or repairs.

Service: Building Preventative Maintenance [Core – BMP: PIP]

Proactive preventative maintenance programs ensure that the building envelope and equipment are kept in good operating condition and that fulfill any warranty requirements. Specific programs include such programs and activities as roof and gutter cleaning, pressure washing and painting, vegetation management, septic field cleaning, and so on. Maintenance activities within the Public Works skill set are routinely scheduled and performed. Outside contractors are hired to perform specialized preventative maintenance tasks.

Service: Emergency Operations [Core – Essential]

Auxiliary generators are located at the Klatt Building, the Works Yard, and at each water treatment plant. These units provide backup power in case of loss of electrical power to the sites. Operations and maintenance includes quarterly exercising and inspection of transfer switches and automatic start up. Annual preventative maintenance including load testing is performed by an outside contractor.



Service: Community Event / Volunteer Support [Discretionary]

Public Works staff prepares facilities for special community events and activities such as the Halloween Fire Works Display or the Polar Bear Plunge, community festivals, and large gatherings. Services are predominantly provided through in-kind contribution and Council approval.

Service: Works Yard Maintenance [Core – BMP]

The **Public Works Yard is the operations nucleus for the department's day to day activities**. This facility acts as a storing house for consumables of all types including, but not limited to: electrical fittings; plumbing and building supplies; road salt; spare signage and parts; pit materials such as gravel and sand; lumber; fuel; equipment; and vehicles. Regular maintenance of the facility and grounds involves general cleaning, lighting checks, electric gate maintenances, fuel pump and storage tank maintenance, septic system clean out and maintenance, gutter cleaning, fence repairs and so on.

CSA: PARKS & OPEN SPACES

This core service area tends to the maintenance of the **Village's** parks, playgrounds, tennis court, and open spaces. Services include regularly scheduled activities as well as demand driven responses to customer requests or vandalism. Park facilities are visited on a scheduled basis during the summer months with particular attention being paid to restroom cleaning, general park upkeep, litter removal, and vandalism repairs.

Service: Park Inspections & Litter Clean-up [Core – BMP]

During peak usage periods the Village's main beach parks are inspected daily for deficiencies and litter control. This service is important ensuring visitor safety and maintaining a general tidy appearance of the park. Excess litter is removed, garbage bins are checked for capacity, and personal belongings are collected and stored for potential retrieval. Any safety related issues are corrected immediately.

Service: Turf Maintenance [Core – BMP: PIP]

Grassed areas are mowed and edged on a regularly scheduled basis throughout the summer and on an as needed basis in the fall and spring. Annual maintenance activities include:

- ◆ Hollow tine aeration followed by sand topdressing each fall
- ◆ Over-seeding, fertilization, and lime applications each spring

Service: Irrigation System Operation & Maintenance [Core – BMP]

Irrigation systems are controlled by a timer with water being applied as needed to maintain the driest conditions possible to support turf and planted areas. Irrigation heads are adjusted and repaired as required.

- ◆ **System start up** – each spring, prior to the onset of drier weather conditions, Public Works will **energize and test the Village's irrigation systems**. Coverage is checked and adjustments are made as required.
- ◆ **Winterizing** – each fall, as the rainy season approaches, Public Works will de-energize and turn off the **Village's irrigation systems**. Prior to the onset of winter conditions, the remaining water within the irrigation systems is blown out using compressed air. This prevents damage to the line caused when water freezes and expands within the pipes.

Service: Planted Beds & Landscaped Areas [Core – BMP]

This service is directed at removing undesired vegetation or weeds that compete with planted materials, such as flowers and shrubs, for nutrients and water. If left unchecked, undesired vegetation can get out of control and take over a bed resulting in a shabby unkempt appearance. Regularly scheduled maintenance occurs throughout the growing season and includes activities such as:

- ◆ Hard edging and mulching annually each spring
- ◆ Monthly pruning and weeding to remove undesirable growth
- ◆ Annual Planting of perennial and mix plantings within flower boxes and ornamental pots



Service: Tree Pruning & Maintenance [Core – BMP]

- ◆ Park and Specimen Trees – pruning of trees increases the overall plant health. Removal of dead and decaying branches helps to prevent insect and decay organisms from infecting the tree. Thinning the canopy increases sunlight penetration and helps to reduce rot and decay as well as to stimulate root growth thereby creating a healthy and strong structure.
- ◆ Generic Village Trees – Pruning and maintenance of all municipal trees within the village are conducted on an “**on demand**” basis in response to trees that poses a safety threat. Pruning may occur throughout the year in response to facility, pedestrian or motorist impediments.

Service: Playground Inspection & Repair [Core – Mandatory: PIP]

Playground inspections are conducted in accordance with the Canadian Standards Association guidelines. Detailed inspections of each play structure and surfacing occurs twice a month during the peak season between April and October, and then monthly for the remainder of the year. Maintenance activities include:

- ◆ Tightening of loose fittings, fasteners, and clamps,
- ◆ Ensuring that playground safety surface material is evenly distributed throughout the playground, with low or dished out areas filled in and leveled
- ◆ Playground components are replaced as required.



Service: Tennis Court Maintenance [Core – BMP]

Tennis courts are readied for use each spring and are inspected and maintained on a weekly basis for the duration of the tennis season (April to November). At the close of the season, nets will be removed and the courts will be closed for the winter months. Maintenance activities include:

- ◆ General inspection and clean-up of litter receptacles (weekly)
- ◆ Replacement of nets and cables (as needed basis)
- ◆ Fence inspection and repairs (as needed)
- ◆ Pressure washing of the surface area (annually or as needed)

Service: Trail & Walkway Inspection & Maintenance [Core – Essential: NIP]

The Centennial Trail, Kelvin Grove Beach Park trails, and residential connector paths are inspected on a monthly basis and include checks of all park amenities such as hand rails, stairs, pedestrian bridges, signage, and fencing. Public Works will respond to public safety or security issues on an as needed basis. Trails will also be inspected after significant weather events where erosion or washout conditions may be expected. Trail surfaces are maintained in a natural state and drainage is installed as required to keep the walking path clear. Due to inclement weather or site specific conditions, tree roots, fallen limbs, or rocky materials may be present upon the walking surface. During winter months snow or ice control is not conducted, as such, trails can remain snow or ice covered for extended periods.

Service: Restroom Maintenance [Core – Essential]

Restrooms at Kelvin Grove and Lions Bay Beach Parks are in operation from May 1st through to September 15th annually. Restrooms may be opened on an as needed basis in response to special or programmed events. Cleaning, litter removal, and restocking of paper products is performed under contract with Public Works performing checks several times a week to ensure services are performed. Building lighting, security, and plumbing systems are repaired on an as needed basis.

Service: Vandalism / Graffiti [Core – BMP]

Public Works strives to keep public areas clean and free of vandalism or graffiti. Upon notification or detection of vandalism, staff will promptly take appropriate corrective action to repair the damage. Graffiti will be promptly removed. Removal method may include soda washing, power washing, chemical removal methods, or painting.

Service: Furniture Maintenance [Core – BMP: PIP]

Lions Bay's parks open spaces contain a variety of furniture placed to enhance visitor experience. Items include benches, planters, bike racks, litter receptacles, picnic tables, and gazebos. Park furniture is inspected annually with repairs being conducted as required. Regular maintenance activities include sanding and staining, cleaning, painting, and component repairs.

Service: Beach Maintenance [Core – BMP]

Public Works maintains the picturesque sand beach located on the foreshore of the Lions Bay Beach Park. Annual maintenance activities involve the removal of driftwood and logs, the addition of sand, and the deployment a log boom and floating dock to demarcate a public swimming area. Public Works conducts annual inspections of the foreshore retaining walls to identify any winter storm damage. Repair works are conducted in conjunction with Department of Fisheries and Oceans (DFO) requirements for the protection of aquatic environments.



Service: Invasive Species Management [Core – BMP: NIP]

Invasive plant species upset local ecosystems by displacing native species, degrading habitat, and disrupting natural ecological processes. The two species of particular concern in the Village of Lions Bay are giant hogweed and Japanese knotweed:

- ◆ **Giant Hogweed:** the clear water sap of this invasive plant contains photoactive toxins that can cause severe burns skin burns when exposed to sunlight. Symptoms occur within forty-eight hours of exposure and consist of painful blistering of the skin.
- ◆ **Japanese Knotweed:** the large rhizomes of this invasive can reach lengths of up to twenty meters and are strong enough to penetrate concrete and asphalt. Throughout BC Japanese knotweed has caused damage to buildings, houses, roadways and railways.

Public Works uses WorkSafe BC approved methods when dealing with giant hogweed. The only effective measure against Japanese knotweed is stem injection using a pesticide. Application requires licensing and certification. Stem injection treatments are required annually and it can take up to three treatments to fully eradicate a single plant.



Service: Kayak Rack Maintenance [Discretionary]

The Village maintains a large wooden kayak storage facility located at the Lions Bay Beach Park. The structure is inspected annually each spring with repairs being made as required. Periodically, the unit is sanded and stained to increase longevity.

CSA: FLEET & EQUIPMENT

This core service area pertains to the maintenance and repair of the **Village's** fleet and equipment inventory which is foundational to the core services provided by the Public Works department. Fleet and equipment is kept clean and well maintained to ensure operability at times of emergency.

The Village's fleet and equipment is diverse and complex and includes such equipment as a small excavator, a skid-steer loader, a man-lift truck, chipper, and various smaller equipment and hand tools. Fleet operations are regulated through federal and provincial legislation. Inspections and operating permits are **managed through the Province's Commercial Vehicle Safety and Enforcement branch.**



Service: Preventative Maintenance & Servicing [Core – Mandatory]

Preventative maintenance is the cornerstone of vehicle longevity and guarantees reliable fleet and equipment at times of emergency. Public Works operates a single bay repair shop for routine maintenance tasks and outsources major inspections and repairs. Services conducted in-house include:

- ◆ General inspections and servicing (oil & lube)
- ◆ Tire repair and replacement including installation of winter tires
- ◆ Washing and detailing
- ◆ Minor electrical repairs and battery replacements

Outsourced activities include:

- ◆ Regulated annual safety inspections
- ◆ Lease vehicle maintenance and service
- ◆ Larger, more intricate services or repairs
- ◆ Annual fuel tank cleaning & internal tank polishing

Service: Fleet & Equipment Repairs [Core – Mandatory]

Fleet and equipment repairs are driven by normal aging and conditions of use. Routine inspection and maintenance highlights issues and problems that require repair. More intricate and skill oriented repairs and servicing are contracted out. Repairs include items such as:

- ◆ Transmission or engine repairs or servicing
- ◆ Drive train or axle repairs or servicing
- ◆ Brake/rotor replacement or turning
- ◆ Exhaust system repair or maintenance

Service: Manufacturing and Custom Fabrication [Core – Essential]

Public Works manages a fabrication shop complete with welders, grinders and a drill press. This service is essential in the maintenance and operation of all vehicles, equipment as well as for the **repair and maintenance of the Village's metal infrastructure**. Examples of services include:

- ◆ Repair of metal handrails and gates
- ◆ Fabrication and repairs of water sluice gates.
- ◆ Custom fabrication of water storage facility access hatches
- ◆ Structural support and repair of snow plows and salting equipment

CSA: WASTE COLLECTION SERVICES

This core service area pertains to the collection, disposal, and recycling of the Village of Lions Bay's residential wastes. Services include biweekly collection of waste and weekly collection of glass, organics, and recycling. Collection services are managed by Public Works and the service is provided via a contractual agreement with a service provider.

Service: Christmas Tree Disposal [Discretionary]

This historical service is provided by Public Works on an annual basis. Residents are able to deposit trees at the CN parking lot on Lions Bay Avenue between January 1st and the second Monday of the month at which time they will be chipped up by Public Works staff. Annually over a hundred Christmas trees are disposed of through this service.

Service: Doggie Bag Dispensers [Discretionary]

The Village of Lions Bay provides dog bag dispensers and waste collection cans at strategic locations throughout the community. This service is valued by both dog owners and non-dog owners, and **helps keeps the Village's streets, parks, and open spaces clean. Public Works purchase and restocks the dispensers on a regular basis with the waste bins being emptied by the Village's waste control contractor.**

REFERENCES

- Anne Jackson. (2016, January 26). *Role of Public Works in Infrastructure and in our Communities*. Retrieved December 13, 2016, from Canadian Public Works Association: <http://cpwa4.cpwa.net/>
- APWA. (2016). *What Is Public Works*. Retrieved 12 2016, from American Public Works Association: http://www3.apwa.net/discover/what_is_public_works
- David Albrice. (2000). *Deterioration Model*. Retrieved December 13, 2016, from Asset Insights: http://www.assetinsights.net/Glossary/G_Deterioration_Model.html
- Federation of Canadian Municipalities . (2003, 04). Developing Levels Of Service: A Best Practice. *The National Guide To Sustainable Municipal Infrastructure* .
- Federation of Canadian Municipalities. (2003, 04). Timely Preventive Maintenance For Municipal Roads — A Primer . *National Guide To Sustainable Municipal Infrastructure* .
- Félio, G., & Mareschal, R. (1998). *Canadian Municipal Infrastructure Solutions: A Practical Technical Guide for Municipalities*. Ottawa, Ontario: Federation of Canadian Municipalities.
- Hein, D. P., & Croteau, J.-M. C. (2004). *The Impact of Preventive Maintenance Programs on the Condition of Roadway Networks*. Québec City, Québec: Transportation Association of Canada.
- John Brodhead, J. D. (2014, October 01). *Crisis and Opportunity: Time for a National Infrastructure Plan for Canada*. Retrieved December 13, 2016, from Canada 2020: <http://canada2020.ca/crisis-opportunity-time-national-infrastructure-plan-canada/>
- Ministry of Municipal Affairs and Housing. (2004). *A Guide to Service Delivery Review for Municipal Managers*. Ontario: Ontario Ministry of Municipal Affairs and Housing.
- MRPA. (1999). *An Overview of Preventive Maintenance Concepts and Practices*. Retrieved 12 13, 2016, from Michigan Road Preservation Association: <http://www.m-rpa.org/overview.htm>
- The Institute On Governance. (March 1999). *Public Works in Small and Rural Municipalities*. Ottawa, Ontario: The Institute On Governance.
- WEF. (2016, 12 13). *Implementing O&M Best Practices*. Retrieved from World Economic Forum: <http://reports.weforum.org/strategic-infrastructure-2014/1-implementing-om-best-practices/1-5-extend-asset-life/>
- Wick, R. (2001). Rotating Biological Contactors. In C. S. University, *Operation of Wastewater Treatment Plants, Vol. I*. Sacramento, CA: Sacramento Foundation.

LEGAL FRAMEWORK & **BMP'S**

CSA: ADMINISTRATION

- ◆ *Local Government Act* [RSBC 2015]
- ◆ *Community Charter* [SBC 2003]
- ◆ *Workers Compensation Act* [RSBC 1996]
- ◆ *Environmental Data Quality Assurance Regulation* [BC Reg. 90] – Operator Training
- ◆ *Drinking Water Protection Act* [SBC 2001] – Operator Training
- ◆ *Drinking Water Protection Regulation* [BC 2003] – Operator Training
- ◆ *The Ground Water Protection Regulation* [BC Reg. 2004] – Operator Training
- ◆ *Employment Standards Act* [RSBC 1996]
- ◆ *Workers Compensation Act* [RSBC 1996]
- ◆ *Hazardous Products Act* [RSC 1985]
- ◆ *Employment Equity Act* [SC 1995]
- ◆ *Canadian Human Rights Act* [RSC 1985]

CSA: ROADS & BRIDGES

- ◆ *Transportation Act* [SBC 2004]
- ◆ *Motor Vehicle Act* [RSBC 1996]
- ◆ *Railway Act* [RSBC 1996]
- ◆ *Railway Safety Act* [RSC 1985]
- ◆ Guideline for Bridge Safety Management, Transport Canada – BMP
- ◆ Canadian Highway Bridge Design Code CAN/CSA S6-14 – BMP
- ◆ Bridge Standards and Procedures Manual, BC Ministry of Transportation & Infrastructure – BMP
- ◆ Canadian Geometric Design Guidelines, Transportation Association of Canada – BMP
- ◆ Guide to Bridge Repair and Management, Transportation Association of Canada – BMP
- ◆ Guide to Bridge Repair and Rehabilitation, Transportation Association of Canada – BMP
- ◆ Public Works Association of America, BC Chapter – BMP
- ◆ Canadian Public Works Association – BMP

CSA: TRAFFIC & LIGHTING

- ◆ Canadian Electrical Code CSA 22.1-15
- ◆ Roadway Lighting ANSI/EXNA RP-8-14 Illuminating Engineering Society – BMP
- ◆ Manual of Uniform Traffic Control Devices for Canada (2014) TAC – BMP

CSA: CREEKS & DRAINAGE

- ◆ *Drainage, Ditch And Dike Act* [RSBC 1996]
- ◆ *Dike Maintenance Act* [RSBC 1996]
- ◆ *Fisheries Act* [RSC 1985]
- ◆ *Environmental Management Act* [SBC 2003]
- ◆ *Migratory Birds Convention Act* [SC 1994]
- ◆ *Species at Risk Act* [SC 2002]

- ◇ *Transportation Act* [SBC 2004]
- ◇ *Emergency Program Act* [RSBC 1996]
- ◇ *Health Act* [RSC 1985]
- ◇ *Wildlife Act* [RSBC 1996]
- ◇ American Water Works Association – BMP
- ◇ Canadian Public Works Association – BMP
- ◇ American Public Works Association – BMP

CSA: WATER TREATMENT & QUALITY

- ◇ *Drinking Water Protection Act* [SBC 2001]
- ◇ *Drinking Water Protection Regulation* [BC 2003]
- ◇ *Water Quality Guidelines* [BC 2016]
- ◇ *Guidelines for Canadian Drinking Water Quality* [2014]
- ◇ *The Ground Water Protection Regulation* [BC Reg. 2004]
- ◇ *Water Act* [RSBC 1996]
- ◇ *The Health Hazards Regulation* [BC Reg. 2011]
- ◇ *Public Health Act* [SBC 2008]
- ◇ Vancouver Coastal Health Regulatory Requirements
- ◇ American Water Works Association Standards and Guidelines – BMP
- ◇ Water Environment Foundation – BMP
- ◇ World Health Organization – BMP

CSA: WATER STORAGE & DISTRIBUTION

- ◇ See Water Treatment & Quality (above)

CSA: WASTEWATER COLLECTION & TREATMENT

- ◇ *The Municipal Wastewater Regulation* [BC Reg. 2012]
- ◇ *Environmental Management Act* [SBC 2003]
- ◇ *Public Health Act* [SBC 2008]
- ◇ *Fisheries Act* [RSC 1985]
- ◇ *Environmental Management Act* [SBC 2003]
- ◇ *Migratory Birds Convention Act* [SC 1994]
- ◇ *Species at Risk Act* [S.C. 2002]
- ◇ *Transportation Act* [SBC 2004]
- ◇ *Emergency Program Act* [RSBC 1996]
- ◇ *Health Act* [RSC 1985]
- ◇ *Wildlife Act* [RSBC 1996]
- ◇ *Sewerage System Regulation* [BC Reg. 2010]
- ◇ *Wastewater Systems Effluent Regulations* [SOR 2012]
- ◇ *The Health Hazards Regulation* [BC Reg. 2011]
- ◇ *The Waste Discharge Regulation* [BC Reg. 2004]
- ◇ *Canadian Environmental Protection Act* [SC 1999]
- ◇ Vancouver Coastal Health Regulatory Requirements

- ◆ Canada-Wide Strategy for the Management of Municipal Wastewater – BMP
- ◆ American Water Works Association Standards and Guidelines – BMP
- ◆ Water Environment Foundation – BMP
- ◆ World Health Organization – BMP

CSA: FACILITIES MAINTENANCE & MANAGEMENT

- ◆ *BC Building Code (BCBC) 2012*
- ◆ *BC Fire Code (BCFC) 2012*
- ◆ *BC Plumbing Code (BCPC) 2012*
- ◆ *National Building Code (NBC) 2015*
- ◆ *National Fire Code (NFC) 2015*
- ◆ *National Plumbing Code (NPC) 2015*
- ◆ *National Energy Code for Buildings (NECB) 2015*
- ◆ *Canadian Electrical Code CSA 22.1-15*

CSA: PARKS & OPEN SPACES

- ◆ *Environmental Management Act [SBC 2003]*
- ◆ *Migratory Birds Convention Act [SC 1994]*
- ◆ *Species at Risk Act [SC 2002]*
- ◆ *Wildlife Act [RSBC 1996]*
- ◆ *The Ground Water Protection Regulation [BC Reg. 2004]*
- ◆ *Fisheries Act [RSC 1985]*
- ◆ BC Recreation and Parks Association – BMP
- ◆ Canadian Safety Association (CSA) Standards – BMP

CSA: FLEET & EQUIPMENT

- ◆ *Commercial Transport Act [RSBC 1996]*
- ◆ *Transport Of Dangerous Goods Act [RSBC 1996]*
- ◆ *Transportation Act [SBC 2004]*
- ◆ *Motor Vehicle Act [RSBC 1996]*
- ◆ *Transportation of Dangerous Goods Act [SC 1992]*
- ◆ *Motor Fuel Tax Act [RSBC 1996]*
- ◆ *Motor Vehicle Act [RSBC 1996] - Division 25 Vehicle Inspection and Maintenance*
- ◆ *Motor Vehicle Act [RSBC 1996] - Division 37 Safety Code*
- ◆ *National Safety Code Standard - Division 10 - Cargo Securement*

CSA: WASTE COLLECTION SERVICES

- ◆ *Organic Matter Recycling Regulation [BC Reg. 2002]*
- ◆ *Environmental Management Act [SBC 2003]*
- ◆ *Public Health Act [SBC 2008]*
- ◆ *Recycling Regulation [BC Reg. 2014]*
- ◆ *Hazardous Waste Regulation [BC Reg. 2016]*

CORE SERVICE LEVELS

VILLAGE OF LIONS BAY - CORE SERVICE LEVELS

			MANHOURS		
			Annual Service Estimate (hrs)	Previous Year Actual	Targeted Level
CSA: ADMINISTRATION			1532	1123	
Human Resources [Core – Mandatory]	EOCP & WSBC mandated training, labour relations matters, safety talks, OHS meetings, daily work briefings & debriefings.	Enhanced employee engagement and job satisfaction levels which result in increased productivity and commitment to the Village. Increased safety awareness reduces risk of injuries.	750		
Finance & Purchasing [Core – Essential]	Preparation of tenders, requests for quotes, time sheet entry, research product specs, review invoicing, ordering of materials, and documentation / records management.	Ensures compliance with Village purchasing policies and that the Village obtains the best value for dollar spent. Accurate, efficient record keeping ensures accountability and cost tracking.	250		
Customer Service [Core – Essential]	Response to internal and external customer requests, research, preparation of communication pieces, meeting with residents, reviewing issues and problem solving.	Ensures high level of customer satisfaction and builds relationships between Public Works and the Residents of the Village.	416		
Engineering [Core – Essential]	Technical services pertaining to proposed public works projects, engineering design reviews, ensuring compliance with standards, assessing infrastructure and so on.	Ensures applicable standards are met, ensures our ability to operate and maintain infrastructure, ensures quality product, and technical requirements.	104		
Development [Core – Essential]	Review of resident and developer drawings, service requests, utilities requirements, periodic inspections, and final sign off on Public Works related items.	Ensures proper servicing and functioning of Public Works services in relation to residential and commercial developments.	12		
CSA: ROADS & BRIDGES			2824	652	
Bridge - Maintenance Inspection [Core – BMP] Not In Place	Annual maintenance inspections for pedestrian and vehicle safety, concrete condition, vegetation management corrosion and other defects that lead to degradation of bridge structures.	Preserves bridge integrity and safety and improves the functional condition of the bridge with the aim of preventing, delaying, or mitigating deterioration.	16		
Bridge - Professional Inspection [Core – BMP] Not In Place	Detailed inspections to check general condition, load rating, deterioration of concrete and steel materials, and to recommend further destructive/non-destructive testing of structural steel.	Preserves bridge integrity and safety and improves the functional condition of the bridge with the aim of preventing, delaying, or mitigating deterioration.	2		
Bridge Washing [Core – BMP] Not In Place	Clean bridges using a combination of air and high volumes of water to remove chloride build-up from winter activities.	Preserves bridge integrity and safety and improves the functional condition of the bridge with the aim of preventing, delaying, or mitigating deterioration.	192		
Bridge Repairs – Minor [Core – Essential] Not In Place	Annual maintenance activities include vegetation management, minor concrete patching, bridge drainage maintenance, railings maintenance, spot treatment of corrosion, and minor joint repairs.	Preserves bridge integrity and safety and improves the functional condition of the bridge with the aim of preventing, delaying, or mitigating deterioration.	16		

VILLAGE OF LIONS BAY - CORE SERVICE LEVELS

VILLAGE OF LIONS BAY - CORE SERVICE LEVELS			MANHOURS		
Service Area	General Description	Benefit	Annual Service Estimate (hrs)	Previous Year Actual	Targeted Level
Grade Crossing Inspection & Repairs [Core – Mandatory] Partially In Place	Routine inspections of the crossing surface, approaches, and flangeways. Maintenance activities involve vegetation management, approach repairs, and documentation of flangeway and crossing surface defects for reporting to CN Rail.	Ensures the safety of pedestrian and vehicular traffic at the Village's grade crossings.	72		
Pedestrian Feature Inspection & Maintenance [Core – Essential] Not In Place	Pedestrian facilities are inspected every 12 months to assess their condition and to identify any defects or hazards which are then scheduled for repair. Vegetation is managed once per year.	To maintain pedestrian features as safely as possible within the resource allocations permitted through the annual operating budget.	176		
Boulevard Maintenance [Discretionary]	Mowing and trimming of boulevards adjacent to private residences.	Maintains a neat and tidy overall appearance.	192		
Shoulder Maintenance [Core – BMP] Partially In Place	Clear road shoulders of debris and ensure positive drainage along the length of the roadway.	Ensures free draining road and protects against accelerated deterioration of road surfaces.	208		
Forest Service Road Maintenance [Core – Essential]	Clear road shoulders of debris, grading and re-establishing proper cross fall to ensure dispersion of water, and ensuring positive drainage along entire length of roadway.	Ensures free draining road and protects against accelerated deterioration of road surfaces.	192		
Forest Service Road Rock Scaling [Core – Essential] Not In Place	Clear rock faces of loose material and dangerous trees.	Ensures access to critical infrastructure and protects employee health and safety while accessing infrastructure.	8		
Street Sweeping [Core – BMP]	Mechanically sweep road surfaces and collect materials for proper disposal.	Reduces contaminant loading from first flush events and maintains a neat and tidy overall appearance.	96		
Street Decorations [Discretionary]	Install decorative banners, flags, and decorative lighting at key locations.	Provides ambiance and character to the Village.	32		
Guardrail & Fence Maintenance & Repair [Core – BMP] Partially In Place	Inspection and maintenance of guard rails to ensure functionality and stability.	Prevents vehicles from taking an off-roadway course and protects infrastructure such as hydrants and electrical kiosks.	144		
Street Appurtenances & Bus Shelters [Core – BMP] Partially In Place	Inspection and maintenance ensures features are in good working order and free of graffiti and vandalism.	Protects against liability and ensures functionality of these street appurtenances.	80		
Pavement Condition Assessment Program [Core – BMP] Partially In Place	Assessment of pavement condition through specialty equipment to grade and prioritize roadway deterioration. Contract Service.	Enables staff to prepare specific remediation measures and priorities for the Village's roadways.			

VILLAGE OF LIONS BAY - CORE SERVICE LEVELS

VILLAGE OF LIONS BAY - CORE SERVICE LEVELS			MANHOURS		
Service Area	General Description	Benefit	Annual Service Estimate (hrs)	Previous Year Actual	Targeted Level
Crack Sealing [Core – BMP] Not In Place	Application of asphaltic cement materials to limit the intrusion of water into the surface of the pavement.	Prolongs life of roadway through the prevention of damage caused by water and freeze thaw.			
Pavement Patching [Core – Essential] Partially In Place	Excising sections of pavement, re-compacting the sub-base, and applying new asphalt to remediate the area.	Prolongs life of roadway through the prevention of further damage.	32		
Mill & Overlay [Core – BMP] Not In Place	Mill 25 mm (typical) of road surface, apply binding agent, and apply top course of pavement.	Provides as-new life expectancy for roadway.			
Road Reconstruct [Core – Essential] Not In Place	Remove all asphalt, re-grade road sub-base to re-establish camber, provide drainage features, apply 1st lift of asphalt, and apply second (final) lift of asphalt.	Provides new roadway with full life expectancy.	16		
Pest Control & Dead Animal Pickup [Core – Essential]	Remove and dispose of dead animal carcasses.	Provides for a neat and tidy appearance and prevents odour and bacterial contamination.	16		
Street Litter Pickup [Discretionary]	Collect and remove litter from roadways, boulevards, and medians.	Provides for a neat and tidy appearance.	52		
Snow & Ice Control [Core – Essential]	On demand removal of snow and ice buildup from roadways and pedestrian pathways.	Ensures resident, emergency services, and goods and supplies mobility during adverse winter conditions.	400	405	
Spill Response [Core – Mandatory] Partially In Place	Immediate response includes the application of sand, absorbent materials, and physical measures to contain the leading edge of a spill.	Protects the environment and public health and safety.	18		
Utility Right of Way Maintenance [Core – Essential] Partially In Place	Remove overgrowth, repair surface, and ensure positive drainage.	Reduces the impact of breaks and blockages by ensuring quick access to buried infrastructure.	320		
Roadside Vegetation Management [Core – Mandatory]	Flail mowing, manual vegetation removal, and contract vegetation management.	Ensures adequate passage corridors for emergency services and larger vehicles (garbage trucks). Provides clear sightlines of signage and traffic obstacles.	480		
Windstorm Cleanup [Core – Essential]	Removal and disposal of windfall vegetation	Provides for a neat and tidy appearance and removes potentially hazardous materials from roadways and boulevards.	64		

VILLAGE OF LIONS BAY - CORE SERVICE LEVELS

VILLAGE OF LIONS BAY - CORE SERVICE LEVELS			MANHOURS		
Service Area	General Description	Benefit	Annual Service Estimate (hrs)	Previous Year Actual	Targeted Level
CSA: TRAFFIC & LIGHTING			105		
Sign Installations [Core – Essential]	Installation of regulatory and information signage as required or directed.	Regulatory signage provides notice of legal requirements, dangerous conditions, or wayfinding and protects the safety and well being of motorists and pedestrians.	10		
Sign Maintenance [Core – BMP] Not In Place	Annual inspection, cleaning, vegetation management (sightlines), and sign support adjustments conducted to ensure regulatory signage continues to meet the required functions.	Ensures that regulatory signs in good order and continue to function as a communication mechanism for the pertinent laws and regulations. Sign maintenance acts to mitigate risk of liability for the municipality.	48		
Pavement Markings [Core – Essential]	Contracted service involving the application of specialized reflective paint, in accordance with MUTCD specifications, on roadways throughout the Village.	Pavement markings communicate intended travel path, roadway alignment, and delineate pedestrian walking areas.	3		
Street Lighting Inspections and Maintenance [Core – BMP] Not In Place	Inspection and minor maintenance including vegetation management and minor repairs. Replacement of lamps and major repairs are by contractor.	Ensures street lighting continues to provide assistance to vehicles and pedestrians during evening hours and under low light conditions. Street lighting also promotes security and safety of residents and property.	44		
CSA: CREEKS & DRAINAGE			528	198	
Creek Inspections [Core – BMP] Partially In Place	Inspect small and large watercourses throughout the municipality looking for potential blockage issues, bank erosion, and other potential issues.	Ensures positive drainage and mitigates risk of blockage resulting in flooding and potential infrastructure damage such as blocked culverts to bridge support erosion, etc.	44		
Drainage System Inspections [Core – BMP]	Ensures drainage components are in good working order and continue to convey their design capacity.	Ensures positive drainage and mitigates risk of blockage resulting in flooding and potential infrastructure damage such as blocked culverts and ditches.	140		
Drainage System Sediment Removal [Core – Essential]	Mechanical removal of sediment and debris build up from ditch centrelines. Vegetation management ensures ditches are clear of vegetation and are visible.	Ensures positive drainage and drainage system capacity functions as designed. Mitigates flooding and potential damage to private and public infrastructure.	156		
Culvert Inspection & Maintenance [Core – Essential] Not In Place	Visual and mechanical inspection to check for blockages and deterioration or defects in structure.	Ensures positive drainage and drainage system capacity functions as designed. Mitigates flooding and potential damage to private and public infrastructure.	40		
Catch Basin & Manhole Inspections & Maintenance [Core – Essential] Partially In Place	Visual and mechanical inspection to check for blockages and deterioration or defects in structure.	Ensures positive drainage and drainage system capacity functions as designed. Mitigates flooding and potential damage to private and public infrastructure.	52		

VILLAGE OF LIONS BAY - CORE SERVICE LEVELS

Service Area			MANHOURS		
			Annual Service Estimate (hrs)	Previous Year Actual	Targeted Level
Flood Response [Core – Essential]	Responding to emergent issues as required and address complaints and flooding issues.	Ensures positive drainage and drainage system capacity functions as designed. Mitigates flooding and potential damage to private and public infrastructure.	96		
CSA: WATER TREATMENT & QUALITY			1986	3527	
Treatment Plant Operation & Maintenance [Core – Mandatory] Partially In Place	Planned upgrades and/or repairs to facility or equipment to ensure proper continued operation.	Ensures equipment operates as intended; prevents failure and potential loss of service.	28		
Data Management & Recording [Core – Mandatory]	Recording operating parameters as required by law and providing data for water quality reporting.	Provides for risk management and ensures duty of care. Verifies standards, procedures, and policies are being adhered to and that maintenance is being performed.	130		
Instrument Calibration [Core – Essential]	Manage and adjust instrumentation to manufacturers recommendations to ensure accuracy and operability.	Ensures optimal dosing of chemicals for disinfection and correct monitoring of regulatory parameters. Accurate readings provide for correct operator decision making and maintenance.	26		
UV Reactor Maintenance [Core – Essential]	Inspect and maintain UV reactors to manufacturer specifications.	Ensures optimal disinfection of pathogenic organisms for a safe drinking water supply.	42		
Chemical Feed Systems Maintenance [Core – Essential]	Inspect and maintain chlorine injectors, peristaltic pumps, distribution lines, manifolds, and related appurtenances in accordance with manufacturer recommendations.	Ensures optimal dosing and use of chemical disinfectants. Maintains operability of secondary disinfection system.	63		
Intakes [Core – Essential]	Inspection and maintenance including periodic cleaning and debris removal.	Ensures optimal flow of raw water for treatment purposes. Implicitly linked to resident safety through the provision of adequate fire supply.	312		
Settlement Chambers [Core – Essential]	Manual or mechanical removal of sand and gravel build up within settlement chambers.	Maintaining settlement chamber functionality is vital in maintaining low NTU levels thereby improving water quality.	96		
Basket Filters & Strainers [Core – Essential]	Manual or mechanical removal of sand and gravel build up within y-strainers and filters.	Maintaining basket and filter functionality is vital in maintaining low NTU levels thereby improving water quality.	106		
SCADA Operation & Maintenance [Core – Essential]	Inspecting and maintaining equipment cabinets, wiring components, cooling fans and other appurtenances in accordance with manufacturer recommendations.	Ensures operability and reliability of SCADA monitoring, ensures operator effectiveness, provides early warning of system issues, and minimizes operator call-outs.	108		

VILLAGE OF LIONS BAY - CORE SERVICE LEVELS

VILLAGE OF LIONS BAY - CORE SERVICE LEVELS			MANHOURS		
Service Area	General Description	Benefit	Annual Service Estimate (hrs)	Previous Year Actual	Targeted Level
Distribution System Monitoring & Protection [Core – Mandatory]	Prescribed sampling of water throughout the distribution system for turbidity and chlorine residual.	Ensures optimal water quality throughout the distribution network of pipes.	1040		
Customer Inquiries [Core – Essential]	On demand response to customer enquiries and reports of water quality issues.	Provides reassurance and confidence in water quality and improves customer satisfaction.	35		
CSA: WATER STORAGE & DISTRIBUTION			3430		
Water Storage Facility Inspection [Core – Essential] Partially In Place	Monthly inspection of general condition of reservoir, including vent screens, overflows, dry well, control chamber, piping, and valves. Security is checked (locks, fence) and cleaning is done as required.	Ensures the security of the water supply; checks that facility and equipment are in good operating condition; allows crews to identify any corrective maintenance required.	14		
Water Storage Facility External Cleaning [Core – BMP] Not In Place	External cleaning including vegetation management and removal of moss, detritus and other debris that can affect the integrity of the water storage facility.	Ensures optimal functionality and longevity of water storage infrastructure.	120		
Water Storage Facility Internal Cleaning [Core – Essential]	Annual draining, cleaning and re-disinfection of reservoir.	Ensures water quality.	70		
Water Loss Control Program [Core – BMP]	Preventative Program to Replace Service Connections prior to failure as a result of deterioration.	Prevents future breakdowns and ensuring the proper function of service connections throughout the city.	1040		
Residential Control Valves & Service Lines [Core – Essential] Partially In Place	Water crews to locate difficult to find service boxes.	Ensures an accurate count of all City infrastructure, in order to facilitate maintenance planning and annual budgeting process.	160		
New Service Installations [Core – Essential]	Provision of new water services to residences - triggered by leaks, new development, or renovations requiring sprinklers.	Ensures optimal provision of water to meet domestic and fire sprinkler requirements.	48		
Main Repairs [Core – Essential]	Unplanned upgrades and/or repairs to facility or equipment; usually triggered by customer calls or SCADA system alarms.	Prevents loss of service or restores service that has been lost.	30		
Isolation & Blow-Off Valve Inspections & Maintenance [Core – BMP] Partially In Place	Annual maintenance to exercise the valve, clean out valve box, paint valve lid, and record data about the valve.	Ensures that valves can be easily located and operated in case of emergency.	104		

VILLAGE OF LIONS BAY - CORE SERVICE LEVELS

			MANHOURS		
Service Area	General Description	Benefit	Annual Service Estimate (hrs)	Previous Year Actual	Targeted Level
Air Relief Valve Inspections & Maintenance [Core – BMP] Partially In Place	Planned upgrades and/or repairs to critical equipment to ensure proper continued operation.	Ensures equipment operates as intended; prevents failure and potential loss of service.	156		
Hydrants - Operating Check [Core – Mandatory] Not In Place	Disassemble hydrant, check threads, seals, alignment, etc., replace worn parts, lubricate, and reassemble.	Ensures hydrants are in good working condition.	80		
Hydrants - Maintenance [Core – Mandatory] Partially In Place	Disassemble hydrant, check threads, seals, alignment, etc., replace worn parts, lubricate, and reassemble.	Ensures hydrants are in good working condition.	584		
Pump Station Inspection and Maintenance [Core – Essential]	Monthly inspection of facility and equipment for cleanliness, leaks, corrosion and damage. The lights, ventilation fans, heater, sump pump and drains are also checked for operation. The pump meters are read and, where applicable, fire pumps are tested.	Ensures the facility and equipment are in good operating condition; allows crews to identify any corrective maintenance required.	12		
PRV & Fill Station Inspection and Maintenance [Core – Essential]	Annual Tear-down and inspection of control valves.	Ensures PRVs are in good operating condition; allows crews to identify any corrective maintenance required.	382		
Gas Detector Calibration [Core – Mandatory] Partially In Place	Manage and adjust instrumentation to manufacturers recommendations to ensure accuracy and operability.	Ensures worker safety when entering confined space environments.	12		
Water Service Turn On/Off [Core – BMP]	Water Service Turn On/Off under City Responsibility.	Provides a high level of customer service.			
Water Main Flushing – Water Quality [Core – Mandatory]	High pressure flushing of water main to remove sediment.	Improves water quality, prevents damage to pipe/hydrant infrastructure.	10		
Water Main Flushing – Comprehensive Flushing [Core – Mandatory]	High pressure flushing of water main to remove sediment.	Improves water quality, prevents damage to pipe/hydrant infrastructure.	576		
Watermain Bridge Inspection and Maintenance [Core – BMP] Partially In Place	Inspection and corrective maintenance as required.	Ensures optimal longevity of infrastructure and minimizes potential for catastrophic failure.	32		
CSA: WASTEWATER COLLECTION & TREATMENT			553	208	

VILLAGE OF LIONS BAY - CORE SERVICE LEVELS

VILLAGE OF LIONS BAY - CORE SERVICE LEVELS			MANHOURS		
Service Area	General Description	Benefit	Annual Service Estimate (hrs)	Previous Year Actual	Targeted Level
Inspection Chamber Maintenance [Core – BMP] Not In Place	Planned upgrades and/or repairs to critical equipment to ensure proper continued operation.	Ensures operability of service connections and access by camera or mechanical equipment to inspect and clear blockages in lateral sewer lines.	50		
Lateral Inspection [Core – BMP] Not In Place	CCTV inspection of lateral lines to identify deterioration, blockages or potential blockages, and other related deficiencies.	Ensures operability of service connections and access by camera or mechanical equipment to inspect and clear blockages in lateral sewer lines.	200		
CCTV Inspection [Core – BMP] Not In Place	CCTV inspection of main lines to identify deterioration, blockages or potential blockages, and other related deficiencies.	Ensures operability of mainline and access by camera or mechanical equipment to inspect and clear blockages in sewer lines.	8		
Sewer Main Repairs [Core – Essential]	On demand repairs due to failure of pipe.	Prevents loss of service or restores service that has been lost.	30		
Manhole Inspection & Maintenance [Core – Essential]	Planned upgrades and/or repairs to critical equipment to ensure proper continued operation.	Ensures safety of workers entering manholes, ensures operability of manhole and access via camera or mechanical equipment to inspect and clear blockages in lines.	50		
Sewer Lateral or Main Blockage Unstop [Core – BMP]	On demand repairs due to blockages through mechanical means.	Prevents loss of service or restores service that has been lost.			
New Service Lines [Core – Essential]	Provision of new sewer services to residences - triggered by new development or total reconstruction.	Ensures adequate service.			
WWTP Inspection & Monitoring [Core – Mandatory]	Planned upgrades and/or repairs to critical equipment to ensure proper continued operation.	Ensures optimal operability to meet regulatory requirements for discharge of wastewater to the environment.	92		
WWTP Dewatering and Maintenance [Core – Mandatory]	Planned upgrades and/or repairs to critical equipment to ensure proper continued operation.	Ensures optimal operability to meet regulatory requirements for discharge of wastewater to the environment. Acts to mitigate odour and ensures effectiveness of treatment process.	33		
WWTP Flow Meter Inspection and Calibration [Core – Mandatory]	Planned upgrades and/or repairs to critical equipment to ensure proper continued operation.	Ensures optimal operability to meet regulatory requirements for discharge of wastewater to the environment.	6		
WWTP Effluent Quality Monitoring and Reporting [Core – Mandatory]	Laboratory analysis of effluent grab samples.	Ensures optimal operability to meet regulatory requirements for discharge of wastewater to the environment.	8		

VILLAGE OF LIONS BAY - CORE SERVICE LEVELS

Service Area			MANHOURS		
			Annual Service Estimate (hrs)	Previous Year Actual	Targeted Level
WWTP Outfall Inspection [Core – Mandatory]	Contracted service involving a remotely operated vehicle conducting and exterior assessment of pipe condition.	Ensures optimal operability to meet regulatory requirements for discharge of wastewater to the environment.			
Beach Water Quality Testing & Reporting [Core – Mandatory]	Weekly summer sampling of beach water for the presence of indicator organisms.	Ensures waters used for recreational purposes meet federal regulations for recreational water contact activities.	76		
CSA: FACILITIES MAINTENANCE & MANAGEMENT			956	375	
Building Inspection - Internal [Core – BMP] Not In Place	Annual inspection to assess condition and identify deteriorating components.	Maintains the quality of the facility, prevents injury, and mitigates risk.	16		
Building Inspection - External [Core – BMP] Not In Place	Annual inspection to assess condition and identify deteriorating components.	Maintains the quality of the facility, prevents injury, and mitigates risk.	20		
On Demand Building Maintenance [Core – Essential]	On demand repairs to building features.	Maintains the quality of the facility, prevents injury, and mitigates risk.	52		
Building Preventative Maintenance [Core – BMP] Partially In Place	Preventative maintenance tasks such as cleaning of gutters, HVAC checks, septic system clean-out, etc.	Maintains the quality of the facility, prevents injury, and mitigates risk.	278		
Emergency Operations [Core – Essential]	Monthly checks of generator operability, annual load testing and maintenance by contractor.	Ensures standby emergency operations equipment is operational and functioning per specifications.	6		
Community Event / Volunteer Support [Discretionary]	Deliver, set up, and take down chairs, stages, audiovisual equipment at parks and facilities in support of community events.	Provides high level of customer service and instills pride in the community.	168	215	
Works Yard Maintenance [Core – BMP]	Stock piling of pit materials, spare part, and equipment. Routine maintenance of Works Yard building.	Ensures adequate and rotating stock of parts, equipment supplies, pit materials and other consumables for efficient daily operations of Public Works.	416		
CSA: PARKS & OPEN SPACES			1718	1547	

VILLAGE OF LIONS BAY - CORE SERVICE LEVELS

VILLAGE OF LIONS BAY - CORE SERVICE LEVELS			MANHOURS		
Service Area	General Description	Benefit	Annual Service Estimate (hrs)	Previous Year Actual	Targeted Level
Park Inspections & Litter Clean-up [Core – BMP]	Seasonally driven inspection and litter pickup at parks.	Identifies safety and maintenance related issues. Provides for a neat and tidy appearance.	65		
Turf Maintenance [Core – BMP] Partially In Place	Aeration, lime, fertilizing, and mowing of turf areas throughout the Village.	Ensures healthy lawns and welcoming recreational areas for residents and visitors.	70		
Irrigation System Operation & Maintenance [Core – BMP]	Start up, inspection, operational maintenance, and winterizing of irrigation system in lawns, flower beds, and highway berms.	Ensures healthy trees and plants. Beautifies the Village.	80		
Planted Beds & Landscaped Areas [Core – BMP]	Weeding, planting, soil augmentation, and mulching of planted beds and landscaped areas.	Ensures healthy and vibrant planted areas. Beautifies the Village.	608		
Tree Pruning & Maintenance [Core – BMP]	Removal of damaged, dead, or diseased limbs. Removal of dangerous over extended or overburdened limbs.	Promotes healthy tree growth, is aesthetically pleasing, and improves vehicular and pedestrian passage and sightlines.	320		
Playground Inspection & Repair [Core – Mandatory] Partially In Place	Inspect, tighten or replace loose and worn parts and ensure playground surfacing is evenly spread out.	Ensures user safety and mitigates risk and liability.	40		
Tennis Court Maintenance [Core – BMP]	Repairs to netting and fencing as needed, pressure washing of surface, and litter collection.	Ensures user safety and mitigates risk and liability.	40		
Trail & Walkway Inspection & Maintenance [Core – Essential] Not In Place	Monthly inspection and routine maintenance of trails within the Village's boundaries.	Ensures user safety and mitigates risk and liability.	192		
Restroom Maintenance [Core – Essential]	General maintenance including repairs to fixtures, lighting, minor painting, roof cleaning, litter pickup and vandalism repairs.	Ensures user safety and mitigates risk and liability.	102		
Vandalism / Graffiti [Core – BMP]	Grinding, sanding, washing painting over graffiti. Repair or replacement of vandalized infrastructure	Beautifies community and mitigates further vandalism or graffiti.			
Beach Maintenance [Core – BMP]	Clear logs, sift sand for refuse (glass, bottle caps, discarded toys, etc.), annual addition of sand, placing log booms and dock.	Enhance user experience, beautifies park, and encourages recreational activities.	36		

VILLAGE OF LIONS BAY - CORE SERVICE LEVELS

Service Area			MANHOURS		
			Annual Service Estimate (hrs)	Previous Year Actual	Targeted Level
Invasive Species Management [Core – BMP] Not In Place	Mechanical, labour intensive removal of plant material or stem injection with herbicides.	Encourages natural species, mitigates risk, and restores ecological balance.	80		
Kayak Rack Maintenance [Discretionary]	Inspection and repair of wooden structure, removal of debris, and trimming back vegetation.	Maintains access and mitigates damage to private property.	40		
Furniture Maintenance [Core – BMP] Partially In Place	Washing, sanding and staining, replacement of defective or deteriorating parts.	Enhance user experience, beautifies park, and encourages use.	45		
CSA: FLEET & EQUIPMENT			288	302	
Preventative Maintenance & Servicing [Core – Mandatory]	Tire install, tire rotation, oil changes, tune ups, etc. of all fleet and equipment.	Ensures safe and reliable equipment that meets regulatory requirements. Mitigates risk.	96		
Fleet & Equipment Repairs [Core – Mandatory]	In house routine repairs such as carburetor rebuilds, brakes, muffler repairs etc.	Ensures safe and reliable equipment that meets regulatory requirements. Mitigates risk.	96		
Manufacturing and Custom Fabrication [Core – Essential]	Custom additions or fabrication of custom parts for water, sewer, parks, fleet, facilities or other municipal operations.	Customization and efficiency of equipment and infrastructure.	96		
CSA: WASTE COLLECTION SERVICES			172		
Christmas Tree Disposal [Discretionary]	Chipping of trees.	Provides high level of customer service and instills pride in the community.	16		
Doggie Bag Dispensers [Discretionary]	Provide dog bags at dispensers and remove dog waste.	Provides high level of customer service and instills pride in the community.	156		
RESOURCE ALLOCATION			7.6	4.3	

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**MAYOR'S
COMMUNITY SIGNAGE MAKEOVER
RECOMMENDATIONS**

**VERSION 2.0
17 DECEMBER 2017**

INTRODUCTION

As directed by Council under Community Charter 116 (2)(a)¹, the Mayor has produced these community signage makeover recommendations. The general principle followed is that **community signage should produce understanding, interest, compliance and a sense of ownership.**




These recommendations are intended to position the community as prosperous, welcoming, vibrant, active and diverse. They increase user-friendly language, reduce word count, and seek to avoid counterproductive “orders” and negative words like “rules,” “no,” and “prohibited.” Although in many cases the rationale is self-evident, justifications for all recommendations include:

- Addressing Council’s communication strategic goal (example herein, water treatment plant signage)
- Achieving political goals (example herein, securing water quality)
- Correcting misinformation (example herein, off-leash areas)
- Taking pride (example herein, our Public Service Building)
- Managing risk and demand (example herein, trail signage).

The intention is to present agreed recommendations to the community for comment, including some full size mock-ups, in the Upper Chambers room left open during business hours during the month of February, and that selected elements are in place by late Spring 2018. Future planned Communications Guidelines will view signage going forward through the lens of the needs of the community, rather than the needs of the municipality.

THE DETAILS:

- Word choice and punctuation is paramount. In general, voice should be active, not passive (“Stay on trails to protect watercourses” instead of “Protect watercourses by staying on trails”), and should be as people speak, not official.
- Enabling bylaws are generally not cited: no one cares, and it’s not needed to be able to enforce, which we generally don’t actually do. We **seek compliance.**
- Syntax: all caps for ORDERS. Sentence case for names and information. Design elements (sign size, shape, colour, centering) are only 25% there. Logo is used in preference to coat-of-arms. Mounting hole locations must be shown in the camera-ready layout so that screws/bolts do not overlay text. Calibri actually works quite well for signs. Justification, sizing and layout should be **standardised**:

<p>This is body text, left justified. It should be systematised where logos are placed.</p>  <p>Text here</p>	<p>This is body text, center justified. It should be systematised where logos are placed.</p> <p>Text here </p>	 <p>This is body text, full-justified. It should be systematised where logos are placed.</p>
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Commented [CAO1]: Karl, with respect to font, perhaps we should be reconsidering the use of calibri for everything, especially signage, which will pretty much establish the font forever. Was that something you were going to review in your draft Communications Plan?

Commented [CAO2]: you are missing options for left and centre justified with logo on top instead of bottom.

¹ Community Charter 116 (2) (a) states “In addition to the mayor’s responsibilities as a member of council, the mayor has the following responsibilities: (a) to...[recommend] bylaws, resolutions and other measures that, in the mayor’s opinion, may assist the peace, order and good government of the municipality...;

COMMUNITY SIGNAGE

Entrance logs or panels

Replace existing:



One each at Kelvin Grove north and south:



In underpass (thus includes residences above the highway). Spotlit?



10, approx. 8X8", mounted on ¼" spacers on right-hand abutments of road bridges at Lions Bay Ave, Isleview X 2, Bayview, Bayview Pl. Use of coat-of-arms is deliberate (ensure transparent):



6, approx. 8X8", mounted on ¼" spacers on right-hand abutments of road bridges at Lions Bay Ave, 99S Offramp (left abutment northbound), Crosscreek:



In front of municipal notice board on sand-blasted cedar ("Two Sisters" is placeholder name pending community consultation):

Commented [CA03]: Etched? Vs. raised lettering to match current. It'll probably be forever, so I'd rather see raised silver lettering to match current cedar log out front of office.

Formatted: Font: 14 pt



Top of steps:



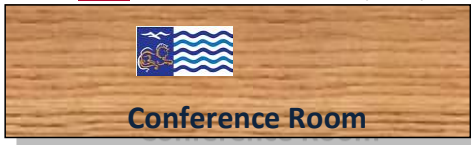
On door (NO "closed meeting" nameplate), logo background transparent:



On door:



On ~~east~~ West side door (which is seen by everyone entering the Hall):



On front door:

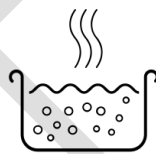


Commented [CA04]: What about hours?

New water sandwich boards to freshen the beat-up ones we have now, to remove the word "restrictions," to reduce bureaucratic language, to make period end explicit by simple expedient of removal of sign (since we seldom cancel any other way). We need 6 (entrance t-o Brunswick Beach, S end of Crosscreek bridge, LB Ave downhill, Isleview entrance, Kelvin Grove uphill, Kelvin Grove downhill):

Commented [CA05]: We actually use sign holder tripods to hold the signs

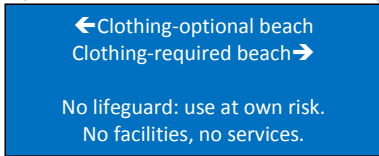




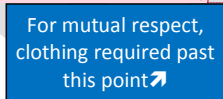
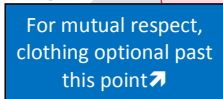
Or do we want this type of logo: ? To be

approved by Coastal Health. Will they pay for these? Is there a distinction between an advisory, a notice and an order? "Turbidity" is deliberately not used, because no one knows what it means.

At sand line opposite 7 Brunswick Beach Road + at exit to trail off CN line facing inland (note no logo):



At high-water on nominal nude beach boundary, 90° to waterline:



Commented [CA06]: Many other reasons why BWA may be issued – not just sediment.

Commented [CA07]: Nai advises there are many other causes of requirements for BWA, so cannot stipulate reason on sign.

Commented [CA08]: We already ordered a sign after you approved it last summer – we just didn't get it up. Actually, 2 signs.

This location would be awkward as the nude beach does not start at this point; sign needs to provide additional direction as to how far in that direction I think.

Commented [CA09]: Arrow on first sign should point northwest

MOVES/REMOVES/CHANGES

Commented [CAO10]: Please meet with Norma Rodgers directly on this one please.



Some typos and syntax errors, plus insufficient information to enhance visitor experience (and management). THIS is one we want people to stop and read at their leisure.

Place at select trail entrances, using a more representative graphic of a black bear in a coastal rainforest environment:

THIS IS BLACK BEAR TERRITORY.



Black bears can be light brown to jet black. Adults weigh up to 110 kg and can run at 60 km/h. BLACK BEARS ARE NOT AGGRESSIVE: huffing, jaw snapping and growling are defensive behaviours; rearing on hind legs is to see and smell. NEVER APPROACH CUBS: the mother *is* nearby and will defend them without preliminaries. A FED BEAR IS A DEAD BEAR: bears that become habituated to human contact will end up euthanized.

Coyotes & aggressive owls are also common. Cougars are seen occasionally; wolf and grizzly bear ranges are expanding south toward Lions Bay.

While in the forest keep dogs and children in sight. Make plenty of noise, especially near loud water. If you encounter a wild animal DO NOT RUN, which may trigger a predator chase response. BACK AWAY and speak calmly to avoid posing a threat. In the unlikely event of an attack, do not play dead: fight back with any weapon.



In this particular sign, a poop bag in the mouth is not right and Sunset Trailhead is NOT an on-leash area.

A slightly more official sign at all in-Village trail entrances subject to Bylaw 461's permitted off-leash areas*: Centennial, Crystal Falls, Harrison Upper & Lower, Loggers Lane, Marjorie's Meadows, Soundview (off Mountain), Sunset, Tidewater** and Kelvin*** Trails, plus at Sunset and Oceanview trailheads (the access points the permitted Lions, Totally Unnecessary and Trudi's Trails):



*Note that the Erin Moore, Missing Link & Sleepless Nights trails are new since the bylaw, but lead from off-leash trails. Presumably we don't expect dogs to be put back on leash up there—do we update the bylaw? Turpin and Pride trails are NOT off-leash designated.

**Tidewater Trail is impassable so a sign is probably unneeded here.

***No dog walker would allow their animal off leash this close to the Highway so a sign is probably unneeded here.




Commented [CAO11]: Image may have to be vectorized (but not by Nai) so would have to be sent out at cost.

Commented [CAO12]: I suppose so.

Commented [CAO13]: Should they be?

Commented [CAO14]: Impassable from Sweetwater? Or in southern portion of park?

Commented [CAO15]: Other than the SB on-ramp portion, this trail is below hwy grade and completely separated from hwy.

	<p>Install on the Mag and Harvey water plant gates to a) inform passers by what the building is, b) subtly reduce the number of hikers defecating in our watershed:</p> <div data-bbox="602 510 1052 1024" style="border: 1px solid black; padding: 10px; margin: 10px auto; width: fit-content;">  <p style="text-align: center;">VILLAGE OF LIONS BAY DRINKING WATER TREATMENT FACILITY</p> <p>This plant is one of two in the community that utilise ultraviolet irradiation and chlorine injection to disinfect raw water drawn from the creek high above. Treated water quality exceeds Canadian Drinking Water Standards and achieves Vancouver Coastal Health permit requirements without use of filtration.</p> <p>Constructed in 2009, \$1.26 mil. of the project cost was provided by the Province of British Columbia Community Water Improvement program and \$0.63 mil. by Lions Bay taxpayers with 30-year loan financing.</p> </div> <p>Different numbers to the existing sign are found at http://www.cscd.gov.bc.ca/lgd/infra/library/BCCWIP_2012_Annual_Program_Progress_Report.pdf, but must be confirmed against claim that plants were \$2 mil. EACH.</p>
<p>On Harvey intake gate</p>	<div data-bbox="654 1171 1006 1646" style="border: 1px solid black; padding: 10px; margin: 10px auto; width: fit-content;">  <p style="text-align: center;">VILLAGE OF LIONS BAY HARVEY CREEK WATER INTAKE</p> <p>A weir on Harvey Creek beyond delivers raw water under provincial water license to the municipal treatment plant __ m below.</p> <p>DANGER: ROCKFALL AND ROADWAY COLLAPSE HAZARD. CONFINED WORKSPACE, HIGH RAINFALL LANDSLIDE PROTOCOLS IN PLACE. ENTER ONLY WITH TRAINED AUTHORISED ESCORT.</p> </div>

Remove these incorrect and uninformative signs.

Commented [CA016]: Not advisable to advertise critical infrastructure = poor risk management. Nai has lots of information on this topic and has attended conferences where law enforcement advises on best practices, especially where your CI is remote.

<p>On intake Mag gate</p>	<div style="text-align: center;">  <p>VILLAGE OF LIONS BAY MAGNESIA CREEK WATER INTAKE</p> <p>A weir on Magnesia Creek beyond delivers raw water under provincial water license to the municipal treatment plant __ m below.</p> <p>DANGER: ROCKFALL AND ROADWAY COLLAPSE HAZARD. CONFINED WORKSPACE, LAHAR (MUDFLOW) & HIGH RAINFALL PROTOCOLS IN PLACE. ENTER ONLY WITH TRAINED AUTHORISED ESCORT.</p> </div>
	<p>Kelvin Grove BP: remove unused poles</p>
	<p>Kelvin Grove BP: what safety equipment? Remove, or if there IS equipment, go with:</p> <div style="text-align: center;">  <p>VILLAGE OF LIONS BAY</p> <p>Lifesaving equipment for emergency use only.</p> </div>

Commented [CAO17]: On PW CSR list

Commented [CAO18]: Ditto

	<p>On the Centennial/Crystal Falls road across Brunswick Hill, remove the "Private Road [it's not], "No Trespassing" [people go there all the time as exemplified by the trail name sign 20 m away].</p>
	<p>Replace these signs with the one below, typically at intake contour levels and above. The current sign is rather wordy and may not have the effect desired.</p> <div data-bbox="673 758 954 961" style="border: 1px solid black; padding: 10px; text-align: center;">  <p>VILLAGE OF LIONS BAY DRINKING WATER CATCHMENT AREA. Please protect the watershed. Leave no waste.</p> </div>
	<p>Even though it's WVSD property, can we reduce the number of "Dumping of Garbage or Other Refuse is Prohibited" signs at the Lower School Lot?</p>
	<p>Remove. Justifications if needed (the Mayor will absorb any political flak): no sign is going to induce someone to remove garbage or not "change in public." Let's not be people's mommy. Let's welcome people in the hope that they respond.</p>

Commented [CAO19]: The gated road to go up to the Pit is MOTI property which we use through explicit and limited permission. It is not open to the public and we do not want people wandering around up there, especially with fire department facilities and future PW Yard, for which security will be an issue. If necessary, we will need to ensure that Soundview Trail (which is frankly just an access road to the Pit) to Crystal Falls Rd via Crystal Falls Trail is separated from areas of the Pit used by ourselves and MOTI.

Commented [CAO20]: Brand new (after Nai researched wording from other jurisdictions) to try and tackle issue of people crapping and tossing garbage in watershed, which there was clear evidence they were doing. I believe we should keep these signs and if you want to add more in the substantively the design you have provided, then okay.

Commented [CAO21]: Would have to ask them for permission or simply request that they do it.


Commented [CAO22]: Perhaps the signage needs to adopt your tack of kinder, gentler, positive message etc. Eg: Kindly use Kelvin Grove Beach Park Washrooms for Changing In/Out of Scuba Gear.

	<p>Remove. Justifications if needed (the Mayor will absorb any political flak): Bylaw 376 has long been repealed, people are going to do what they're going to do sign or not, and this sign is frankly ridiculous.</p> <p>Install a Dogs Off Leash sign at the beach.</p>
	<p>Remove. By saying the same thing on 2 contiguous signs, can the intention be anything other than to annoy? This sign is ridiculous. Mothers can say this to people (or "persons" if we use the sign's syntax), but not municipalities. It's surprising this sign hasn't been <i>more</i> vandalised.</p>

Commented [CAO23]: Then why have any signs at all? And I don't just mean this one.



Hardly a community lens, is it? Replace with:

VILLAGE OF

LIONS BAY
WASTEWATER TREATMENT FACILITY

This secondary treatment plant handles up to ___ liters per day of domestic wastewater generated in the Kelvin Grove neighbourhood to meet the terms of Lions Bay's ocean-discharge permit.

DANGER: CONFINED WORKSPACE
SAFETY PROTOCOLS AND
BREATHING APPARATUS REQUIRED.
AUTHORISED PERSONNEL ONLY.

Beside informing people, why is this important? It's subtle. Staff enter all the time so the first line contradicts the rest of the sign. Let's not use words that are exclusionary: you can enter if authorised, and there's nothing wrong with you if you can't. Let's explain why: it's dangerous. Trespassers likely won't be caught OR prosecuted so let's rather say believable things that keep them out in the first place.

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Commented [CAO24]: I notice that you put "Village of" on top of the logo and "Lions Bay" under it. This is different than other renderings. Do you have a preference?



Replace

Note: "Central" is a placeholder name pending proposals by LBBPC. There's no "RULES" on top, nor "please act responsibly" or "please use garbage cans:" people either will or they won't regardless of a sign.

Commented [CA025]: Committee turned down the suggestion.
Disagree with using 2200 hours for 10 pm. Not sure what status of vaping is vs. smoking. Not sure we can say no vaping?

VILLAGE OF
LIONS BAY

Welcome to Central Beach Park.
Open 8:00 to 22:00.
NO LIFEGUARDS: USE AT OWN RISK.

- Official Rockfish Conservation Area: no fishing.
- BBQ only in designated spots; limit table use to 1 hour if others are waiting.
- Unamplified music OK (no open fires, alcohol, smoking, vaping, dogs, scuba).




Maintenance by parking fees and local property taxes.

VILLAGE OF
LIONS BAY

Welcome to Kelvin Grove Beach and Marine Park.
Open 8:00 to 22:00.
NO LIFEGUARDS: USE AT OWN RISK.

- Official Marine Park. Mooring and motorised vessels beyond buoys only.
- Official Rockfish Conservation Area: no fishing.
- BBQ only in designated spots; limit table use to 1 hour if others are waiting.
- Dogs & divers welcome, unamplified music OK (no open fires, alcohol, smoking, vaping).

Maintenance by parking fees and local property taxes.

	 <p>VILLAGE OF LIONS BAY</p> <p>Welcome to Brunswick Beach. Open 8:00 to 22:00. NO LIFEGUARDS: USE AT OWN RISK.</p> <ul style="list-style-type: none">• Official Rockfish Conservation Area: no fishing.• Unamplified music OK (no open fires, BBQs, alcohol, smoking, vaping, dogs, scuba). <p><i>Maintenance by parking fees and local property taxes.</i></p>
<p>At beaches and elsewhere</p>	 <p>NO SMOKING NO VAPING</p> <p>(scale devices within icon?)</p>
	<p>Remove: hasn't been an RCMP sub-station for years</p>

Commented [CA026]: I think you've been back and forth on remove vs. leave up a couple of times now.



Remove this 2" X 10" little sign (we're proud of the building). Redo gable in text sizes that can be seen from the street by civilians in a panic and professionals in a hurry:

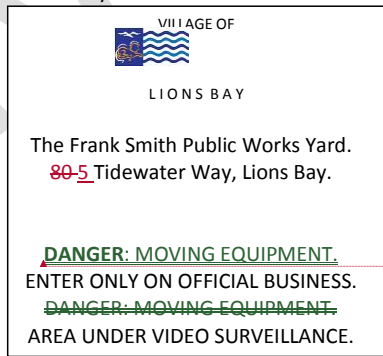
Commented [CA027]: Whose proud? Why? Proud of the activities that are conducted there definitely, but it's not a great building.



Is "Lions Bay Fire/Rescue" the official name syntax? I've also seen "Lions Bay Fire Rescue" and "Lions Bay Fire & Rescue." If not, replace (does it actually require "NO. 1 HALL"?). Does LBSAR want their new logo or the retro logo?



"Public Works" is preferred to "Works" and it's the physical yard, not the conceptual dept. Again, community lens:



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Can we have haz mat signage on the gate too?


WAYFINDING SIGNAGE

- Drivers: feature of a complete community, get residents out hiking and discovering their village, accommodate and spread visitor load (they're coming anyway), distribute parking demand, produce sense of prosperity and diversity.
- Decide syntax between "100 m: Centennial Trail.", "100 m to Centennial Trail.", "Centennial Trail (100 m)." All distance figures must be confirmed to the nearest 100 meters (or 0.1 km for numbers > 1000) on Google Maps.
- Colours and layout TBC, but these examples attempt to match the green of existing trail name signs (even though they use a coat-of-arms, and not well at that). Use of hiking terms like "spur" and "cut-off" is deliberate.


Commented [CA028]: What "backcountry trailheads"? General store is a good 200 m from Office, so perhaps they should not be paired together? Or drop the distances altogether?

➡ At N side of Tidewater Way opposite exit from Kelvin Grove BP parking lot:

1.3 km to central Lions Bay for municipal offices, general store, café, Centennial Trail, backcountry trailheads




50 m to Kelvin Grove Beach & Marine Park, dog beach, toilets, change rooms, outdoor shower, equipment wash




➡ Midway along south side of Kelvin Grove parking lot (note that wash table would need to be added; hose bib exists):

40 m to toilets, change rooms, outdoor shower, equipment wash




➡ At bus stop on west side of Tidewater Way. Note "park" is dropped from beach names since that designation is more a municipal consideration than a user one:

0.9 km to central Lions Bay for municipal offices, general store, café, Centennial Trail, backcountry trailheads



➡ On SW corner of Lions Bay Ave. at 99 S onramp, pointing E (uphill):

270 m to municipal offices, general store, café,
Centennial Trail
1.7 km to Sunset Dr. trailheads



➔ Pointing S:

 80 m to Kelvin Grove Trail for Kelvin Grove Beach, visitor parking and dog beach


➔ Pointing W (downhill):


300 m to visitor parking
350 m to Lions Bay Beach Park
500 m to Lions Bay Marina


➔ On west side of Lions Bay Ave. directly opposite CN crossing:


30 m to Lions Bay Beach Park


➔ On east side of Crosscreek at south end of bridge:

 200 m to general store, café, Centennial Trail
10 m to Marjorie's Meadow dog park
1.6 km to Sunset Dr. trailheads

1.2 km to Oceanview Dr. trailhead for
Unnecessary Mountain Trail, Erin Moore Trail


➔ Halfway up Oceanview:


 600 m to Oceanview Dr. trailhead for
Unnecessary Mountain Trail, Erin Moore Trail

➡ On east side of Centre Road at T opposite centreline of Crosscreek (same pole as street name signs):



100 m to Centennial Trail for Harrison Trail, Crystal Falls Trail
100 m to Post Office, general store, café

1.6 km to Sunset Dr. trailheads for The Lions Trail, Tunnel Bluffs Trail, Upper Harrison Trail, Trudi's Trail, Sleepless Nights Trail




Note: the Lions Trail is called "Magnesia Creek Trail" on Google Maps.

➡ On west side on Bayview at school driveway (in conjunction with overflow parking signage):

1.1 km to Sunset Dr. trailheads for The Lions Trail, Tunnel Bluffs Trail, Upper Harrison Trail, Trudi's Trail, Sleepless Nights Trail




➡ On east side of Mountain opposite Bayview T:




800 m to Sunset Dr. trailheads for The Lions Trail, Tunnel Bluffs Trail, Upper Harrison Trail, Trudi's Trail, Sleepless Nights Trail

➡ On east side of Sunset at Mountain T:



150 m to Sunset Dr. trailhead for The Lions Trail, Tunnel Bluffs Trail, Upper Harrison spur to Centennial Trail

200 m to Sunset Dr. trailhead for Trudi's Trail, Sleepless Nights Trail and cut-off to The Lions Trail



Other possible icons...2 people is a safety hint, but backpack indicates a more backcountry route:



Under all in-municipality trail name and Bear Aware signs (same width on same pole). We don't mention cyclists; no logo is intentional:

- ✓ Trails not maintained by municipality: use at own risk.
- ✓ Expect off-leash dogs.
- ✓ Bears, coyotes and cougars may be present.
- ✓ No fires.

At trailheads (confirm wording with LBSAR). We don't mention cyclists; no logo and no explicit trailhead name is intentional:

**BACKCOUNTRY TRAILHEAD
50 SUNSET DR., LIONS BAY.**

- ✓ Trails not maintained by municipality: use at own risk.
- ✓ Expect wild animals and off-leash dogs.
- ✓ Conditions change fast: have proper gear and carry the Ten Essentials (visit lbsar.com). Beware cornice collapse danger. In a real emergency call 911 before dark.



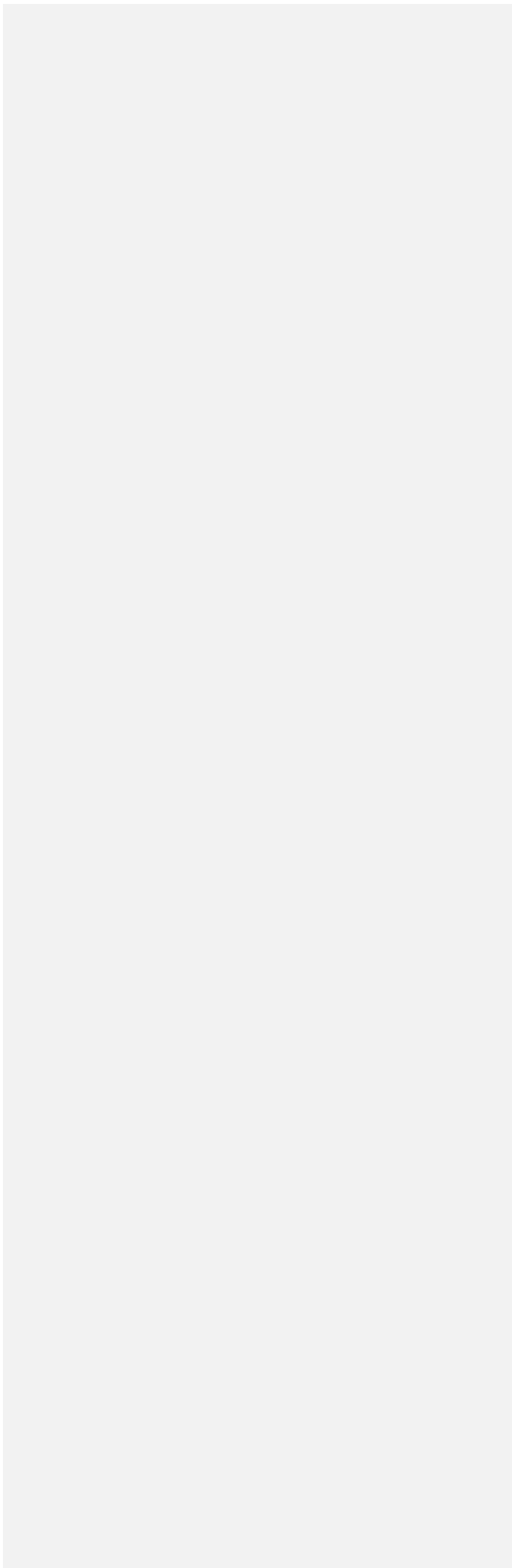
GPS CHECK: 123.4 M ABOVE MSL/DATUM: Ø

**BACKCOUNTRY TRAILHEAD
165 SUNSET DR., LIONS BAY.**

✓

**BACKCOUNTRY TRAILHEAD
375 OCEANVIEW RD, LIONS BAY.**

✓



PUBLIC CONSULTATION (NOT YET COMPLETE)

Age group(tick one)

0-9 10-17 17-29 30-50 50-70 70-99 100+

Resident of Lions Bay?

Drivers of -prosperity, getting people out

Do you support wayfinding signage, at an estimated budget of \$___?

Which bg colour, green, blue, brown

Which syntax

Wording suggestions

Which icons? Different for hiking and walking?

DRAFT

