AGENDA

Regular Meeting of the Council of the Village of Chase
to be held in the Council Chamber at the Village Office, 826 Okanagan Avenue, and via Zoom
on June 11, 2024 at 4:00 p.m.

Join the meeting from your computer, tablet or smartphone:
https://us02web.zoom.us/j/83008608128
Or join the meeting using your phone:
Dial: 1-778-907-2071 Meeting ID: 830 0860 8128

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1. **CALL TO ORDER**

2. **ADOPTION OF AGENDA**
   Resolution:
   "THAT the agenda of the June 11, 2024 Regular Meeting be adopted as presented."

3. **ADOPTION OF MINUTES**
   3.1 Minutes of the May 28, 2024 Regular Meeting Pages 1-5
   Resolution:
   "THAT the minutes of the May 28, 2024 Regular Meeting be adopted as presented."

4. **PUBLIC HEARINGS**
   None

5. **PUBLIC INPUT ON CURRENT AGENDA ITEMS**
   This opportunity is for members of the gallery to provide input on items on this Agenda

6. **DELEGATIONS**
   6.1 Chase and District Chamber of Commerce – Update on Activites

   6.2 Dick Leppky – Recreation Proposal for Arena Lands

   6.3 Terry Mindel with "Together Chase" regarding former Primary School Facility

7. **REPORTS**
   a) Mayor and Council Reports

   b) Staff Reports Pages 6-10

8. UNFINISHED BUSINESS

8.1 Village of Chase Zoning Amendment Bylaw No. 937-2024 Pages 11-26
Bill 44 – 2023 Housing Statutes (Residential Development) Amendment Act
Report from the Director of Corporate Operations
Recommendations:
"THAT the third reading of Village of Chase Zoning Amendment Bylaw No. 937-2024 be rescinded."

"**THAT Village of Chase Zoning Amendment Bylaw No. 937-2024 be given third reading as amended."**

"**THAT Village of Chase Zoning Amendment Bylaw No. 937-2024 be adopted."**

8.2 Fees & Charges Amendment Bylaw No. 940-2024 Pages 27-29
Recommendation:
"THAT Fees & Charges Amendment Bylaw No. 940-2024 be adopted."

8.3 Minister Meetings at 2024 UBCM Convention Page 30-31
Memo from the Chief Administrative Officer
Recommendation:
Council direction is requested.

9. UNFINISHED BUSINESS

9.1 2024 Road Maintenance Program Pages 32-146
Report from the Manager of Public Works
Recommendation:
"THAT Council direct staff to proceed with issuing the tender for the 2024 Road Maintenance Program."

9.2 BC Interior Community Foundation – Fundholder Statement Pages 147-149
Recommendation:
"THAT the BC Interior Community Foundation Fundholder Statement for Chase Community from January 1, 2023 to December 31, 2023 be received as information."

9.3 Annual letter from Interior Health regarding resources to support communities to minimize negative health impacts Pages 150-153
Recommendation:
"THAT the annual letter from Interior Health regarding resources to support communities to minimize negative health impacts be received as information."

9.4 Letter from City of Campbell River to Provincial Minister of Forests Pages 154-155
Recommendation:
"THAT the Village of Chase write a letter to the Minister of Forests sharing the concerns of the City of Campbell River, urging the Province to better manage the forest resources in BC to ensure that employment opportunities continue to be provided for as many people as possible."

10. NOTICE OF MOTION

11. IN CAMERA
None

12. RELEASE OF IN CAMERA ITEMS
None

13. ADJOURNMENT
Resolution:
“THAT the June 11, 2024 Regular Meeting be adjourned.”

MINUTES

of the Regular Meeting of the Council of the Village of Chase
held in the Council Chamber at the Village office at 826 Okanagan Avenue
on Tuesday, May 28, 2024 at 4:00 p.m.

PRESENT: Mayor David Lepsoe
Councillor Colin Connett
Councillor Jane Herman
Councillor Dan Stevens
Councillor Fred Torbohm

In Attendance: Joni Heinrich, Chief Administrative Officer
Sean O'Flaherty, Director of Corporate Operations
Deb Lovin, Chief Financial Officer
Mike Baker, Manager of Public Works
Mike McLean, Deputy Corporate Officer
Brian Lauzon, Fire Chief

Public Participants: 15 in-person, 10 virtual

1. **CALL TO ORDER**
   Mayor Lepsoe called the meeting to order at 4:00 pm.

2. **ADOPTION OF AGENDA**
   Moved by Councillor Herman
   Seconded by Councillor Torbohm
   "THAT the agenda of the May 28, 2024 Regular Meeting be adopted as presented."
   CARRIED
   #2024/05/28_001

3. **ADOPTION OF MINUTES**
   3.1 Minutes of the May 14, 2024 Regular Meeting
   Moved by Councillor Connett
   Seconded by Councillor Stevens
   "THAT the minutes of the May 14, 2024 Regular Meeting be adopted as presented."
   CARRIED
   #2024/05/28_002

4. **PUBLIC HEARINGS**
   None

5. **PUBLIC INPUT ON CURRENT AGENDA ITEMS**
   Angie McLaren of 462 Maple Place, with the Chase Environmental Action Society applauded Council for both Items 6.1 (SenseNet demo) and 8.2 Yard Waste Clean-Up Event.

   James Mintz of 813 Okanagan Avenue mentioned the water and sewer rates and while the minimum charges may not have been fair, Council has the responsibility to ensure that costs of operating the system and providing water are covered.

6. DELEGATIONS

6.1 SenseNet – Rapid Wildfire Detection

Representatives from SenseNet provided an overview of its rapid wildfire detection technology, which combines advanced sensors, AI algorithms, and real-time data analysis for wildfire detection and management to identify early signs of wildfires and assist in effective strategies for fire control.

7. REPORTS

Mayor Lepsoe

May 16 – Regular TNRD meeting, passed motion to waive charge at Eco Depot for yard waste
May 18 – Spoke at long time resident Bob East's celebration of life on behalf of the Village
May 21 – Trail Alliance AGM
May 24 – Attended ALIB Wildland Truck ceremony
May 27 – Met with a grade 5/6 school class from Haldane. They wished to meet with their Mayor and presented some written requests.
May 28 – The CAO and myself attended our regular monthly meeting with Neskonlith, we discussed Secwepemc participation in the Village

Councillor Connett

May 14 – Attended Regular Council meeting
May 14 – Attended Chase and District Health Services Foundation meeting
Have been speaking regularly with various members of the community on various issues.

Councillor Herman

May 14 – Attended Regular Council meeting
May 17 – Participated in Provincial Hazard Preparedness presentation
May 17 – Met with members of Chase Environmental Action Society regarding upcoming Bike Rodeo and Go By Bike BC week June 3-9
May 22 – Attended a communities in bloom information meeting
May 25 – Participated in the Walk for Alzheimer's at Memorial Beach in Chase

Councillor Stevens

May 14 – Attended Regular Council meeting
I recently taught about 100 students at Haldane about FireSmart using the FireSmart education program
I attended the regular council meeting on May 14
On May 18, I attended the Pritchard FireSmart event.
Answered emails from the public and administration.
Spoke with PAC representatives about the Haldane Elementary School June Jamboree which is on June 7 from 4 pm – 8 pm at the school.
Attended the Trail Alliance AGM on May 21 via Zoom
On May 25, I undertook a Wildfire Hazard Assessment with a neighbourhood in Chase. They are working towards being Chase's first FireSmart Recognized Neighbourhood. Met in person with members of the public.

Councillor Torbohm
May 14 – Attended Regular Council meeting
May 17 – Attended Provincial Hazard Preparedness presentation
Have invited Dan Stevens to do FireSmart assessments at our strata
Reviewed agenda, reviewed emails, met with staff for information as required, answered inquiries from the public.

Moved by Councillor Stevens
Seconded by Councillor Torbohm
"THAT the reports from Council members be received for information."

CARRIED
#2024/05/28_003

8. UNFINISHED BUSINESS

8.1 Fees & Charges Amendment Bylaw No. 940-2024

Moved by Councillor Torbohm
Seconded by Councillor Stevens
"THAT Fees & Charges Amendment Bylaw No. 940-2024 be given three reading using the figures of Option 3 in the report from the Chief Financial Officer."

CARRIED
#2024/05/28_004

8.2 Wildfire Preparedness

Moved by Councillor Stevens
Seconded by Councillor Connett
"WHEREAS the Village of Chase is committed to the principles of FireSmart and to assisting our residents to take steps to safeguard their properties by clearing and trimming vegetation in order to mitigate fire risk; and

WHEREAS the Village of Chase wishes to assist our residents in safely disposing of large quantities of yard waste that might otherwise be improperly disposed of and/or pose a fire risk;

THEREFORE BE IT RESOLVED that Council direct Administration to develop a proposal for a pre-summer two or three day curbside yard waste pick-up service either provided by the Village's staff or contracted to a private service contractor, such proposal to include costs, potential timing, pick-up and disposal logistics, advertising requirements and timing, sign-up considerations and any other associated aspect of this trial project and bring a report back to Council for consideration/ratification as soon as is practicable."

CARRIED
#2024/05/28_005

9. NEW BUSINESS

9.1 Village of Chase Zoning Amendment Bylaw No. 937-2024

Moved by Councillor Stevens
Seconded by Councillor Herman
"THAT Village of Chase Zoning Amendment Bylaw No. 937-2024 be given three readings."

CARRIED
#2024/05/28_006

9.2 Secwepemc Community Improvement Association
Moved by Councillor Stevens
Seconded by Councillor Herman
"THAT Council award $2000 to the Secwepemc Community Improvement Association for a donation to support their Secwepemc Lakes Indian Days June 21-23, 2024." **CARRIED**
#2024/05/28_007

9.3 Letter from Premier David Eby – Minister Meetings at 2024 UBCM
Moved by Councillor Herman
Seconded by Councillor Stevens
"THAT Council members give consideration to issues that may be relevant for Minister meeting (s) at UBCM 2024 and if there are any matters, they be raised and discussed at the June 11, 2024 Council meeting with assistance from Administration." **CARRIED**
#2024/05/28_008

10. NOTICE OF MOTION
None.

11. OPPORTUNITY FOR PUBLIC TO SPEAK ON MUNICIPAL MATTERS
Anne Grube of 5848 VLA Road commended Council on the progressive actions of inviting SenseNet to do a demonstration of their technology, for looking into a yard waste clean-up iniatiative, and for donating funds to help the local area communities.

Jean Holt of 235 Willow Street asked several questions including why the Village does not collect a parcel tax, why meters have not been replaced, why the Village is not providing incentives to attract doctors to Chase, why a walking path to nowhere has been built and a street sweeper has been purchased that does not work when taxes are so high in Chase.

Brenda Massey of 1015 Paquette Road stated that her property taxes are $6500 before the Homeowner Grant this year and with the pathway to the falls there is no parking along Paquette which means her neighbour continues to harbour derelict vehicles, gas cans and transients in the bush rather than the vehicles being parked on the boulevard.

Jean Holt of 235 Willow Street added that the Village should not be giving such a large donation when usually only $500 is given.

12. IN CAMERA
Moved by Councillor Herman
Seconded by Councillor Stevens
"THAT Council recess to an In Camera meeting pursuant to Section 90 (1) (e) acquisition, disposition or expropriation of land and improvements."
CARRIED
#2024/05/28_009

13. RELEASE OF IN CAMERA ITEMS
None

14. ADJOURNMENT

Moved by Councillor Torbohm
Seconded by Councillor Stevens
"THAT the May 28, 2024 Regular Meeting be adjourned." **CARRIED #2024/05/28_010**

The meeting concluded at 6:08 p.m.

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David Lepsoe, Mayor Sean O'Flaherty, Corporate Officer

VILLAGE OF CHASE

Memorandum

Date: June 3, 2024

To: Mayor and Council

From: CAO

RE: Activities Report May 7 to June 3, 2024

Council Support

- Attend Regular Council meetings May 14 and 28
- Met with Indigenous elders from Adams Lake Indian Band regarding Cultural Awareness Training required to be done for emergency personnel at Village of Chase
- Participated in a UBCM Minister meeting scheduling process webinar
- Attended along with several Council members a Provincial Hazard Update presentation
- Along with Mayor Lepsoe met with Chief and Council of Neskonlith Indian Band May 28
- Reviewed and prepared reports for Council meeting agendas
- Reviewed Council meeting minutes and communications to the public
- Regular meetings with Mayor, various meetings with members of Council
- Regular meetings with Senior managers to discuss council directives, delegate tasks

Management and Staff Support

- Participated in Internet Performance Test meetings
- Met with Fire Chief regarding various Fire Department operational matters
- Provided Commissioner services to members of the public
- Met with legal services provider regarding potential services to the Village
- Met with Interior Health representatives regarding requests for long term care facility in Chase
- Arranged for Manager of Public Works to attend a meeting for the upcoming Secwepemc Landmark sculpture installation
- Participated in a Voyent Alert! administration refresher
- Participated in several meetings with new IT service provider regarding security, new processes
- Discussed several labour issues with Management team
- Reviewed and authorized a variety of invoices for services and supplies
- Discussions with senior staff regarding human resource matters and resourcing needs
- Responded to email and telephone inquiries

Respectfully submitted,

Joni Henrich

VILLAGE OF CHASE

Memorandum

Date: June 5, 2024

To: Mayor and Council

From: Sean O'Flaherty, Director of Corporate Operations

RE: Activities undertaken from May 6, 2024 to June 5, 2024

Regular Duties:

- Attend Council's meetings (Regular, Special, In Camera) and workshops
- Preparation of Council meeting agendas and minutes
- Prepared Council reports and correspondence on various matters
- Responsible for confidential matters, information and privacy, and legislative affairs
- Responding to email and telephone inquiries
- Assisting staff and public with legislative and bylaw interpretations, and general support
- Responding to land use inquiries
- Ongoing human resource management
- Liaising with the Building Inspector on zoning confirmation matters
- Staff meetings
- Assist with Village communications through social media, Village's website, and the Sunflower

Other Duties/Activities During the Reporting Period:

- Processed 8 Comfort Letters
- Processed 3 Building Permits
- Approved 2 new Business Licenses
- Attended a project meeting on the Mill Park Boat Launch
- Met with our new IT consultant
- Attended the annual Planning Institute of BC conference
- Worked on some HR matters
- Met with MoTI on CIF startup
- Met with Urban Systems on Development Approvals bylaw, OCP update and DCCs
- Met with Sun Valley executive on cedar hedge/fencing options
- Coordinating development at 116 MacPherson
- Completed 5 Freedom of Information requests
- Working on the Building Permit at 229B Brooke Drive
- Working on land sale of unused, unimproved roadway to 838 Shuswap Ave
- Attended Voyent Alert training
- Met with consultant ELAS on updating the cemetery bylaw, and the memorial wall
- Met with Queensboro regarding the Mill Park Boat Launch
- Working on the permit application and other details of the Chase Falls trail upgrade
- Attended a meeting with Skwlax

Bylaw Enforcement

- Bylaw Enforcement activity is normal for the season as unattended spring vegetative growth appears.

Dog Control

- Dog control matters are normal for the season

Respectfully submitted,

Sean O'Flaherty

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Approved for Council Consideration by CAO

Joni Heinrich

_____

VILLAGE OF CHASE

Memorandum

Date: June 3, 2024

To: Council

From: Deb Lovin, Chief Financial Officer

RE: April 2024 Report

Regular Duties
Attend Council's meetings (Regular, Special, In Camera) and workshops.
Complete monthly eTax (Provincial Property Tax) calculation, reconciliation, and requisition.
Dealt with property taxes and utility billing issues as required.
Work with staff to design and print property tax newsletter.
Monthly account reconciliations, incl. Bank, Utilities, Property tax & Accounts Receivable ledgers
Weekly staff meetings
Respond to email and telephone inquiries.
Upload BC Assessment roll updates.
Review daily cash receipting transactions and bank deposits.

Budget, Property Taxes & Financial Reporting
Calculate and balance tax run.
Complete 2023 Financial Statements and yearend review
Complete and balance all tax rates input for tax calculation.
Complete and submitted LDGE 2023 Financial Plan Data Report and 2024 Tax Rate Report
Create Mortgage holders report and send out.
Import Homeowner grant data.
Property taxes calculated, printed, and mailed out.
Upload Homeowner grant information to Province of BC
Modify Water & Sewer bylaw for rate change from council resolution

Grant Applications, Implementation and Reporting
Complete and submit 2023 Gas Tax Annual Report
Modify Firesmart grant

Other
Participated in GFOA taxation webinar.
Input approved budget into financial software.
Participated in Climate Action Program Webinar
Completed Gas Tax survey and review program changes.

Respectfully submitted,

D Lovin

Deb Lovin

Approved for Council Consideration by CAO

Joni Henrich

Joni Henrich

VILLAGE OF CHASE

Memorandum

Date: June 11, 2024

To: Council

From: Mike Baker, Manager of Public Works

RE: May 2024 Report

Regular Duties

Attend Council's meetings (Regular, Special, In Camera) and workshops.
Invoice processing
Processing and completing service requests.
Review of development proposals and variances.
Review of Bylaws for proposed revisions.
Preparation of reports to Council.
Respond to email and telephone inquiries.

Utilities

Managing consultant for design of the confirmed grant for lagoon improvements.
Overseeing the changing out non-functioning water meters.
Implementing changes to process for changing out meters including possible Bylaw amendments.
Developing a water meter replacement program to deal with an increased volume of meter malfunctions.
Water systems flushing
Sanitary Sewer flushing
Storm Sewer cleaning

Parks and Recreation

Community Hall rentals
Preparing parks and facilities for summer season
Mill Park ball diamond improvements
Community Garden in Willson Park
Centennial Pool rehabilitation
Park mowing and weeding
Irrigation repairs
Cemetery services and Cemetery Maintenance

Roads and Drainage.

Scheduling line painters
Coburn Multi-Use Pathway complete
Patching contractor preparing to begin work

Solid Waste and Recycling

Continuing with recycling audits

Respectfully submitted,

M. Baker

Mike Baker

Approved for Council Consideration by CAO

Joni Heinrich

Joni Henrich

VILLAGE OF CHASE

Memorandum

Date: June 7, 2024

To: Mayor and Council

From: Deputy Corporate Officer

RE: Activities Report – May 6, 2024 to June 7, 2024

Legislative Services/Council Support

- Agenda preparation and minutes
- Preparation of bylaws and minutes for archival purposes
- Maintenance of bylaw and resolution indexes
- Bylaw consolidation
- Coordination of delegations

Operational Support

- Updated social media pages, routine website maintenance
- Ongoing IT support, installation of new equipment
- Coordination with Community Hall users
- Preliminary design of cemetery webpage and updated forms
- Preparation of forms and digital documents
- Records management support
- Ongoing indexing of agreements and leases
- Lease indexing and administration
- Support for cemetery management software
- IT service transition and onboarding
- Website hosting and domain name registration
- Introduction of email filtering tools
- Cyber security improvements
- IT infrastructure review and preparatory work for upgrades
- Ongoing development of intranet site

Respectfully submitted,

Approved for Council Consideration by CAO

Village Of Chase

Administrative Memorandum

TO: **Mayor and Council**

FROM: **Director of Corporate Operations**

DATE: **June 4, 2024**

RE: **Zoning Amendment Bylaw 937-2024. Bill 44 – 2023 *Housing Statutes (*Residential Development*) Amendment Act***

ISSUE/PURPOSE

To amend a height regulation for detached suites in Zoning Amendment Bylaw 937-2024.

OPTIONS

1. Rescind 3rd reading of the bylaw; re-read 3rd reading and adopt the bylaw as recommended.

2. Adopt the bylaw as is. This is not the recommendation.

DISCUSSION

The main purpose behind *Zoning Amendment Bylaw 937-2024* is to increase housing density by permitting attached or detached suites. The regulation height for a detached suite, however, is not sufficient to construct a dwelling unit over a garage. The regulation for height of a detached suite over a garage has been increased so that the height allows for an 8m. high garage/suite combination, not 5m.

Noteworthy: The province has removed any procedural obstacles that interfere with their housing initiatives. Typically, bylaw readings require 24 hours between 3rd reading and adoption, however zoning bylaws related to housing can be given 3 readings and adopted all at 1 meeting.

The public have had the opportunity to have any questions or concerns answered. Additionally, an open house was held in advance of today's meeting.

Included in this Report to Council is:
• Zoning Amendment Bylaw 937-2024

RECOMMENDATION:

"THAT the third reading of Village of Chase Zoning Amendment Bylaw No. 937-2024 be rescinded."

"THAT Village of Chase Zoning Amendment Bylaw No. 937-2024 be given third reading as amended."

"THAT Village of Chase Zoning Amendment Bylaw No. 937-2024 be adopted."

Respectfully submitted,

Approved for Council Consideration by CAO

VILLAGE OF CHASE
BYLAW NO. 937-2024

A Bylaw to Amend the Village of Chase Zoning Bylaw No. 683-2006

WHEREAS the Council of the Village of Chase has adopted the Village of Chase Zoning Bylaw No. 683-2006;

AND WHEREAS the Council of the Village of Chase deems it necessary to amend Bylaw No. 683-2006;

AND WHEREAS the zoning amendment conforms to the Village of Chase Official Community Plan Bylaw No. 896, 2021 as amended from time to time;

AND WHEREAS the *Local Government Act,* Chapter 1, Part 14, Section 481.3 requires a local government to permit the use, and density of use necessary to accommodate at least one additional housing unit within a detached dwelling that would otherwise be a single-family dwelling, or within another building on the same parcel or parcels of land on which a detached single-family dwelling is located;

NOW THEREFORE, the Council of the Village of Chase in open meeting assembled enacts as follows:

1. This Bylaw shall be cited for all purposes as “Village of Chase Zoning Amendment Bylaw No. 937-2024”.

2. The following definitions are added to Section 2 – DEFINITIONS:

   Semi-Detached Dwelling means one or two dwellings connected above finished grade and designed to accommodate two households living independently in separate Dwelling Units, side by side, or back to back, in adjacent real estate entities separated by a party wall, each having a separate entrance at, or near, finished grade.

Duplex d designed
to acco lling Units,

side by side, or above and below each other, each having a separate entrance at, or near, finished grade, all on a single real estate entity. A Duplex may be constructed as two (2) Dwelling Units at initial construction, or thorough the conversion of an existing building.

Attached Suite means an accessory dwelling unit compliant with the *BC Building Code*, having a total floor area of not more than 90 square metres, and occupying a floor space less than 40% of the habitable floor space in the

Principal Building. It must be located within the Principal Building that contains only one other Dwelling Unit, and on a single real estate entity.

Detached Suite means a second storey Dwelling Unit located above a garage in a detached accessory building, ancillary to the Principal Building. The maximum total floor area must be not exceed 90 square metres in area and have a total floor space not exceeding 50% of the building.

3. The following definitions are amended in Section 2 – DEFINITIONS:

SHORT-TERM RENTAL means a Guest Suite, Guest Rooms, or part thereof in a residential zone wherein accommodation is offered for rent, or rented, as a transient accommodation business on a temporary basis of 90 days or less per occurrence. The maximum total floor area must be less than 90 square metres in area and have a total floor space less than 40% of the habitable floor space of the Principal Building.

SECONDARY SUITE means an Attached Suite

TWO FAMILY DWELLING means any building divided into two Dwelling Units, each of which is occupied or intended to be occupied as the permanent home or residence of one household. Duplex, and Semi-Detached Dwellings are Two Family Dwellings.

3. Section 4.7.2 is hereby amended by removing “R-1SS, Low Density Residential Secondary Suite”.

4. Table 14:4 is hereby amended by removing “R-1SS”.

5. Section 5 – Establishment of Zones is hereby replaced in entirety with:

SECTION 5 – ESTABLISHMENT OF ZONES

5.1 ESTABLISHMENT OF ZONES

The area within the boundaries of the Village of Chase shall be divided into the zones identified in column I and described in column II of Table 3.

TABLE 3: Establishment of Zones

Column I	Column II
Zones	**Title Elaboration**
AR-1	Agriculture
AR-2	Rural
AR-3	Agricultural Rural - Residential
R-1	Low Density Residential
R-1A	Low Density Small Lot Residential
R-2	Medium Density Residential
R-2A	Limited Medium Density Residential
R-3	High Density Residential
R-3A	Institutional Residential
R-4	Mobile Home Residential
R-5	Recreational Residential
CD-A	Comprehensive Residential
CD-C	Comprehensive Residential
C-1	General Commercial
C-2	Downtown Comprehensive Development
C-3	Service Commercial
C-4	Highway Commercial
C-5	Recreation Commercial
C-6	Local Commercial
C-7	Shopping Centre Commercial
C-8	Campground Commercial

M-1	Light Industrial
M-2	General Industrial
M-3	Resource/Heavy Industrial
P-1	Parks and Recreation
P-2	Public and Quasi-Public

6. Section 6.18 through 6.20, R-1SS Low Density Residential Secondary Suite is hereby eliminated.

7. AR-1 is hereby replaced with:

AR-1 AGRICULTURE

6.1 INTENT

The purpose of this zone is to identify lands that are within the Agricultural Land Reserve and to protect and enhance agricultural operations and other compatible land uses.

6.2 PERMITTED USES

The following uses and no others are permitted in the AR-1 zone:

- single family dwelling
- single family dwelling with attached suite
- single family dwelling with detached suite
- mobile home (subject to condition)
- home occupation
- agricultural use
- accessory use

6.3 REGULATIONS

On a parcel located in an area zoned as AR-1, no building or structure shall be constructed, located or altered, and no plan of subdivision approved which contravenes the regulations set out in the table below in which column I sets out the matter to be regulated and column II sets out the regulations.

Column I	Column II

Minimum setback:	
front parcel line	9 m
rear parcel line	9 m
interior side parcel line	3 m
exterior side parcel line	9 m
Minimum parcel area	2 ha

6.4 CONDITIONS OF USE

6.4.1 A Mobile Home may be placed on concrete pads with blocking or with a permanent foundation.

8. AR-3 is hereby replaced with:

AR-3 AGRICULTURAL RURAL - RESIDENTIAL

6.9 INTENT

The purpose of this zone is to identify lands which, by reasons of adequate drainage, sufficient supply of potable water, adequate sewage disposal system, proximity to urban services and freedom from hazardous conditions, are suited for low-density residential and limited agricultural uses.

6.10 PERMITTED USES

The following uses and no others are permitted in the AR-3 zone:

- single family dwelling
- single family dwelling with attached suite
- single family dwelling with detached suite
- accessory use including home occupation
- the keeping of a maximum 12 pigeons or 12 poultry, and a maximum of 1 horse or 1 cow or 1 sheep or 1 goat per 1500 m^2 of lot area
- kennel, in conjunction with residential use – maximum 3 dogs

6.11 REGULATIONS

On a parcel located in an area zoned as AR-3, no building or structure shall be constructed, located or altered, and no plan of subdivision approved which contravenes the regulations set out in the table below in which column I sets out the matter to be regulated and column

II sets out the regulations.

Column I	Column II
Maximum number of dwelling units	2 per parcel
Minimum setback of principal building from:	
front parcel line	6 m
rear parcel line	6 m
interior side parcel line	3 m
exterior side parcel line	6 m
Minimum setback of accessory use building from:	
front parcel line	6 m
rear parcel line	6 m
interior side parcel line	3 m
exterior side parcel line	6 m
Minimum parcel area	1,500 m^2
Minimum parcel frontage	25 m
Maximum building height for:	
principal building	9 m
accessory use building	10 m
Maximum floor area for accessory use building	180 m^2

9. R-1 is hereby replaced with:

R-1 LOW DENSITY RESIDENTIAL

6.12 INTENT

The purpose of this zone is to accommodate low density residential housing development with a maximum of two dwelling units.

6.13 PERMITTED USES

The following uses and no others are permitted in the R-1 zone:

- single-family dwelling
- single-family dwelling with attached suite
- single family dwelling with detached suite
- home occupation
- short-term rental
- accessory use

6.14 REGULATIONS

On a parcel located in an area zoned as R-1, no building or structure shall be constructed, located or altered, and no plan of subdivision approved which contravenes the regulations set out in the table below in which column I sets out the matter to be regulated and column II sets out the regulations.

Column I	Column II
Maximum number of dwelling units	2 per parcel
Minimum setback of principal building from:	
front parcel line	6 m.
rear parcel line	6 m.
interior side parcel line	1.5 m.
exterior side parcel line	3 m.
Minimum setback of accessory use building from:	
front parcel line	6 m.
rear parcel line	1.5 m.
interior side parcel line	1.5 m.
exterior side parcel line	3 m.
Minimum parcel area	550 $m.^2$ ** ***Site Specific – See Below*
Minimum parcel frontage	15 m.

Maximum building height for:	
principal building	9 m.
accessory use building	5 m.*
Minimum single family dwelling width	6 m.
Maximum secondary suite size	90 $m.^2$
Maximum floor area for accessory use building	65 $m.^2$

*Minimum Parcel Area – Site Specific
For the following site only, the required minimum parcel area is 464.5 m.2:
(a) 237 Pine Street (Parcel Z, DL 517 KDYD, Plan 3479) as per Bylaw 578.

6.15 CONDITIONS OF USE

***6.15.1** The maximum height of a detached suite is eight metres (8 m.).

10. R-1A is hereby replaced with:

R-1A LOW DENSITY SMALL LOT RESIDENTIAL

6.15 INTENT

The purpose of this zone is to accommodate low density residential housing development with a maximum of two dwelling units on small lots of at least 370 m^2.

6.16 PERMITTED USES

The following uses and no others are permitted in the R-1A zone:

- single-family dwelling
- single-family dwelling with attached suite
- home occupation
- short-term rental
- accessory use

6.17 REGULATIONS

On a parcel located in an area zoned as R-1A, no building or structure shall be constructed, located or altered, and no plan of subdivision approved which contravenes the regulations set out in the table below in which column I sets out the matter to be regulated and column II sets out the regulations.

Column I	Column II
Maximum number of dwelling units	2 per parcel
Minimum setback of principal building from:	
front parcel line	4.5 m.
rear parcel line	4.5 m.
interior side parcel line	1.5 m.
exterior side parcel line	1.5 m.
Minimum setback of accessory use building from:	
front parcel line	4.5 m.
rear parcel line	1.5 m.
interior side parcel line	1.5 m.
exterior side parcel line	1.5 m.
Minimum parcel area	370 $m.^2$
Minimum parcel frontage	11 m.
Maximum building height for:	
principal building	9 m.
accessory use building	5 m.
Minimum single family dwelling width	6 m.
Maximum secondary suite size	90 $m.^2$
Maximum floor area for accessory use building	65 $m.^2$

11. R-2 is hereby replaced with:

R-2 MEDIUM DENSITY RESIDENTIAL

6.21 INTENT

The purpose of this zone is to accommodate medium density residential housing development with a minimum of two dwelling units.

6.22 PERMITTED USES

The following uses and no others are permitted in the R-2 zone:

- single-family dwelling with attached suite
- single family dwelling with detached suite
- semi-detached dwelling
- semi-detached dwelling with attached suite
- duplex housing
- multiple family dwelling
- home occupation
- short-term rental
- accessory use

6.23 REGULATIONS

On a parcel located in an area zoned as R-2, no building or structure shall be constructed, located or altered, and no plan of subdivision approved which contravenes the regulations set out in the table below in which column I sets out the matter to be regulated and column II sets out the regulations.

Column I	Column II
Minimum number of dwelling units	2 per parcel
Minimum setback of principal building from:	
front parcel line	6 m.
rear parcel line	6 m.
interior side parcel line	1.5 m.
exterior side parcel line	3 m.
Minimum setback of accessory use buildings from:	
front parcel line	6 m.
rear parcel line	1.5 m.
interior side parcel line	1.5 m.
exterior side parcel line	3 m.
Minimum parcel area for:	

two family dwelling	550 m.^{2}
multiple family dwelling	1,000 m.^{2}
Minimum parcel frontage for:	
two family dwelling	15 m.
semi-detached dwelling	7.5m per side
multiple family dwelling	20 m.
Maximum building height for:	
principal building	9 m.
accessory use building	5 m.*
Minimum principal building width	6 m.
Maximum density	35 dwelling units per ha. * ***Site Specific – See Below***
Maximum secondary suite size	90 m.^{2}
Maximum floor area for accessory use building	65 m.^{2}

* Site Specific

(a) For 417 Cottonwood Street (Lots 4 and 5, DL 517 KDYD, Plan 17158), the maximum number of dwelling units permitted thereon is seven (7).

(b) For 413 Cottonwood Street (Lot A, DL 517, KDYD, Plan 27085 as shown on Plan B12499), the maximum number of dwelling units permitted thereon is four (4). (Amending Bylaw No. 811)

(c) For 213 Bell Street (LOT 21 DISTRICT LOT 517 KAMLOOPS DIVISION YALE DISTRICT PLAN 6240), "Mobile Vending" is a permitted use as a home occupation notwithstanding Section 4.7.1.c. (Amending Bylaw No. 834)

6.24 CONDITIONS OF USE

6.24.1 Semi-detached Dwelling

Where a common wall is shared between two dwelling units on two separate parcels, the minimum setback of the principal building from the interior side parcel line is zero metres (0 m.).

6.24.2 Multiple Family Dwelling

The minimum setback from an interior side parcel line for a multiple family dwelling shall be 3 metres. The minimum setback from an exterior side parcel line for a multiple family dwelling shall be 4.5 metres.

***6.24.3** The maximum height of a detached suite is eight metres (8 m.).

12. All occurrences of the word ‘principle’ are hereby changed to ‘principal’.

13. Numbering of sections are updated to reflect all changes, and any re-numbering will occur in sequence.

14. Schedule A, *Zoning Map*, of Zoning Bylaw No. 683-2006, is hereby amended in accordance with above.

READ A FIRST TIME THIS **28th** DAY OF **MAY, 2024**

READ A SECOND TIME THIS **28th** DAY OF **MAY, 2024**

READ A THIRD TIME THIS **28th** DAY OF **MAY, 2024**

Approved pursuant to section 52(3)(a) of the *Transportation Act*
this _____ day of _____, 20____

_____
for Minister of Transportation & Infrastructure

ADOPTED THIS ___ DAY OF _____

_____ _____
David Lepsoe, Mayor Sean O'Flaherty, Corporate Officer

VILLAGE OF CHASE
Bylaw No. 940-2024

A Bylaw to Amend the Village of Chase Fees and Charges Bylaw No. 820-2016

WHEREAS the Council of the Village of Chase has adopted the Village of Chase Fees and Charges Bylaw No. 820-2016;

AND WHEREAS the Council of the Village of Chase deems it necessary to amend Bylaw No. 820-2016;

NOW THEREFORE, the Council of the Village of Chase, in open meeting assembled, enacts as follows:

1. This bylaw may be cited for all purposes as “Village of Chase Fees and Charges Bylaw No. 820-2016, Amendment Bylaw No. 940-2024”.

2. The following schedules are hereby replaced in their entirety:

   Schedule “D” – Water Service Rates

   Schedule “E” – Sewer Service Rates

READ A FIRST TIME THIS **28th** DAY OF **May, 2024**

READ A SECOND TIME THIS **28th** DAY OF **May, 2024**

READ A THIRD TIME THIS **28th** DAY OF **May, 2024**

ADOPTED THIS THIS ___ DAY OF _____**, 2024**

David Lepsoe, Mayor

Sean O'Flaherty, Corporate Officer

Schedule "D" to
Village of Chase Fees and Charges Bylaw No. 820 - 2016

WATER SERVICE RATES

Residential Water Service Charges	Annual Charge
Fixed Rate charge per single family dwelling property (effective October 1, 2023)	$ 260.00
Fixed Rate charge per additional residential unit other than a single family dwelling property(effective October 1, 2023)	$ 230.00

*Fixed rate charges are applied for each unit whether occupied or not.

Non Residential Water Service Charges	Annual Charge
Meter Size 5/8 inch (effective October 1, 2023)	$ 260.00
Meter Size 3/4 inch (effective October 1, 2023)	$ 380.00
Meter Size 1.00 inch (effective October 1, 2023)	$ 450.00
Meter Size 1.50 inch and larger (effective October 1, 2023)	$ 1,040.00
Fixed Rate charge per additional business unit or occupancy on property (effective October 1, 2023)	$ 230.00

*Fixed rate charges are applied for each unit whether occupied or not.

Water Consumption Rate - per unit ***	Volume Charge
Minimum consumption per quarter per cubic meter effective October 1, 2023	60 m3
Minimum consumption per quarter per cubic meter effective July 1, 2024	30 m3
Minimum consumption charge per year effective October 1, 2023	$ 235.20
Minimum consumption charge per year effective July 1, 2024	$ 151.20
Metered water consumption per cubic meter effective October 1, 2023	$ 0.98
Metered water consumption per cubic meter effective July 1, 2024	$ 1.26
All units will be charged for usage in excess of 60m3/ quarter effective October 1, 2023 All units will be charged for usage in excess of 30m3/ quarter effective July 1, 2024	

* The water service fee is a recurring annual charge renewing on the first day of every calendar year, and billed in 4 equal instalments January 1, April 1, July 1, and October 1

** In the event that a water meter starts to fail or fails, the Village reserve the right to estimate usage based on prior readings.

*** unit refers to residential units or # of business units

Schedule "E" to
Village of Chase Fees and Charges Bylaw No. 820 - 2016

SEWER SERVICE RATES

Residential Sewer Service Charges	Annual Charge
Fixed Rate charge per single family dwelling property	$ 155.40
Fixed Rate charge per single family dwelling property with Secondary Suite	$ 213.70
Fixed Rate charge per residential unit other than a single family dwelling property	$ 116.60

*Fixed rate charges are applied for each unit whether occupied or not.

Non Residential Sewer Service Charges	Annual Charge
Meter Size 5/8 inch	$ 155.40
Meter Size 3/4 inch	$ 223.80
Meter Size 1.00 inch	$ 397.80
Meter Size 1.50 inch and larger	$ 895.20
Fixed Rate charge per additional business or occupancy on property	$ 116.60

*Fixed rate charges are applied for each unit whether occupied or not.

Sewer Consumption Rate - per unit ****	Volume Charge
Minimum sewer consumption charge (effective October 1, 2023)**	$ 210.00
Minimum sewer consumption charge (effective July 1, 2024)***	$ 123.60
Commercial effluent discharge based on metered water consumption per cubic meter **	$ 0.875
Commercial effluent discharge based on metered water consumption per cubic meter ***	$ 1.030

* The sewer service fee is a recurring annual charge renewing on the first day of every calendar year, and billed in 4 equal instalments January 1, April 1, July 1, and October 1.

** CHANGES effective October 1, 2023 - minimum charge will be a flat rate of $52.5/quarter. All commercial sewer consumption shall be based on the metered water consumption during the period January to March of the current year, with a minimum charge of $52.50 per quarter.

*** CHANGES effective July 1, 2024 - minimum charge will be a flat rate of $26.25/quarter. All commercial sewer consumption shall be based on the metered water consumption during the period January to March of the current year, with a minimum charge of $26.25 per quarter.

VILLAGE OF CHASE

Memorandum

Date: June 4, 2024

To: Mayor and Council

From: CAO

RE: UBCM – Potential Minister Meeting Topics

At its May 28, 2024 Regular meeting, the following resolution was passed:

> ***"THAT Council members give consideration to issues that may be relevant for Minister meeting (s) at UBCM 2024 and if there are any matters, they be raised and discussed at the June 11, 2024 Council meeting."***

Council's are encouraged to request meetings with Ministers for issues that are significant to that particular local government. In past years, Village Council has requested and/or met with Ministers at UBCM to address the following topics:

- Works performed inside municipal boundaries by Ministry of Transporation and Infrastructure and the need for better coordination and communiation with the local government **- Minister of Transportation and Infrastructure**
- Advocate for better funding support for Village's participation in the First Responders program (supporting Ambulance Service) - **Minister of Health**
- Advocate for better funding supports to Local Governments to perform fuel mitigation outside of Local Government boundaries - **Minister of Forests**
- Advocate the Fire Underwriters Service to allow small Local Governments to utilize well maintained Fire Apparatus beyond 20 years - **Minister of Emergency Management and Climate Readiness**
- Advocate for more sustainable funding model for Road Rescue Services - **Ministry of Emergency Management and Climate Readiness**
- Advocate for Interfor's bid for additional fibre tenure - **Ministry of Forests**

In 2024, Local Governments are facing more challenges than ever before:

- Costs to live at home are increasing and making independent living for many people more financially challenging
- There are ever increasing doctor shortages when there is a increasing need for health care services
- There is an ever increasing need for home supports for the elderly
- There is ongoing need for Assisted Living and Extended Care facilities across the Province
- Infrastructure costs (roads and Fire Department apparatus for example) are challening most small communities

- Ongoing downloading of Provincial responsibilities including child care, Ambulance Service activities (First Responders) and housing provision is stretching local government resources (financial and human) more and more

Some suggested topics for Minister Meetings at UBCM in 2024 could be:

- Need to increase the homeowner and seniors grants to help offset property tax costs
- Better incentives for home owners to acquire cooling units during heat events
- Better funding for the improvement of cellular and broadband services in small communities
- More financial and information resources for small communities to mitigate fuel in areas surrounding the communities

RECOMMENDATION

“Council direction is requested.”

Respectfully submitted,

Joni Heinrich

_____

VILLAGE OF CHASE
Administrative Report

TO: **Mayor and Council**

FROM: **Mike Baker, Manager of Public Works**

DATE: **June 11, 2024**

RE: **2024 Road Maintenance Program**

ISSUE/PURPOSE

To discuss the 2024 Road Maintenance Program and proposed roads for inclusion into the program and obtain a resolution of Council to proceed with the 2024 program.

DISCUSSION

Consistent with good engineering practice in determining and prioritizing specific roads for the 2024 Road Maintenance Program, the following reports were utilized;

- Road Condition Assessment and Upgrading Plan – True Engineering, 2020 "Appendix A"
- Asset Management Risk Analysis – True Engineering, 2020 "Appendix B"
- Village of Chase 2021 Roadway Data Collection and Pavement Management Plan – Tetra Tech Canada Inc, 2021 "Appendix C"
- 5 year Paving Plan – True Engineering, 2021 "Appendix D"

Roadways that have been listed as a higher priority in the program but are not being considered for the 2024 program are ones that require water main replacement as well as paving, service a very limited area, have been inspected and determined to not be an immediate priority, or other works are required in conjunction with paving.

The current 2024 Financial Plan includes $850,000 for Pavement Management. There is also pavement works budgeted for both the Shepherd Road project and the Bay Drive upgrade as part of those specific projects.

Of the reports reviewed, the main challenge was aligning roadways that need rehabilitation with the known upgrades to utilities that will have to occur in the near future. In keeping with prudent fiscal management, the last thing the Village should be doing is ripping up new asphalt for repairs or even worse, replacement of underground infrastructure.

It should be noted that roadways such as Willow St, Thompson Ave, Third Ave, Sicamous Ave, Shepherd Road, Shaw St, Second Ave and Pine St have been identified for road improvements and are all identified as *high risk* in the Asset Management Risk Analysis for Watermain failure. The focus for this years' program has been identifying as much road to rehabilitate as possible, without the need for the replacement of other infrastructure, while ensuring that our asset management plan is structured and planned for the future. A significant focus will be required to address the aging water system in the coming years.

The estimated costs for the selected roads based on the principles noted above are presented in the following table.

Roadway	From	To	Rehab Method	Cost
All - Crack Sealing				$20,000
All - Major Pothole Repairs				$50,000
Shuswap Ave	Petro Canada	Bell St	50mm overlay	$230,000
Shuswap Ave	Bell St	Margery St	Mill and Inlay 100mm	$525,000
Juniper St.	Third Ave		Mill and Inlay 50mm	$25,000

* Final costs will be determined at the time of tendering. Estimates include contingency and testing.

Other major projects that are identified in the background reports include utility work to be completed. These projects have other complicating factors such as additional infrastructure needs or possible road widening requirements. Council could choose to proceed with any of these additional roadways at this time however, Administration strongly recommends the utilities be addressed in conjunction with the works.

None of the roads in the proposed 2024 plan have a recent history of water main concerns. There are some works required to cover inspection and ditch work that would protect the roads once rehabilitated. Additional roads could be added to the contract if the tender prices are lower than expected which is unlikley.

The proposed roadways selected were selected based upon the recommended construction year, rehabilitation strategy and anticipated condition of the roadway after any utility construction. The selected roads have been proposed prior to the recommended rehabilitation strategy being elevated to require a complete road reconstruction. Other criteria incorporated into the decisions include water main replacements, total costs of the program, and location of the roadways. There are some cost savings to be realized by grouping projects located in the same area.

FINANCIAL IMPLICATIONS

The capital budget for Road Works/Paving is $850,000. Once Council provides approval to Administration to proceed, the 2024 Road Maintenance Program will be issued for tender and the award of the contract, including the scope of work will be brought to Council for final approval.

RECOMMENDATION

"THAT Council direct Administration to proceed with issuing the tender for the 2024 Road Maintenance Program as outlined in the June 11, 2024 report from the Manager of Public Works."

Respectfully submitted,

Mike Baker

Mike Baker
Manager of Public Works

Approved for Council Consideration by CAO

Joni Heinrich

Road Condition Assessment and Upgrading Plan

Village of Chase

January 2020

Project No. 1377-071

ENGINEERING ■ PLANNING ■ URBAN DESIGN ■ LAND SURVEYING

201-2079 Falcon Rd | Kamloops BC | V2C 4J2 | www.true.bc.ca | tel 250.828.0881 | fax 250.828.0717

Distribution List

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0	1	Village of Chase

Revision Log

Revision #	Revised by	Date	Issue / Revision Description
1	DPG	2020-01-29	Issued

Report Submission

Report Prepared By:

Todd Turnbull, AScT, CPWI 3

Report Reviewed By:

Dave Underwood, P. Eng.
Project Engineer

R:\Clients\1300-1399\1377\1377-071\05 Reports\Village of Chase-Road Condition Assessment and Upgrading Plan\1377-071-Chase Road Condition Assessment & Upgrading Plan-January 2020.docx

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APPENDICES

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List of Figures

List of Acronyms

MoTI	Ministry of Transportation and Infrastructure
PDI	Pavement Distress Index
TRUE	TRUE Consulting

1.0 Introduction

1.1 Background

In July of 2019, TRUE Consulting was asked by the Village of Chase to conduct a Pavement Surface Condition Report of outlined municipal roads. The primary objective was to identify all required upgrading, establish priorities and prepare a report to serve as a resource in capital planning.

1.2 Project Scope

The scope of work is briefly summarized as follows:

- Conduct a field assessment visually evaluating the condition of outlined paved roads maintained by the municipality using methodology contained in the BC Ministry of Transportation and Infrastructure's (MoTI) "Pavement Surface Condition Rating Manual."
- Compile roadworks assessment data and categorize roads based on upgrading needs.
- Identify the appropriate approaches to achieve the upgrading objectives, i.e. crack sealing, mill and overlay, or reconstruction.
- Prepare cost estimates for the upgrading or maintenance of roads to maintain or upgrade to a "good" condition rating.
- Prioritize roads to be upgraded based on current condition and function.
- Produce a report describing the road condition assessment and presenting upgrading recommendations with capital cost estimates.

For the purpose of this inventory, the municipal streets were assigned a segment number and a condition rating based on a cursory visual inspection. Either using the condition rating or actual construction data, the depreciated "value" and replacement costs for each road segment was computed.

Asphalt road cores were completed on all outlined roads and referenced as part of TRUE recommendations. A report summary (KamTech Quality Management – July 4, 2019) is attached within along with Figure 2.7 indicating core locations.

2.0 Road Condition Assessment

2.1 BC MoTI Pavement Surface Condition

The road condition assessment was undertaken using the MoTI Pavement Surface Condition Rating Manual Fifth Edition (August 2016) as a reference document. The MoTI document provides a standardized means of assessing highways throughout British Columbia. The general methodology of the MoTI manual comprises measurement or identification of pavement distress parameters. The manual describes a total of twelve distress classifications summarized as follows:

TABLE 2-1: MOTI DISTRESS CLASSIFICATIONS FOR PAVEMENT

Crack Type	Probable Cause
1. Longitudinal Wheel Path Cracking (LWP)	heavy traffic loading during spring thaw
2. Longitudinal Joint Cracking (LJC)	poor construction, frost action, moisture changes
3. Pavement Edge Cracking (PEC)	frost action, inadequate pavement substructure, heavy traffic loading, poor drainage, inadequate pavement width
4. Transverse Cracking (TC)	low/high temperatures, frost action, reflection cracks from substructure
5. Meandering Longitudinal Cracking (MLC)	frost action, poor construction
6. Alligator Cracking (AC)	repeated traffic loading, insufficient pavement substructure, poor asphalt mix design
7. Rutting (RUT)	poor construction, unsuitable pavement substructure
8. Shoving (SHV)	vehicle stop/start, heavy traffic on steep grades, poor asphalt mix design, unstable pavement substructure
9. Distortion (DST)	frost heaves, poor pavement substructure
10. Bleeding (BLD)	poor mix design, poor construction
11. Potholes (POT)	poor construction, drainage issues, poor asphalt mix design
12. Ravelling (RAV)	poor asphalt production, poor construction, aging/weathering

Some of the pavement distresses are indicators of problems such as poor substructure or base gravels. Examples of the indicators include pavement edge cracking, alligator cracking, rutting, shoving, distortion and potholes. All of these pavement condition parameters are indicative of conditions not permanently resolvable by milling and overlay.

2.2 On Site Road Assessment

On site road assessments using the MOTI Pavement Condition Rating system were conducted by senior technical staff of TRUE over a 2 day period in July 2019. On site assessment activities included:

- Initially a visual driving overview was completed followed by a detailed walking survey.
- Pavement distresses were noted and visually approximated based on severity and density level.
- Other forms of distress noted included drainage conditions, past crack sealing and patching.
- The distresses, as well as relevant notes on each road segment were recorded on standard evaluation forms for each segment. Several photographs were also taken of each road segment.

Detailed measurements of each distress parameter were not undertaken because of time constraints. No geotechnical investigations were undertaken through the course of the assessment study. Several streets such as Cottonwood Street, had surface deficiencies clearly indicating base and subbase deficiencies. In these cases, geotechnical investigations may be necessary to assess the adequacy of the overall pavement structure and assist in finalization of reconstruction scope and costs. Asphalt cores were completed on all assessed roads in July 2019 and reported within attached document Appendix C.

All field data for pavement condition parameters were tabulated in a spreadsheet and methodology from the MOTI used to calculate a pavement distress index for each road segment. The pavement distress index (PDI) is a numerical value generally between 10 (good condition) and 1 (poor condition).

To assist in an overall understanding of the condition of the Village's roads assessed; good, fair and poor classifications have been assigned to PDI ranges. These are:

TABLE 2-2: MOTI PAVEMENT DISTRESS INDEX CONDITION RANGE

Condition Classification	Pavement Distress Index
Good	> 7
Fair	5 to 7
Poor	< 5

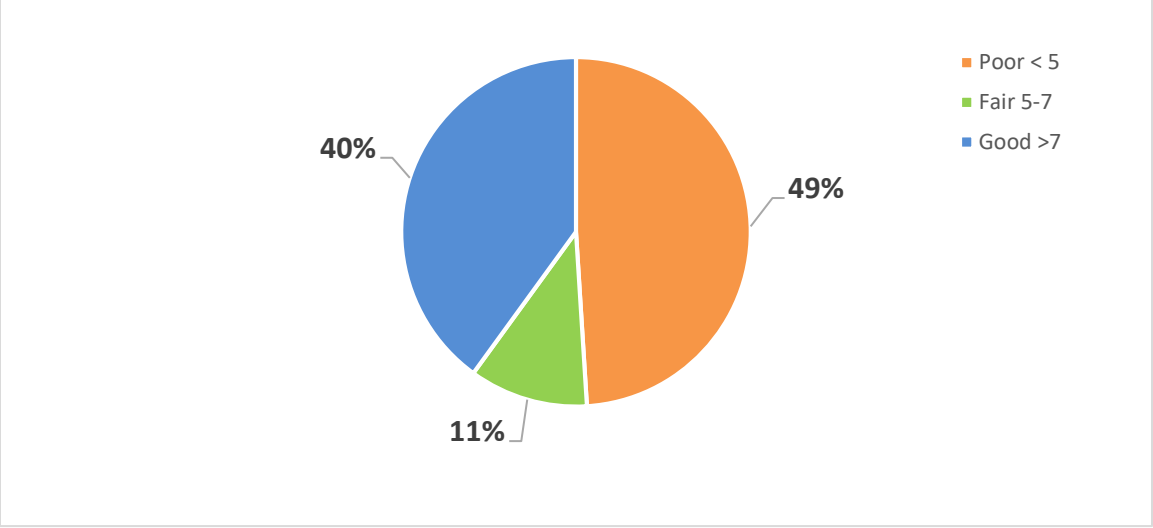
2.3 Road Pavement Assessment Rules

The pavement assessments for all roads surveyed are presented on spreadsheets in Appendix B. General conditions, i.e. good, fair and poor, for all assessed municipal streets are illustrated in Figure 2.5. The assessment is summarized in the tabulation following.

TABLE 2-3: ROAD CONDITION INVENTORY RESULTS (JULY 2019)

PDI Rating	Length [m]	Total Length [%]	Road Condition Category	PDI Rating Range	Total Length (%)
Poor			**Poor**	<5	49%
<2	535	12.03%	**Fair**	5-7	11%
2-3	195	4.38%	**Good**	>7	40%
3-4	240	5.40%		**Total**	**100.0%**
4-5	1195	26.87%			
Good					
7-8	288	6.48%			
8-9	605	13.60%			
9-10	887	19.95%			
Fair					
5-6	90	2.02%			
6-7	412	9.26%			

FIGURE 2-1: ROAD CONDITION INVENTORY RESULTS BY CONDITION CATEGORY (JULY 2019)



Fifteen of the road segments are categorized to be in “poor” condition, i.e., having a ranking of less than 5 points on the pavement distress index. Roads classified as “poor” will require extensive upgrades and most likely will require reconstruction. A significant number of the roads in this category appear to be compromised as a result of base and drainage deficiencies.

Five road segments are ranked between 5 and 7 on the pavement distress index, categorizing them to be in “fair” condition. These road assets will require a variety of upgrades depending on the type of distress.

Finally, the remaining fourteen road segments are categorized as “good” condition. These roads will likely only require basic maintenance to extend their service life and keep them in “good” condition into the future. Maintenance treatments that will be required on many of the roads include crack sealing and patching. It is crucial that the distresses in these “good” assets are addressed in a timely manner as the pavement without maintenance will degrade at a much faster rate.

For perspective of the three road condition categories, examples of each are presented on the following photos:

FIGURE 2-2: PAVEMENT EXAMPLES SHOWING GOOD CONDITION (> 7)

Cedar Avenue – Between Cottonwood Street and Start of Curb Section North

Lakeshore Drive – Between Second Avenue and House #315

FIGURE 2-3: PAVEMENT EXAMPLES SHOWING FAIR CONDITION (5 - 7)

Beach Drive – Between Crescents

Lakeshore Drive – Between Beach Drive and House #536

FIGURE 2-4: PAVEMENT EXAMPLES SHOWING POOR CONDITION (< 5)

Fourth Avenue – Between Pine Street and Birch Street

Margery Street – Between Thompson Avenue and Shuswap Avenue

The PDI values or ratings for the assessed municipal streets are presented by colour codes in Figure 2.6. This figure assists in understanding the rankings of individual streets in any of the broader good/fair/poor condition categories. As an example, Beach Crescent and Arbutus Street are both classified in the poor condition category, however, Arbutus Street (from Figure 2.6) has a modestly higher (better) PDI of 4 as compared to 1 for Beach Crescent. A breakdown of the PDI values for all surveyed road segments in the Village are contained in Appendix B.

VILLAGE OF CHASE
2019 PAVEMENT CONDITION ASSESSMENT

ROAD CONDITION RATINGS

TRUE CONSULTING

DESIGN BY: DU
SCALE: 1:7500
DWG NO.: 2.5 FIGURE
REV:
DRAWN BY: TT
DATE: JULY 2019

FILE:r:\clients\1300-1399\1377\1377-071\03 drawings\cad\02 design drawings\dn-1377-071.dwg

VILLAGE OF CHASE
2019 PAVEMENT CONDITION ASSESSMENT

PAVEMENT DISTRESS INDEX RATINGS

TRUE CONSULTING

DESIGN BY: DU	
SCALE: 1:7500	
DWG NO.: 2.6 FIGURE	REV:
DRAWN BY: TT	
DATE: JULY 2019	

FILE:r:\clients\1300-1399\1377\1377-071\03 drawings\cad\02 design drawings\dn-1377-071.dwg

3.0 Road Upgrading Options

3.1 Reconstruction Design Standards

The Village's Subdivision and Development Servicing Bylaw contains a street network map which identifies major network and collector roads within the Village. This map follows as Figure 1.

Within the "poor" condition category there are a number of low volume residential streets, i.e. Cottonwood Street and Beach Place, where reconstruction will require complete asphalt, base and subbase removal and replacement. In these cases, the Village will have to make a decision as to whether curb, gutter, sidewalk and possibly lighting will be included in the reconstruction scope. These ancillary works increase the cost of road reconstruction by approximately 2.5 times the cost, from approximately $500 to $1250 per meter. Some municipalities have policies whereby the existing standard is replaced when a low volume local neighbourhood road is reconstructed.

For local low volume roads requiring reconstruction, it is assumed that the existing standard would be constructed. Fronting property owners may be asked if they would want the scope expanded to include curb, gutter, sidewalk, etc. on a local improvement basis.

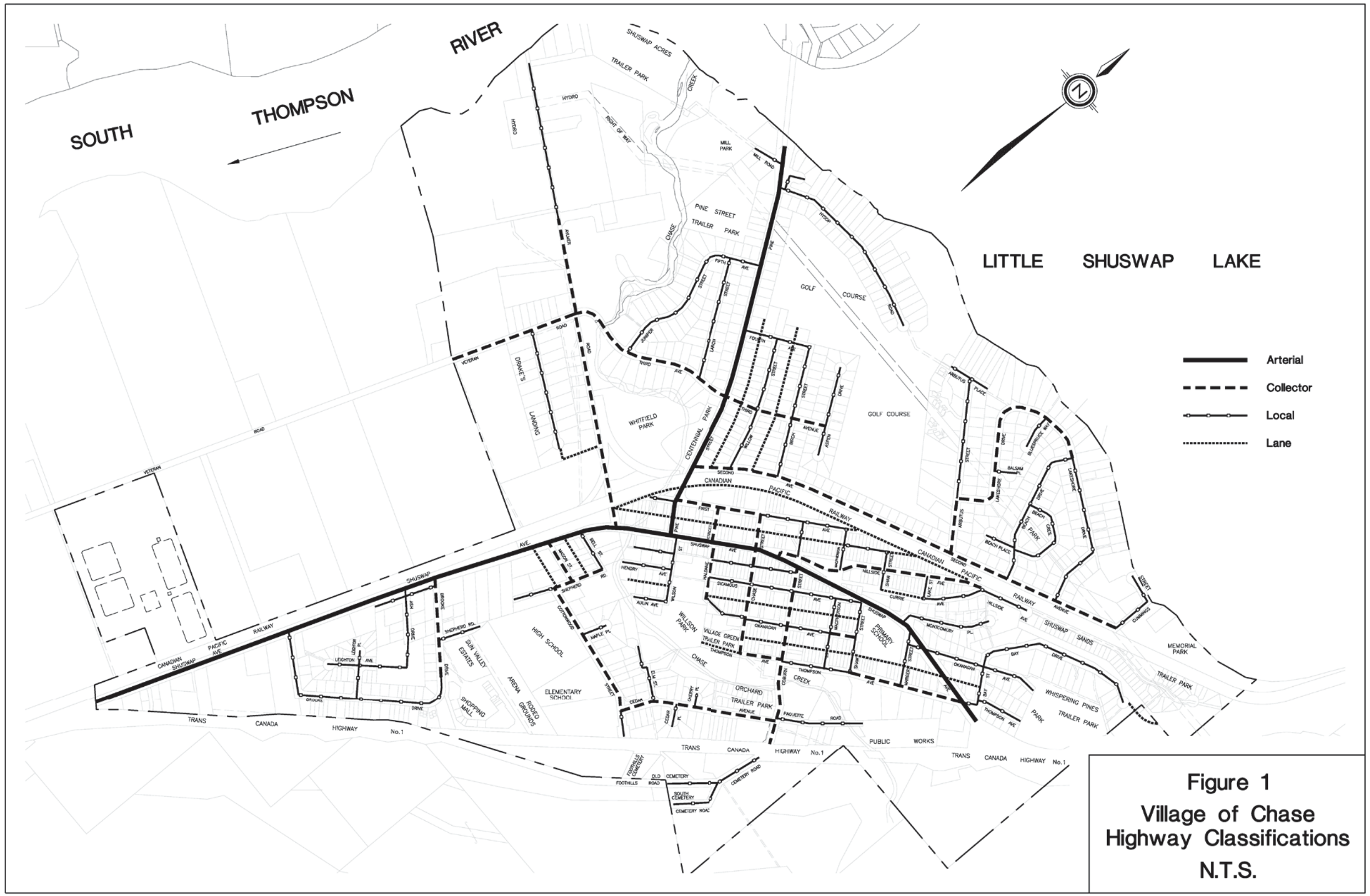


Figure 1
Village of Chase
Highway Classifications
N.T.S.

SCHEDULE B – ROADWAYS AND WALKWAYS

3.2 Upgrading Strategies

Upgrading strategies including preventative maintenance applicable to Village of Chase assessed roads are:

- crack sealing, preventative maintenance
- overlay
- mill and repave
- reconstruction

Lower maintenance costs are associated with crack sealing and higher maintenance and upgrading costs are associated with reconstruction.

Crack sealing is intended to keep water from entering the cracks in an existing asphalt surface and thereby increasing the life of a road. Many roads in the Village of Chase especially those in the “good” or “fair” categories, are good candidates for crack sealing as a method of extending the service life of the existing asphalt surface. Crack sealing involves the installation of a sealent followed by a finish in Portland Cement or equivalent. It is ideal to install crack sealant into clean dry cracks during the spring season when they are at their widest.

Overlaying is used when the road still has a solid base but there are cracks or areas of thin pavement that cannot be repaired with basic crack sealing treatment. An overlay involves covering the existing asphalt surface with a new layer. First the existing asphalt is cleaned and dried before tack is applied to the surface as a bonding agent, then the overlaying asphalt is applied. It is often beneficial to crackseal the existing cracks previous to overlaying, in order to minimize reflection cracking through the new overlayed surface. Overlays have proven to be a very effective method for extending service lifetime of low volume residential streets.

Mill and repavement is ideal for situations where the surface is very poor and reflection cracking will inevitibly occur if the surface is overlayed. Mill and repaving occurs in the same manner as overlaying, however, before resurfacing all of the previous asphalt surface is ground and removed. Therefore the base structure still remains and a complete new surface is applied.

Mill and overlay is particulary applicable to streets with curb, gutter and sidewalks where the asphalt surface is reaching the end of its service life. Examples where mill and overlay is applicable include Birch Street and Arbutus Street.

The last and most expensive option to address a deteriorating road condition is reconstruction. Reconstruction is the recommended approach where base or subbase deficiencies are identified as the primary causes of the surface deterioration, i.e. Beach Crescent and Fourth Avenue. Reconstruction typically comprises complete removal and replacement of granular subbase, crush gravel base and asphalt.

Appendix B of this report provides general recommendations for the appropriate option to maintain or upgrade assessed roads within the Village.

3.3 Capital Cost Estimates for Road Upgrading

The condition assessment spreadsheet (Appendix A) includes data for the segment road length and pavement width. The spreadsheet provides a relatively straightforward means to develop budget capital cost estimates for the recommended upgrading strategy. The unit costs presented in Table 3-1 were incorporated into the spreadsheet for the purpose of developing budget capital cost estimates to preserve or upgrade the pavement surface.

TABLE 3-1: ROADWORKS MAINTENANCE/UPGRADING UNIT COST BUDGET

Item	Unit of Measurement	Unit Price
Mill and Repave	m²	$40.00
Reconstruct c/w Base and Subbase Grade	m²	$60.00
Curb and Gutter	m	$140.00
Sidewalk	m	$150.00
Overlay	m²	$25.00
Street Light (30m interval)	m	$200.00
Crack Sealing	m	$2.50
Contingency & Engineering Allowance		30%

It is essential to note that the spreadsheet develops budget capital cost estimates to maintain or upgrade the existing asphalt or pavement structure surface. The budget capital cost estimates derived from the spreadsheet do not include:

- works to address adverse soil bearing conditions below subbase.
- allowances to provide ancillary works, i.e. curb, gutter, sidewalk, or street lighting or to widen the existing pavement surface.
- allowances to upgrade storm drainage works. Every street in the Village is unique in terms of storm water management. At the time that a street segment is identified for upgrading, an assessment of appropriate storm water management improvements should be undertaken.
- allowances for the concurrent upgrading of storm, water and/or sanitary sewer infrastructure. Prior to the finalization of any cost estimates for capital improvements the condition of subsurface infrastructure would be reviewed and any upgrading considered necessary included in the project budget. At a minimum water services should be

assessed and replaced as considered appropriate concurrent with a road upgrading project.

4.0 Road Upgrading Program and Priorities

4.1 Comprehensive Crack Sealing Program

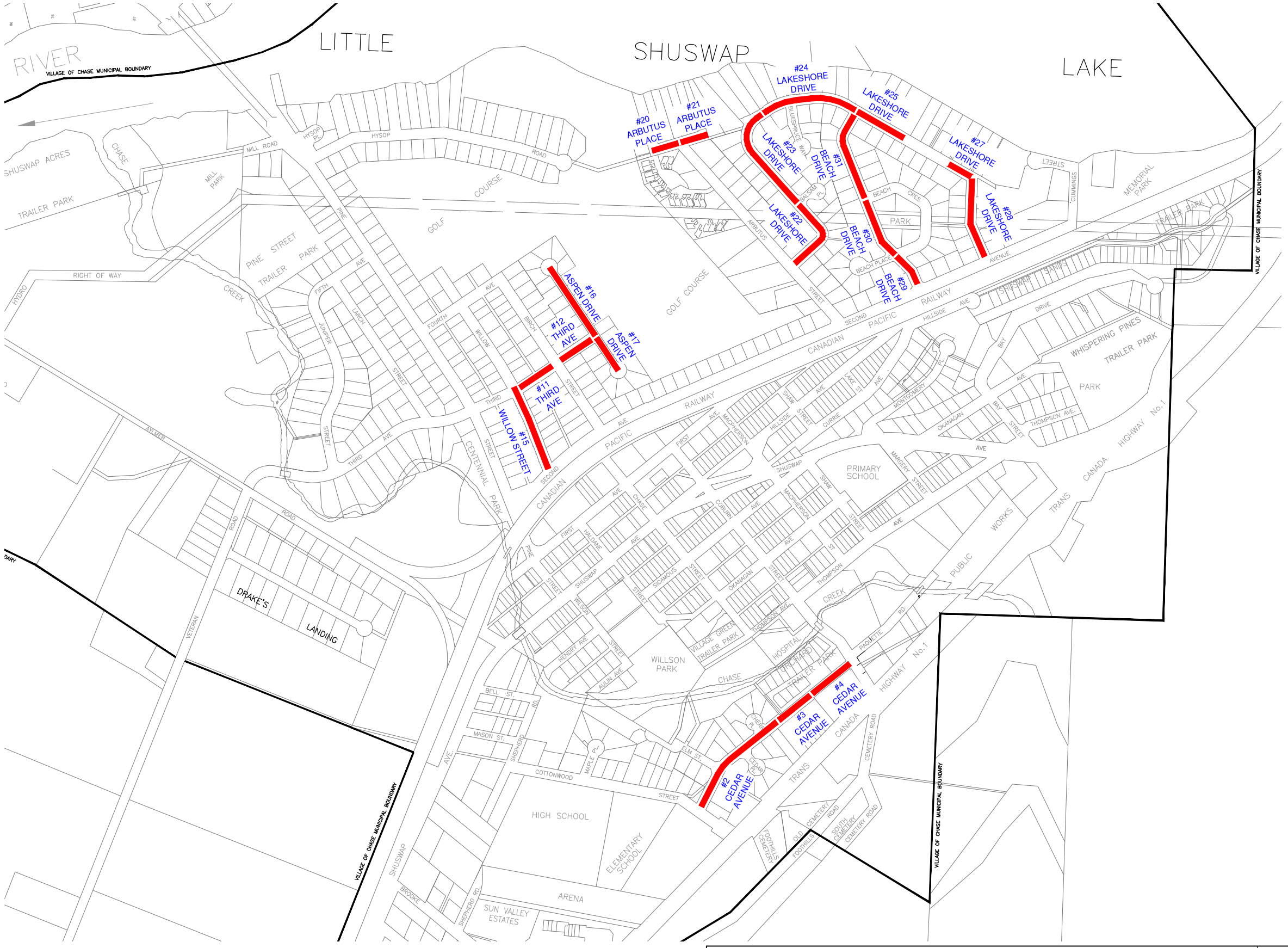
A comprehensive crack sealing program is suggested having the objective of preserving the road surface quality as indicated by the pavement distress index. Functionally, crack sealing prevents stormwater from entering the road base materials. Stormwater flow through cracks into the road subbase and base materials results in an acceleration of road surface deterioration.

As shown in Figure 4-1, the crack sealing program is intended to include all roads with a good condition rating category or recommended for overlaying. Crack sealing requirements will vary significantly between road segments. The estimated cost of the crack sealing program is based on limited measurements of actual crack lengths and experience with similar programs in other municipalities. Measuring the crack lengths within each assessed road segment represents detail beyond the scope of this study.

4.2 Road Upgrading Program

The road upgrading program focuses on road segments assessed in poor condition. As illustrated in Figure 2.5, there are a total of 15 road segments that are classified as poor condition. Within this category, higher priority is assigned:

- to major municipal roads.
- to road segments where a separate infrastructure deficiency exists, in most cases a drainage problem.



VILLAGE OF CHASE
2019 PAVEMENT CONDITION ASSESSMENT

CRACK SEALING

TRUE CONSULTING

DESIGN BY: DU
SCALE: 1:7500
DRAWN BY: TT
DATE: JULY 2019
DWG NO.: 4.1 FIGURE
REV:

FILE:r:\clients\1300-1399\1377\1377-071\03 drawings\cad\02 design drawings\dn-1377-071.dwg

Table 4-1 lists all street segments in the poor category with a priority rating for upgrading.

TABLE 4-1: ROAD UPGRADING PRIORITY RANKINGS

High Priority	Medium Priority	Low Priority
▪ Margery Street (#7)	▪ Thompson Avenue (#6)	▪ Cottonwood Street (#1)
▪ Pine Street (#8)	▪ Fourth Avenue (#9)	▪ Elm Street (#5)
▪ Third Avenue (#10)	▪ Beach Crescent (#32)	▪ Birch Street (#13)
▪ Arbutus Street (#18)	▪ Beach Crescent (#33)	▪ Birch Street (#14)
▪ Lakeshore Drive (#26)	▪ Beach Place (#34)	▪ Arbutus Street (#19)

Sections following provide a brief description of proposed upgrading for road segments listed in Table 4-1 and illustrated in Figure 4-2.

VILLAGE OF CHASE
2019 PAVEMENT CONDITION ASSESSMENT

PRIORITY RANKINGS OF 'POOR' CONDITION RATING

TRUE CONSULTING

DESIGN BY: DU
SCALE: 1:7500
DWG NO.: 4.2 FIGURE
REV:
DRAWN BY: TT
DATE: JULY 2019

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4.2.1 High Priority Roads

Segments judged to be a high priority for upgrading are illustrated in Figure 4.2 and described following:

4.2.1.1 Margery Street (Road #7)

Margery Street is a local road about 120m in length with an average pavement width of 7.7m. The PDI of the pavement surface is -0.88 on the basis of the severe edge, transverse, and alligator cracking throughout. Previously placed asphalt patches and potholes are abundant on the upper portion. The turf boulevards sit adjacent to the road edge and are well above the paved surface which is trapping storm water run-off; thus entering the cracks and saturating the base gravels. The asphalt surface is the worst encountered within reporting.

Reconstruction is the recommended approach for upgrading Margery Street at which time the subgrade should be evaluated for any required replacements. It is also suggested that storm sewer catchbasins (2) be installed and tied to the existing infrastructure on Shuswap Avenue. Approximately 60m of asphalt curbing will ensure surface water is directed into the storm system and not eroding the pavement edge.

Reconstruction to Existing Area		$55,440
Storm Sewer Installations		$10,000
Asphalt Curbing		$2,700
	Subtotal	$68,140
Option to Reconstruct to Urban Standard		$107,040
Storm Sewer Installations		$10,000
	Total	$117,040

Pine Street (Road #8) From Third Avenue to Fourth Avenue

This segment of Pine Street is designated as an arterial road that is ± 195m in length and has 9.1m asphalt width between the existing concrete curbs. A concrete sidewalk is located on the west side. The PDI of the pavement surface is 2.44 on the basis of moderate longitudinal wheel path, meandering longitudinal and alligator cracking. Rutting is throughout both traffic lanes and, combined with cracking types, indicates structure failures due to loading. Asphalt core results indicate 100mm to 125mm of thickness with approximately 250mm of base gravels. It is also apparent that settlements have occurred at a few catchbasins and sections of the concrete curb has spalling (±40m).

Reconstruction is recommended at which time the road structure should be reviewed and designed for traffic loads occurring on Pine Street.

Reconstruction of Pine Street		$106,470
Concrete Curb & Gutter Repairs		$7,000
Storm Sewer Repairs		$5,000
	Subtotal	$118,470

4.2.1.2 Third Avenue (Road #10) From Pine Street to Willow Street

This segment of Third Avenue is 95m in length, averages 6.8m in width and is a designated collector. Extensive cracking is present throughout which results in a PDI rating of -0.83. A few pot holes are located near the mid-point of this road. Storm water drainage is contained at the pavement edges due to higher boulevards and thus allowing the base gravels to become saturated over time. Further damage occurs during freeze/thaw events and the road cannot sustain traffic loads.

Accordingly, it is suggested that reconstruction include establishing drainage swales and a storm sewer collection system that would tie to the existing storm manhole on Pine Street.

Reconstruction of Existing Area		$38,760
Storm Sewer Installations		$10,000
Drainage Swales		$3,000
	Subtotal	$51,760
Option to Reconstruct to Urban Standard		$79,610
Storm Sewer Installations		$10,000
Drainage Swales		$3,000
	Subtotal	$92,610

4.2.1.3 Arbutus Street (Road #18) From Second Avenue to Lakeshore Drive

This segment of Arbutus Street is about 130m in length, 7.5m average width and has a pavement distress rating of 4.5. It is a collector road until north of Lakeshore where it is designated local. Visible pavement edge, transverse and alligator cracking is frequent with a severity rating of moderate to extensive. The east side of the northbound lane is predominately worse due to drainage containment at the pavement edge.

Milling and repaving is the recommended approach for upgrading. Furthermore, approximately 300m² of base reconstruction along with storm swale grading complete with localized storm sewer drywells should be included prior to asphalt placement.

Mill and Repave to Existing Area	$39,000
±300m² of Base Reconstruction	$13,500
Localized Storm Sewer Installations	$10,000
Drainage Swales	$4,000
Subtotal	$66,500

Option to Reconstruct to Urban Standard	$94,900
±300m² of Base Reconstruction	$13,500
Localized Storm Sewer Installations	$10,000
Drainage Swales	$4,000
Subtotal	$122,400

4.2.1.4 Lakeshore Drive (Road #26) From House #325 to House #340

This segment of road has a pavement distress rating of 4.79 which is the lowest of all segments of Lakeshore Drive. It is a local road segment that is 90m in length and 7.3m wide. A total of 8 asphalt cores were completed on Lakeshore Drive with 7 having a thickness over 56mm; this segment measured 27mm with varying layers of gravels and chip seal asphalt.

Cracking includes moderate longitudinal joint and pavement edge, yet alligator cracking is extensive. Storm drainage deficiencies and suspected substandard base are the primary contributing factors to the pavement failures.

Milling and repaving is recommended complete with base evaluation and repairs and localized storm sewer improvements. Reconstruction of base gravels may be required throughout the entire segment pending the geotechnical inspection.

Mill and Repave to Existing Area	$26,280
±360m² of Base Reconstruction	$16,200
Localized Storm Sewer Installations	$9,000
Subtotal	$51,480

Option to Reconstruct to Urban Standard	$64,980
±300m² of Base Reconstruction	$16,200
Localized Storm Sewer Installations	$9,000
Subtotal	$90,180

4.2.2 Medium Priority Roads

Roads assigned a low or medium priority for upgrades are generally local residential roads where there is traffic flow connectivity between neighbourhoods. From Figure 4.2, a total of 5 road segments are identified as medium priority upgrading and are described following:

4.2.2.1 Thompson Avenue (Road #6) From Margery Street to Southwest End

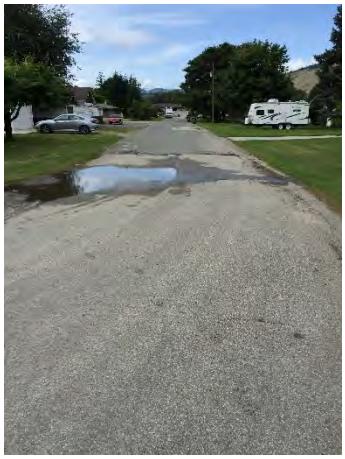
This segment of Thompson Avenue represents a length of 240m with the pavement width averaging 7.2m. The pavement surface has a pavement distress rating of 4.57 derived from high severity longitudinal wheel path cracking and moderate alligator cracking. Considering this segment is a designated collector, the asphalt core results indicate thin asphalt (29mm and 35mm). The road profile is lacking a defined crown or crossfall which is confining storm water run-off to unsuitable locations.

Localized storm sewer installations along with ± 150m² of base reconstruction shall be included with the recommended milling and repaving.

Mill and Repave to Existing Area	$69,120
±150m² of Base Reconstruction	$6,750
Localized Storm Sewer Installations	$6,000
Drainage Swales in Boulevards	$9,000
Subtotal	$90,870

Option to Reconstruct to Urban Standard	$172,320
±150m² of Base Reconstruction	$6,750
Localized Storm Sewer Installations	$6,000
Drainage Swales in Boulevards	$9,000
Subtotal	$194,070

4.2.2.2 Fourth Avenue (Road #9)



Fourth Avenue is 170m in length with an average pavement width of 6.8m and is a designated local road. A pavement distress rating of 3.19 reflects the moderate cracking, patching, and storm drainage issues throughout. The storm drainage is the major contributing factor as the existing drywell (near Willow) has failed, shoulders have overgrown containing drainage, and the road profile has lost any definition that may have been. Boulevards are generally lower than the road edge, yet high shoulders are preventing functionality.

It is recommended, as part of reconstruction, that the road be raised approximately 0.2 – 0.3m to aid in drainage. Localized storm sewer installations and replacements should be included as part.

Reconstruction of Existing Area		$69,360
Storm Sewer Installations		$10,000
	Subtotal	$79,360
Option to Reconstruct to Urban Standard		$142,460
Storm Sewer Installations		$10,000
	Subtotal	$152,460

4.2.2.3 Beach Crescent (Road #32) From Beach Drive South to House #31

The segment of Beach Crescent, representing a length of 175m and a width of 7.1m, is a local road with moderate longitudinal joint, pavement edge and transverse cracking throughout. High severity alligator cracking and distortion are also visible on the entire segment. The negative pavement distress rating of -1.23 reflects the settlement of the previously placed utility trench and storm drainage containment at the road edges. Apparent base saturation has led to majority failures within that remove the capability of this segment handling any traffic loads.

Concurrently with road reconstruction, modest localized storm sewer installations and road profile raising is recommended. Drainage swales exist for the most part, yet are under utilized due to settlements within the travelled surface.

Reconstruction of Existing Area		$74,550
Localized Storm Sewer Installations		$35,000
	Subtotal	$109,550
Option to Reconstruct to Urban Standard		$149,800
Storm Sewer Installations		$35,000
	Subtotal	$184,800

4.2.2.4 Beach Crescent (Road#33) From House #31 to Beach Drive North

Moderate pavement edge cracking and alligator cracking along with extensive distortion give this local road section a pavement distress rating of 3.76. The segment is 70m in length and averages 6.3m in width with a few utility trench crossings that have settlement. High boulevards are containing storm drainage to the pavement edge and within the traffic lanes.

The recommended reconstruction should include localized storm sewer installations, asphalt curbing, and road profile raising in part.

Reconstruction to Existing Area	$24,460
Localized Storm Sewer Installations	$15,000
Asphalt Curbing (±60m)	$2,700
Subtotal	$42,160
Option to Reconstruct to Urban Standard	$56,560
Localized Storm Sewer Installations	$15,000
Subtotal	$71,560

4.2.2.5 Beach Place (Road #34)

Beach Place is consistent with findings on Beach Crescent (Segment #32) relating to cracking severity and settlement within utility trenches. The cul-de-sac has settled in numerous locations and ponding storm water throughout. Boulevards do not allow any drainage off the road surface whatsoever. This local road is 70m in length, 6.6m in width, ends with a 25m diameter cul-de-sac and has a pavement distress rating of 1.91.

Reconstruction is the recommended approach for upgrading and should be in conjunction with localized storm sewer installations and ±40m of asphalt curbing.

Reconstruction to Existing Area	$27,720
Localized Storm Sewer Installations	$12,000
Asphalt Curbing	$1,800
Subtotal	$41,520
Option to Reconstruct to Urban Standard	$57,820
Localized Storm Sewer Installations	$12,000
Subtotal	$69,820

4.2.3 Low Priority Roads

As described previously, roads assigned a low or medium priority for upgrades are generally local residential roads where there is a traffic flow connectivity between neighbourhoods. Figure 4.2 indicates 5 road segments identified as low priority upgrading and are summarized as follows:

4.2.3.1 Cottonwood Street (Road #1) From Cedar Avenue to Southeast End

This segment of Cottonwood Street is designated local and is 75m in length and averages 11m in width. The negative pavement distress rating of -0.14 derives from moderate to high cracking and distortion along with the settlements of the previously placed utility trench. High boulevards along with the mentioned settlements result in severe storm water ponding throughout this road segment.

Reconstruction is the recommended approach for upgrading at which time it is suggested the road cross-section be modified to crossfall south into the lower play fields and that the utility trench subgrade be evaluated for specification requirements.

Reconstruction to Existing Area	$49,500
Cross-Section and Boulevard Modifications	$3,000
Subtotal	$52,500
Option to Reconstruct to Urban Standard	$81,750
Localized Storm Sewer Installations	$15,000
Subtotal	$96,750

4.2.3.2 Elm Street (Road #5)

Elm Street is 100m in length and 7.3m in width that terminates, at the west end, with a half moon cul-de-sac. This locally designated road has a pavement distress rating of 4.19 reflecting the failed utility trench base and poor road drainage. All the boulevards are graded to the pavement edge trapping storm water.

In conjunction with the recommended milling and repaving allowances should be made to repair the utility trench gravels, install localized storm sewers complete with asphalt curbing, and establish boulevard swales between property access points

Mill and Repave to Existing Area		$29,200
±260m² of Base Reconstruction		$11,700
Localized Storm Sewer Installations		$10,000
Asphalt Curb (±50m)		$2,250
Drainage Swales in Boulevards		$3,000
	Subtotal	$56,150
Option to Reconstruct to Urban Standard		$72,200
±260m² of Base Reconstruction		$11,700
Localized Storm Sewer Installations		$10,000
Drainage Swales in Boulevards		$3,000
	Subtotal	$96,900

4.2.3.3 Birch Street (Road #13) From Third Avenue to Fourth Avenue / (Road #14) From Second Avenue to Third Avenue

These two road segments are representative of each other and have a pavement distress rating of 4.97. Segment #13 is 190m in length compared to segment #14 being 140m. The average pavement width is 7.4m. Both road segments have moderate alligator and pavement edge cracking due to storm drainage containment at the pavement edge. The boulevards are generally low, yet the shoulder turf has overgrown to an elevation higher than the edge of pavement. As expected in aged asphalt, transverse and meandering longitudinal cracking is throughout.

Milling and repaving is the recommended approach and should include provisions for localized base replacements, boulevard swale definition and grading, as well as localized storm sewer installations.

Road #13

Mill and Repave to Existing Area		$56,240
±120m² of Base Reconstruction		$5,400
Drainage Swales in Boulevards		$5,800
Localized Storm Sewer Installations		$21,000
	Subtotal	$88,440
Option to Reconstruct to Urban Standard		$137,940
±120m² of Base Reconstruction		$5,400
Drainage Swales in Boulevards		$5,800
Localized Storm Sewer Installations		$21,000
	Subtotal	$170,140

Road #14

Mill and Repave to Existing Area		$40,880
±100m² of Base Reconstruction		$4,500
Drainage Swales in Boulevards		$4,200
Localized Storm Sewer Installations		$15,000
	Subtotal	$64,580

Option to Reconstruct to Urban Standard		$101,080
±100m² of Base Reconstruction		$4,500
Drainage Swales in Boulevards		$4,200
Localized Storm Sewer Installations		$15,000
	Subtotal	$124,780

4.2.3.4 Arbutus Street (Road #19) From Lakeshore Drive to Arbutus Place

This segment of Arbutus Street is 305m in length and averages 7.5m in width. It is a local road with a pavement distress rating of 4.5 due to moderate pavement edge, transverse, and alligator cracking. Contained storm run-off at the pavement edges have caused localized base failures. Boulevards on the west side are generally lower than the road edge.

Allowances should be made for localized base reconstruction and storm swale/drainage improvements as part of the recommended mill and repave upgrading.

Mill and Repave to Existing Area		$91,500
±230m² of Base Reconstruction		$10,350
Localized Storm Sewer Installations		$6,000
	Subtotal	$107,850

Option to Reconstruct to Urban Standard		$222,650
±230m² of Base Reconstruction		$10,350
Drainage Swales		$6,000
	Subtotal	$239,000

5.0 Summary and Recommendations

5.1 Summary

As a result of the condition assessment study that was completed for all selected roads in the Village of Chase, a PDI rating was calculated for each road segment. The PDI rating is generated based on the MoTI Pavement Surface Condition Rating Manual. The methodology provided by the MoTI manual was used to identify the type and extent of surface cracking of a road segment. The PDI rating permits condition comparisons of individual road segments and provides a classification system.

4.4km of roads were assessed as part of this document, the conditions for which are summarized as follows:

TABLE 5-1: SUMMARY OF ROAD CONDITIONS BY PDI RATING RANGE

Road Condition	PDI Rating Range	km (% of Total)
Good	> 7	1.78 km (40%)
Fair	5 to 7	0.50 km (11%)
Poor	< 5	2.16 km (49%)

5.2 Recommendations

With about 40% of the assessed municipal streets having a pavement surface in “good” condition, preventative maintenance in the form of a crack sealing program is recommended. The objective is to prevent water flow through cracks which compromises granular base materials leading to accelerated pavement surface deterioration.

Road segments having a “poor” condition rating should be the focus of the Village’s road capital improvement budget. There are a total of 15 road segments that are in the “poor” condition category. Each of the 15 road segments have been assigned a priority for improvements; low, medium and high. A higher priority is assigned to major municipal roads and/or road segments where a separate infrastructure deficiency exists, such as the most common deficiency; a lack of drainage. Lower priorities are low volume residential roads and/or roads where future development is anticipated that will assist with the funding of road improvements.

Table 5-2 lists all road segments having a “poor” condition rating grouped by priority. The order of listing in each group is not an order or priority. Table 5-2 provides the PDI rating and recommended upgrading for each road segment to existing standards. Estimates are provided

to upgrade to urban standards, i.e. curb, gutter and sidewalks where historical cost data is available.

Of the 15 road segments listed in Table 5-2 a majority will require reconstruction including subbase gravels. An inadequate subbase is considered as the primary contributing factor to the poor condition of many roads in the Village of Chase.

Subbase reconstruction represents about 25% of the reconstruction cost per square meter. It is recommended that the Village assess the feasibility of establishing a gravel stockpile that can be used for road reconstruction purposes.

TABLE 5-2: SUMMARY OF ROAD UPGRADING RECOMMENDATIONS

	Segment	PDI	Upgrading Proposed	To Existing Standard	To Urban Standard	Comment
High Priority						
1) Margery Street	7	-0.88	Reconstruction	$55,440	$107,040	Subgrade Review
2) Pine Street	8	2.44	Reconstruction	$106,470	In Place	Structure Failure
3) Third Avenue	10	-0.83	Reconstruction	$38,760	$79,610	Drainage Issues
4) Arbutus Street	18	4.50	Mill & Repave	$39,000	$94,900	Localized Base Replacements
5) Lakeshore Drive	26	4.79	Mill & Repave	$26,280	$64,980	Localized Base Replacements
Medium Priority						
1) Thompson Avenue	6	4.57	Mill & Repave	$69,120	$172,320	Drainage Issues
2) Fourth Avenue	9	3.19	Reconstruction	$69,360	$142,460	Drainage Issues
3) Beach Crescent	32	-1.23	Reconstruction	$74,550	$149,800	Utility Trench Failure
4) Beach Crescent	33	3.76	Reconstruction	$26,460	$56,560	Utility Trench Failure
5) Beach Place	34	1.91	Reconstruction	$27,720	$57,820	Utility Trench Failure
Low Priority						
1) Cottonwood Street	1	-0.14	Reconstruction	$49,500	$81,750	Utility Trench Failure, Drainage Issues
2) Elm Street	5	4.19	Mill & Repave	$29,200	$72,200	Utility Trench Failure, Drainage Issues
3) Birch Street	13	4.97	Mill & Repave	$56,240	$137,940	Drainage Issues
4) Birch Street	14	4.97	Mill & Repave	$40,880	$101,080	Drainage Issues
5) Arbutus Street	19	4.50	Mill & Repave	$91,500	$222,650	Drainage Issues

APPENDIX A

Road Condition Assessment Form

Pavement Distress Rating System – Severity Levels			
Distress Type	Low Severity	Moderate Severity	High Severity
Longitudinal Wheel Path Cracking (LWP)	Single cracks with no spalling; mean unsealed crack width < 5mm	Single or multiple cracks; moderate spalling; mean unsealed crack width 5-20mm	Single or multiple cracks; severe spalling; mean unsealed crack width >20mm; alligator
Longitudinal Joint Cracking (LJC)	Single cracks with no spalling; mean unsealed crack width < 5mm	Single or multiple cracks; moderate spalling; mean unsealed crack width 5-20mm	Single or multiple cracks; severe spalling; mean unsealed crack width >20mm; alligator
Pavement Edge Cracking (PEC)	Single cracks with no spalling; mean unsealed crack width < 5mm	Single or multiple cracks; moderate spalling; mean unsealed crack width 5-20mm	Single or multiple cracks; severe spalling; mean unsealed crack width >20mm; alligator
Transverse Cracking (TC)	Single cracks with no spalling; mean unsealed crack width < 5mm	Single or multiple cracks; moderate spalling; mean unsealed crack width 5-20mm	Single or multiple cracks; severe spalling; mean unsealed crack width >20mm; alligator
Meandering Longitudinal Cracking (MLC)	Single cracks with no spalling; mean unsealed crack width < 5mm	Single or multiple cracks; moderate spalling; mean unsealed crack width 5-20mm	Single or multiple cracks; severe spalling; mean unsealed crack width >20mm; alligator
Alligator Cracking (AC)	Not rated	Interconnected cracks forming a complete block pattern; slight spalling and no pumping	Interconnected cracks forming a complete block pattern, moderate to severe spalling, pieces may move and pumping may exist
Rutting (RUT)	Less than 10mm	10 to 20mm	Greater than 20mm
Shoving (SHV)	Barely noticeable to noticeable	Rough ride	Very rough ride
Distortion (DST)	Not rated	Noticeable swaying motion; good car control	Fair to Poor car control
Bleeding (BLD)	Not rated	Distinctive appearance with free excess asphalt	Free asphalt gives pavement surface a wet look; tire marks are evident
Potholes (POT)	Less than 25mm deep	25 to 50mm deep	Greater than 50mm deep
Ravelling (RAV)	Not rated	Aggregate and/or binder worn away; surface texture rough and pitted; loose particles exist	Aggregate and/or binder worn away; surface texture is very rough and pitted

Pavement Distress Rating System – Density Levels							
Distress Type	Units	None	Few	Intermittent	Frequent	Extensive	Throughout
Longitudinal Wheel Path Cracking (LWP)	Length	0%	< 10%	10-20%	20-50%	50-80%	80-100%
Longitudinal Joint Cracking (LJC)	Length	0%	< 10%	10-20%	20-50%	50-80%	80-100%
Pavement Edge Cracking (PEC)	Length	0%	< 10%	10-20%	20-50%	50-80%	80-100%
Transverse Cracking (TC)	Number	0	1-2	3-4	5-7	8-10	>10
Meandering Longitudinal Cracking (MLC)	Length	0%	< 10%	10-20%	20-50%	50-80%	80-100%
Alligator Cracking (AC)	Area	0%	< 10%	10-20%	20-50%	50-80%	80-100%
Rutting (RUT)	Length	0%	< 10%	10-20%	20-50%	50-80%	80-100%
Shoving (SHV)	Length	0%	< 10%	10-20%	20-50%	50-80%	80-100%
Distortion (DST)	Length	0%	< 10%	10-20%	20-50%	50-80%	80-100%
Bleeding (BLD)	Length	0%	< 10%	10-20%	20-50%	50-80%	80-100%
Potholes (POT)	Number	0	1-2	3-4	5-6	7-9	>10
Ravelling (RAV)	Length	0%	< 10%	10-20%	20-50%	50-80%	80-100%

APPENDIX B

Road Assessment Summary

STATIC INFORMATION							PDI					Cost Estimate	
Road #	Road Name	Road Category	Start	End	Road Length [m]	Road Width [m]	PDI	Drainage Deduct	Total Deduct	General PDI Category	Recommended Maintenance	Recommended Maintenance Estimate	Upgrade to Urban Standard Estimate (Includes Recommended Maintenance)
1	Cottonwood St	Local	Cedar Ave	East Cds	75	11	-0.1	1.0	10.1	Poor	Reconstruction	$49,500.00	$81,750.00
2	Cedar Ave	Collector	Cottonwood St	Start Curb	220	7.4	9.4	0.0	0.6	Good	Crack Seal	$550.00	$95,150.00
3	Cedar Ave	Collector	Start Curb	End Curb	78	9.8	7.1	0.0	2.9	Good	Crack Seal	$195.00	$22,815.00
4	Cedar Ave	Collector	End Curb	Coburn St	90	8.4	5.3	0.3	4.7	Fair	Overlay	$18,900.00	$57,600.00
5	Elm St	Local	Cedar Ave	Cds	100	7.3	4.2	1.0	5.8	Poor	Mill and Repave	$29,200.00	$72,200.00
6	Thompson Ave	Collector	Margery St	SW End	240	7.2	4.6	1.0	5.4	Poor	Mill and Repave	$69,120.00	$172,320.00
7	Margery St	Local	Thompson Ave	Shuswap Ave	120	7.7	-0.9	1.0	10.9	Poor	Reconstruction	$55,440.00	$107,040.00
8	Pine St	Arterial	3rd Ave	4th Ave	195	9.1	2.4	0.0	7.6	Poor	Reconstruction	$106,470.00	$106,470.00
9	Fourth Ave	Local	Pine St	Birch St	170	6.8	3.2	1.0	6.8	Poor	Reconstruction	$69,360.00	$142,460.00
10	Third Ave	Collector	Pine St	Willow St	95	6.8	-0.8	1.0	10.8	Poor	Reconstruction	$38,760.00	$79,610.00
11	Third Ave	Collector	Willow St	Birch St	87	7	9.6	0.3	0.4	Good	Crack Seal	$217.50	$37,627.50
12	Third Ave	Collector	Birch St	Aspen Dr	80	7.3	9.6	0.3	0.4	Good	Crack Seal	$200.00	$34,600.00
13	Birch St	Local	Fourth Ave	Third Ave	190	7.4	5	1.0	5.0	Poor	Mill and Repave	$56,240.00	$137,940.00
14	Birch St	Local	Third Ave	Second Ave	140	7.3	5	1.0	5.0	Poor	Mill and Repave	$40,880.00	$101,080.00
15	Willow St	Local	Second Ave	Third Ave	160	6.9	8.4	1.0	1.6	Good	Crack Seal	$400.00	$69,200.00
16	Aspen Dr	Local	Third Ave	North Cds	145	7.5	9.6	0.3	0.4	Good	Crack Seal	$362.50	$62,712.50
17	Aspen Dr	Local	Third Ave	South Cds	85	7	8.8	1.0	1.2	Good	Crack Seal	$212.50	$36,762.50
18	Arbutus St	Collector	Second Ave	Lakeshore Dr	130	7.5	4.5	1.0	5.5	Poor	Mill and Repave	$39,000.00	$94,900.00
19	Arbutus St	Local	Lakeshore Dr	Arbutus Pl	305	7.5	4.5	1.0	5.5	Poor	Mill and Repave	$91,500.00	$222,650.00
20	Arbutus Pl	Local	Arbutus St	West End	52	7.3	6.6	0.3	3.4	Fair	Overlay	$9,490.00	$31,850.00
21	Arbutus Pl	Local	Arbutus St	East End	55	10	6.9	0.0	3.1	Fair	Overlay	$13,750.00	$37,400.00
22	Lakeshore Dr	Collector	Arbutus St	Balsam Pl	150	7.2	8.6	0.0	1.4	Good	Crack Seal	$375.00	$64,875.00
23	Lakeshore Dr	Collector	Balsam Pl	House #547	210	7.7	7.3	0.0	2.7	Good	Crack Seal	$525.00	$90,825.00
24	Lakeshore Dr	Collector	House #547	Beach Dr	195	7.2	6.8	1.0	3.2	Fair	Overlay	$35,100.00	$118,950.00
25	Lakeshore Dr	Local	Beach Dr	House #340	105	7.5	9.6	0.3	0.4	Good	Crack Seal	$262.50	$45,412.50
26	Lakeshore Dr	Local	House #340	House #325	90	7.3	4.8	1.0	5.2	Poor	Mill and Repave	$26,280.00	$64,980.00
27	Lakeshore Dr	Local	House #325	House #315	60	7.2	9.9	0.0	0.1	Good	Crack Seal	$150.00	$25,950.00
28	Lakeshore Dr	Local	House #315	Second Ave	145	7.3	8.7	0.0	1.3	Good	Crack Seal	$362.50	$62,712.50
29	Beach Dr	Local	Second Ave	Beach Cres S	65	6.7	8.6	0.3	1.4	Good	Crack Seal	$162.50	$28,112.50
30	Beach Dr	Local	Beach Cres S	Beach Cres N	110	6	6.8	1.0	3.2	Fair	Overlay	$16,500.00	$63,800.00
31	Beach Dr	Local	Beach Cres N	Lakeshore Dr	190	7.3	9.7	0.0	0.3	Good	Crack Seal	$475.00	$82,175.00
32	Beach Cres	Local	Beach Drive	House #31	175	7.1	-1.2	1.0	11.2	Poor	Reconstruction	$74,550.00	$149,800.00
33	Beach Cres	Local	House #31	Beach Dr	70	6.3	3.8	1.0	6.2	Poor	Reconstruction	$26,460.00	$56,560.00
34	Beach Pl	Local	Beach Dr	West Cds	70	6.6	1.9	1.0	8.1	Poor	Reconstruction	$27,720.00	$57,820.00

APPENDIX C

Referenced Material

- Asphalt Core Report – KamTech Quality Management – July 4, 2019
  - Figure 2.7: Road Coring Locations (July 4, 2019)

KamTech QUALITY MANAGEMENT

Core Report

TO: Derek Young, True Consulting

File: QM19-46
Date: July 4, 2019

FROM: **Brent Traxel, AScT**

RE: **Chase, BC Coring**

Coring took place in Chase, BC to investigate depths of existing asphalt and gravels beneath. All cores were taken on designated roads @ locations maximum 100m apart. Base gravels were visually inspected to maximum permit able depths. Results from investigation below.

Cottonwood Street

1

- **20m south of Cedar Ave. SBL, 2.8m o/s from C/L**
  - *Depth of asphalt - 80mm*
    - Well graded clean gravel with minimal fracture found below asphalt to approx. 12” below top of asphalt.

Cedar Ave.

1

- **100m east of Cottonwood St. EBL, 2.1m o/s from C/L**
  - *Depth of asphalt – 58mm*
    - Asphalt appears to be dense and in good shape. Well graded base gravels with some fracture found below asphalt to approx. 12” below top of asphalt.

2

- **200m east of Cottonwood St. WBL, 1.9m o/s from C/L**
  - *Depth of asphalt – 48mm*
    - Well graded base gravels with some fracture found below asphalt to approx. 12” below top of asphalt.

3

- **300m east of Cottonwood St. EBL, 1.6m o/s from C/L**
  - *Depth of asphalt – 30mm*
    - Asphalt very thin and in poor shape. Well graded base gravels with some fracture found below asphalt to approx. 12” below top of asphalt.

Elm Steet

1

- **30m north of Cedar Ave. SBL, 1.7m o/s from C/L**
  - *Depth of asphalt – 56mm*
    - Well graded base gravels densely packed, some fracture throughout to approx. 10” below top of asphalt.

2

- **80m north of Cedar Ave. NBL, 2.0m o/s from C/L**
  - *Depth of asphalt – 63mm*
    - Asphalt generally in good dense condition 1-1/2”–2” minus, clean gravel with minimal fracture found below asphalt to approx. 12” below top of asphalt.

Margery Street

1

- **20m north of Thompson Ave. SBL, 1.2m o/s from C/L**
  - *Depth of asphalt – 75mm*
    - Asphalt mostly rotten top 20mm separated from main core (no tack) well graded base gravels densely packed, some fracture throughout to approx. 12” below top of asphalt.

Thompson Ave.

1

- **100m west of Margery St. EBL, 2.1m o/s from C/L**
  - *Depth of asphalt – 29mm*
    - 1” minus from below asphalt to 4”, below 4” some oversized (2–2-1/2”) to 12” below grade. All base gravels well compacted.

2

- **@ intersection with Macpherson St. WBL, 1.4m o/s from C/L**
  - *Depth of asphalt* – 35mm
    - Asphalt very thin on this road. 1” minus from below asphalt to 6”, below 6” some oversized (2–2-1/2”) to 12” below grade. All base gravels well compacted.

Asset Management Risk Analysis

Village of Chase

January 2020

Project No. 1377-041

ENGINEERING ■ PLANNING ■ URBAN DESIGN ■ LAND SURVEYING

201-2079 Falcon Rd | Kamloops BC | V2C 4J2 | www.true.bc.ca | tel 250.828.0881 | fax 250.828.0717

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Revision Log

Revision #	Revised by	Date	Issue / Revision Description
1	DPG	2020-01-29	Issued

Report Submission

Report Prepared By:

Ariana Paulson, P. Eng.
Project Engineer

Report Reviewed By:

Daniel Grant, P. Eng.
Project Engineer

R:\Clients\1300-1399\1377\1377-041\05 Reports\Asset Management Reports\1377-041-Asset Management Risk Analysis-January 2020.docx

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List of Acronyms

TRUE	TRUE Consulting
Village	Village of Chase
TCA	Tangible Capital Assets
PSAB	Public Sector Accounting Board
UBCM	Union of British Columbian Municipalities

Executive Summary

The Village of Chase is dedicated to the ongoing improvement of their understanding and practices related to Asset Management. To that regard the Village has leveraged funding through the 2018 UBCM Asset Management Planning Program to develop a working model for understanding the associated priority of their buried linear water and sanitary assets.

Utilizing existing inventories of material, age, and location, the Village has developed decision matrices for determining asset properties of Criticality and Probability. The Village has defined Criticality as *the consequence of losing a given asset*. For both water and sanitary, this property has been evaluated by considering what portion of the overall utility network would be potentially removed from service if an asset was lost. Probability has been defined as *the likelihood an asset will fail*. This property has been evaluated by considering the material of construction, year of installation, and standard expected service life based on material.

Priority (risk) has been evaluated utilizing a decision matrix comparing Criticality and Probability.

The result of assigning priority to each asset component, based upon known attributes of the assets, is the development of a system with which to compare the overall perceived importance of assets throughout the Village.

The current analyses are based upon the current inventory of known attributes. This dataset presents many opportunities for improvement, including the collection of condition information and recording of regular maintenance.

1.0 Introduction

This document outlines the methodologies behind the Village of Chase's Risk analyses for linear civil infrastructure. This document is an integral part of the Village's overall Asset Management Plan.

2.0 Background

Through their Asset Management Planning processes, the Village has identified that understanding the likelihood and consequence of losing assets as a key component to their long-term infrastructure planning and budgeting. Leveraging funding from the 2018 UBCM Asset Management Planning Program the Village was able to develop a decision process for determining these risks.

It is understood that the processes behind these analyses include a variable level of perception. The boundaries of what are considered High versus Low Criticality, Probability, or Risk can be adjusted as deemed necessary by the Village. However, the intended purpose of these metrics is to create a system by which all assets can be fairly evaluated on the same decision criteria.

3.0 Methodology

The Village's methodology for measuring an asset's priority level (Risk) is based upon determining the consequence of failure (Criticality) and likelihood of failure (Probability). A decision matrix for each infrastructure system has been developed based on the Village's current dataset. Each matrix follows the same general structure shown below.

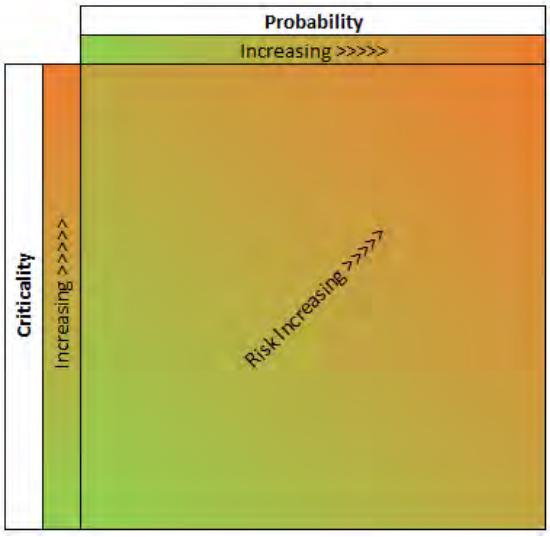


FIGURE 3-1: GENERALIZED RISK MATRIX

3.1.1 Criticality

The evaluation of Criticality aims to answer the question "What is the consequence of losing the service provided by this asset?". In the current analyses, this has been determined by evaluating how much of the service area will be directly impacted or whether key assets or services are lost.

3.1.2 Probability

The evaluation of Probability aims to answer the question "How likely is it that the service provided by this asset will be lost?". The current analyses utilizes the Village's datasets of install year (providing age) and known material type (providing estimated lifespan).

It is understood that this methodology is highly theoretical and the Village understands that future efforts should involve the evaluation of physical conditions to better quantify this decision metric.

3.1.3 Risk

For the purposes of the Village's Asset Management Planning, Risk and Priority are considered interchangeable. The higher the perceived Risk of the asset, the higher the presumed priority of maintaining, replacing, or rehabilitating that asset.

3.2 Linear Water Distribution Infrastructure

The Village of Chase has two water sources. One is from a well (Well Tag Number: 114195) located South of the water treatment plant on Mill Road, and the other is a surface water intake from the South Thompson River located approximately 185 m Northeast of the water treatment plant. The water is collected from the South Thompson River by way of an intake and pumphouse located near the river's edge. Both the well and surface source water are supplied to the water treatment plant and subsequently distributed throughout the Village of Chase. There are two reservoirs located directly beside each other on the south side of the Trans Canada Highway on the East side of town with a collective storage capacity of approximately 2,100 m^3 (2.1 million liters). The Village owns approximately 25 km of water mains within the Village boundaries.

3.2.1 Criticality

The Village's watermain network is almost completely redundant (fully looped) and can receive water from a number of connection points throughout the distribution system. These positive features make it such that losing any single stretch of watermain will not drastically impact the remainder of the system.

The criticality analysis for the watermain network evaluates each length of pipe based upon its *Critical Length*. The Critical Length of a given pipe is the sum of pipe lengths that would be isolated away from the water treatment plant (water source) if the given pipe were to fail or lose function. Anecdotally, the more isolated a collection of pipes are in a branching, dead-end pattern (with no looping), the greater the Critical Length is expected to be. An example is shown on the following page.

FIGURE 3-2: EXAMPLE OF DETERMINING WATER CRITICAL LENGTH

In the above example, Pipe A is a dead-end with a total length of 200m, therefore it's Critical Length is only 200m. Pipe B has a length of 100m (not shown) and stands between Pipe A and the water source. Therefore, if Pipe B were to fail, a total of 300m of pipe could potentially be isolated from the water source, making the Critical Length 300m. In the same manner, all pipes located south of Pipe B have a cumulative length of 490m giving Pipe C a Critical Length of 490m. As there are more and more branching systems isolated from the water source, the critical lengths increase. In the above example, Pipe D has the highest Critical Length of 1,110m as all the pipes in this part of the system rely on Pipe D to have access to water.

During this analysis the distribution of Criticality has been assigned as a natural distribution (bell curve) based on total system length. In other terms, approximately 1/3 of the system (by length) has been set to Medium Criticality, while 1/3 of the system is between Very Low and Low, and 1/3 of the system is between High and Very High. This use of natural distribution is intended to follow along the concept that the majority of the system lies within the mid-range of Criticality with only a small portion (20%) being contained between the categories of Very High and Very Low. It is difficult to see this representation for the Village of Chase. This is because of the looping throughout the watermain system which makes the criticality values very low throughout the distribution. Because of this, 96% of the water system has a "Very Low" criticality rating.

TABLE 3-1: WATER SYSTEM CRITICALITY MATRIX

Criticality	Critical Length (m)
Very Low	<5194.7m
Low	5194.7 – 10389.4m
Medium	10389.4 – 15584m
High	15584 – 20778.7m
Very High	>20778.7m

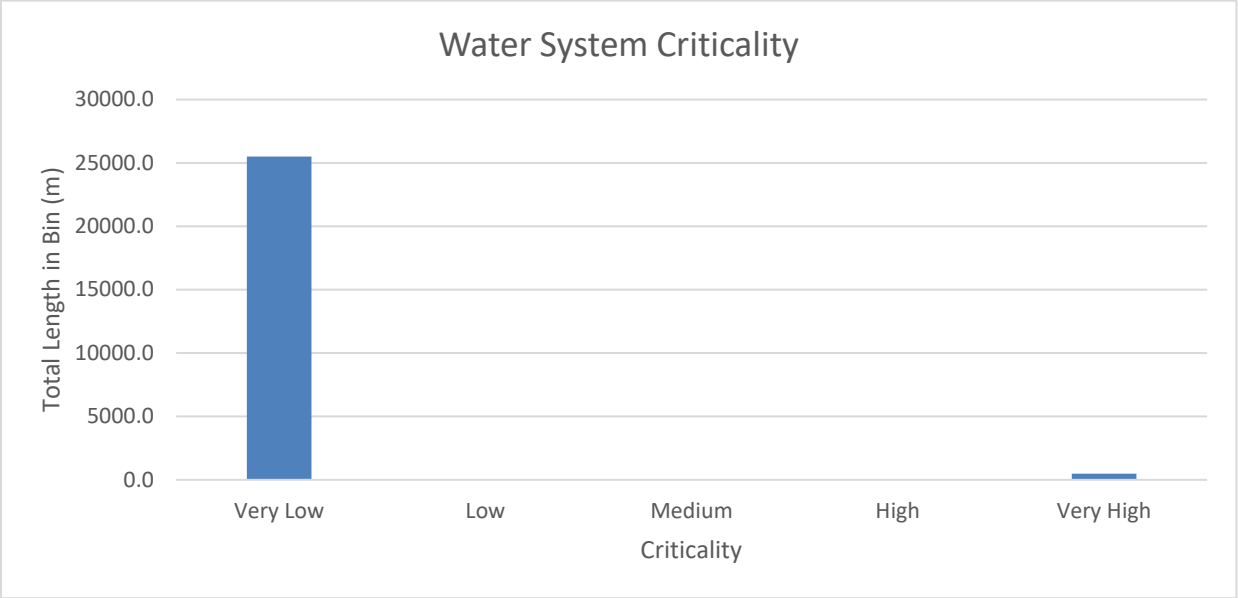


FIGURE 3-3: DISTRIBUTION OF WATERMAIN CRITICALITY BY NORMAL DISTRIBUTION

3.2.2 Probability

The Probability for the water distribution network has been evaluated based on the estimated remaining life. The estimated remaining life has been evaluated using the Village's existing datasets of install years and materials of construction. Using the Village's current tangible capital asset inventories, assets of given materials were assigned estimated lifespans. Those lifespans have been used in this evaluation to develop five categories of Probability. The following is based on the age of infrastructure in 2018.

TABLE 3-2: WATER SYSTEM PROBABILITY MATRIX

Material	Estimated Life Span (Years)	Probability				
		Remaining Life and Install Years				
		Very High	High	Medium	Low	Very Low
		< 20%	20-40%	40-60%	60-80%	>80%
AC	50	<= 1978	1978 – 1988	1988 – 1998	1998 – 2008	>2008
PVC/ Poly/ Pex	80	<=1954	1954 – 1970	1970 – 1986	1986 – 2002	>2002
DI/CI/Cu/ Gal/Steel	100	<=1938	1938 – 1958	1958 – 1978	1978 – 1998	>1998

3.2.3 Risk

Utilizing the results of the Criticality and Probability evaluations the following Risk Matrix was developed.

TABLE 3-3: WATER SYSTEM RISK MATRIX

		Probability				
		Very High	High	Medium	Low	Very Low
Criticality	Very High	Very High	Very High	High	Medium	Medium
	High	Very High	High	High	Medium	Medium
	Medium	High	High	Medium	Low	Low
	Low	Medium	Medium	Low	Low	Very Low
	Very Low	Medium	Medium	Low	Very Low	Very Low

3.3 Linear Sanitary Collection Infrastructure

The Village's sanitary collection network consists of both gravity and forcemains, manholes, and several lift stations. The sanitary mains direct sewage to two aeration ponds, and six R.I. Basins located on the West end of the Village. The total linear length of gravity sanitary mains is approximately 23 km.

3.3.1 Criticality

The criticality analysis for the sanitary collection network evaluates each length of pipe based upon its *Critical Length*. The Critical Length of a given pipe is the sum of pipe lengths that would be isolated away from the treatment plant if the given pipe were to fail or lose function. Anecdotally, the closer a pipe is to the point of treatment, the greater the Critical Length is expected to be. An example is shown below.

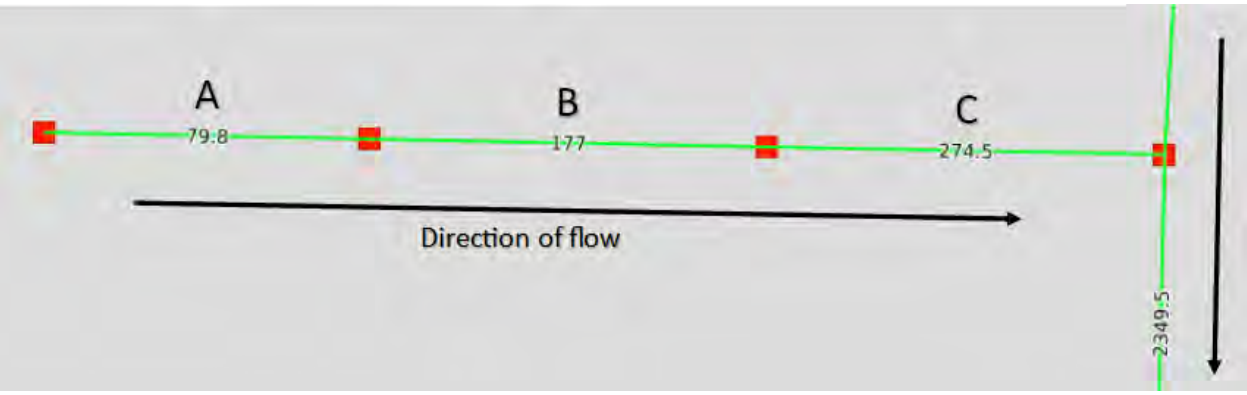


FIGURE 3-4: EXAMPLE OF DETERMINING SANITARY CRITICAL LENGTH

In the above example, Pipe A is a dead-end with a total length of 79.8m, therefore it's Critical Length is only 79.8m. Pipe B has a length of 97.2m (not shown) and stands between Pipe A and the end treatment point. Therefore, if Pipe B were to fail a total of 177m of pipe could potential be isolated from the treatment point, making the Critical Length 177m. In the same manner, Pipe C has a length of 97.5m (not shown) and stands between Pipe B and the end treatment. Therefore, the Critical Length for Pipe C is 274.5m.

During this analysis the distribution of Criticality has been assigned based on pipe length. Approximately 40% of the system (by length) has been set to Medium Criticality, while 30% of the system is between Very Low and Low, and 30% of the system is between High and Very High. This use of analysis by length is intended to follow along the concept that the majority of the system lies within the mid-range of Criticality with only a small portion (10%) being contained between the categories of Very High and Very Low.

TABLE 3-4: SANITARY SYSTEM CRITICALITY MATRIX

Criticality	Critical Length (m)
Very Low	<31.2m
Low	31.2 – 139.4m
Medium	139.4 – 1119.4m
High	1119.4 – 17316.2m
Very High	>17316.2m

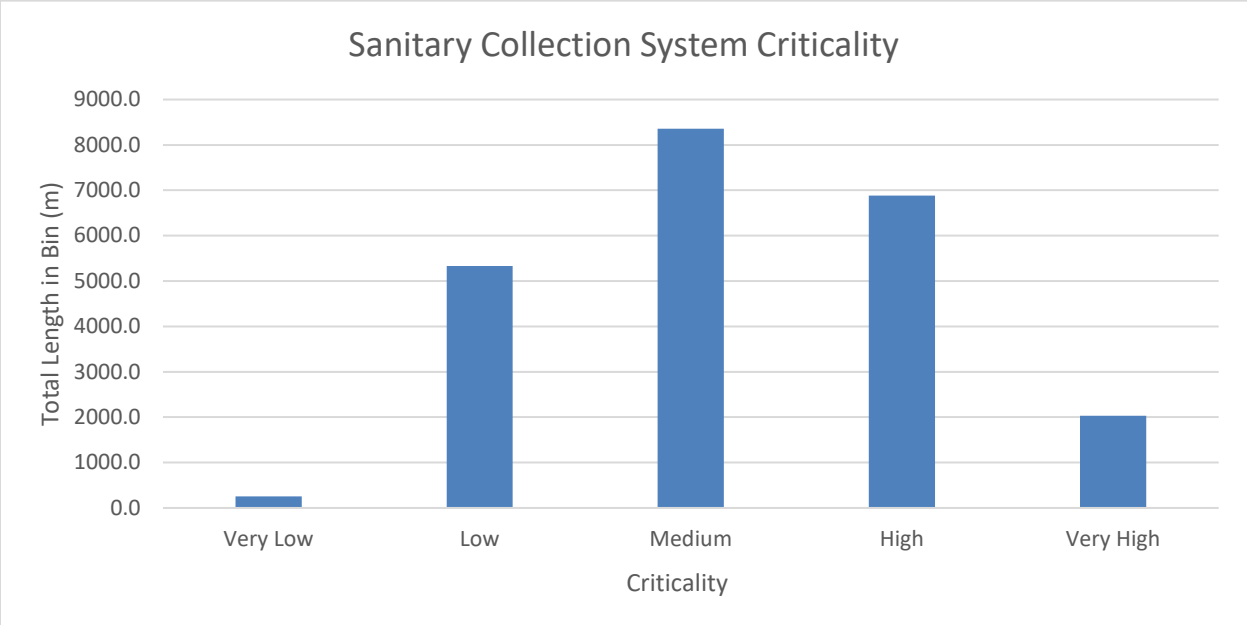


FIGURE 3-5: DISTRIBUTION OF SANITARY CRITICALITY BY LENGTH

3.3.2 Probability

The evaluation of the sanitary collection network for Probability follows the same processes as for water distribution, with the exception that the entire network is assumed to have a life expectancy of 75 years. The material of the sanitary sewer pipes have not yet been tabulated within the TCA inventories. The Village of Chase intends to correct this in the near future.

TABLE 3-5: SANITARY SYSTEM PROBABILITY MATRIX

Material	Estimated Life Span (Years)	Probability				
		Remaining Life and Install Years				
		Very High	High	Medium	Low	Very Low
		< 20%	20-40%	40-60%	60-80%	>80%
Unknown	75	<=1958	1958 – 1973	1973 – 1988	1988 – 2003	>2003

3.3.3 Risk

Utilizing the results of the Criticality and Probability evaluations, the following Risk Matrix was developed.

TABLE 3-6: SANITARY SYSTEM RISK MATRIX

		Probability				
		Very High	High	Medium	Low	Very Low
Criticality	Very High	Very High	Very High	High	Medium	Medium
	High	Very High	High	High	Medium	Medium
	Medium	High	High	Medium	Low	Low
	Low	Medium	Medium	Low	Low	Very Low
	Very Low	Medium	Medium	Low	Very Low	Very Low

4.0 Discussion

The following sections breakdown the results of the analyses and provide comment on those results. It should be noted that the figures presented in the following sections are for reference only. Due to the evolving nature of the results (which are dependant upon the always changing attributes of the assets), the mapping of the analysis results is intended to be viewed within Lightship. The figures presented herein were current and accurate at the time of writing.

4.1 Water Distribution

4.1.1 Length

The system consists of approximately 25,457m of water mains. The different types of pipe along with their respective quantities is tabulated below.

TABLE 4-1: WATER SYSTEM PIPE MATERIALS AND LENGTH

Pipe Material	Length (m)
AC	14,656
PVC	8,935
DI	533
CI	874
Gal/Steel	291
Poly/Pex	168

4.1.2 Criticality

The Criticality of the system by material and length is broken down as follows. Because the Village has so much redundancy (looping), there are very few pipes that aren't considered "Very Low" criticality. Only 4.3% of the system is considered "Very High" Criticality as these pipes are located near the water source and there is only one stretch of pipe that feeds the entirety of the system. The remainder of the system is "Very Low" criticality, making up 95.7% of the system.

TABLE 4-2: BREAKDOWN OF WATER SYSTEM CRITICALITY BY MATERIAL AND LENGTH

	Pipe Material and Length (m)					
Criticality	**AC**	**PVC**	**DI**	**CI**	**Gal/Steel**	**Poly/Pex**
Very High	64	399	0	0	17	0
High	0	0	0	0	0	0
Medium	0	0	0	0	0	0
Low	0	0	0	0	0	0
Very Low	14,591	8,536	533	874	275	168

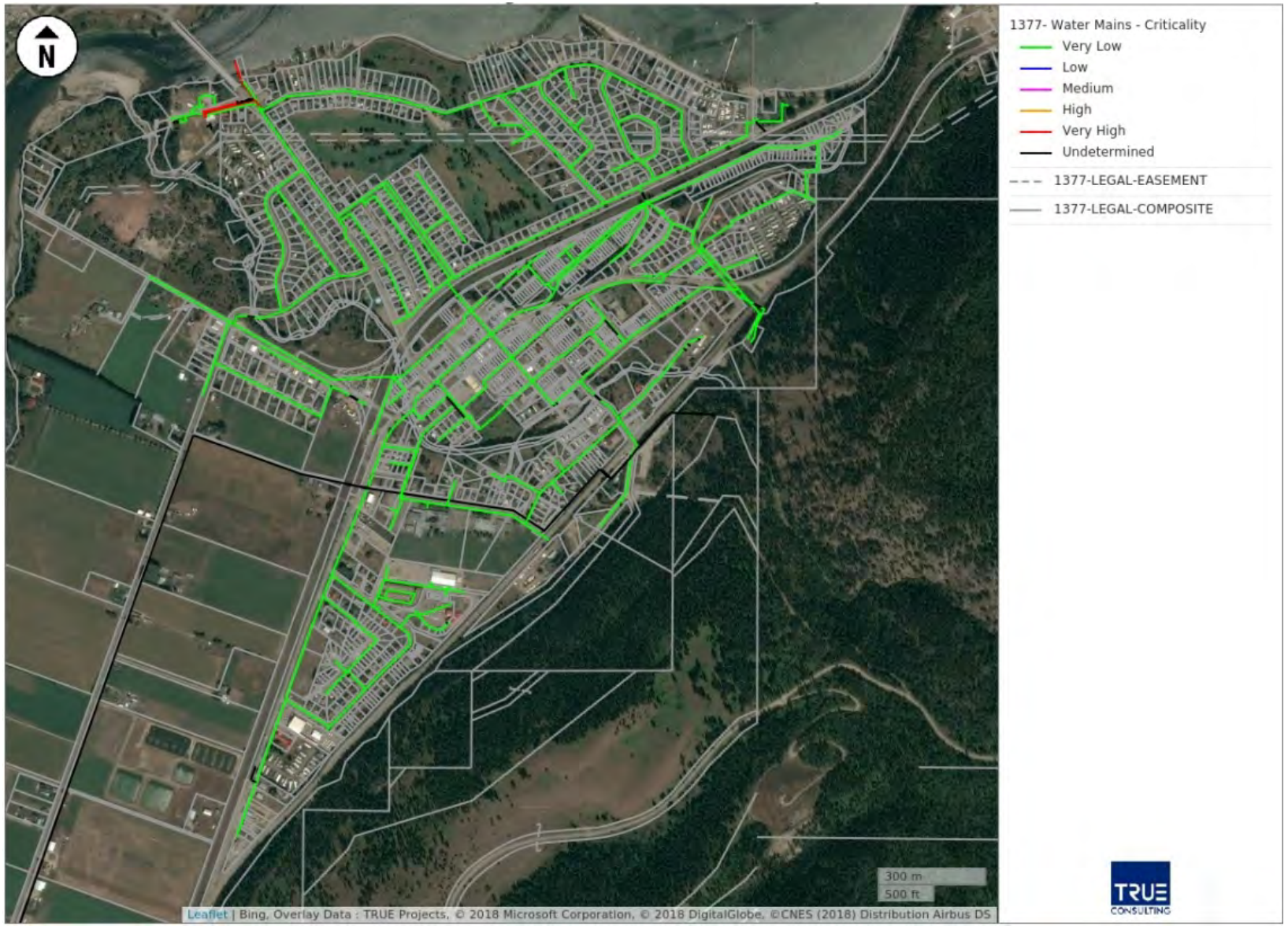


FIGURE 4-1: MAPPING OF WATER CRITICALITY

4.1.3 Probability

The Village watermains appear to have been originally installed in 1960. The majority of piping that was installed at this time was AC with some lengths of DI, CI, Poly/Pex, and Gal/Steel. Starting in 1973, it appears an expansion or upgrade of PVC pipe began and has been an ongoing process since. 94% of the system consists of either AC (60%) or PVC (34%) while the remaining materials consist of 6%. Because the majority of the water system is constructed with AC, the probability of failure is considered High or Very High for 60% of the water system.

TABLE 4-3: BREAKDOWN OF WATER SYSTEM PROBABILITY BY MATERIAL AND LENGTH

	Pipe Material and Length (m)					
Probability	**AC**	**PVC**	**DI**	**CI**	**Gal/Steel**	**Poly/Pex**
Very High	10,474	0	0	0	0	0
High	4,086	0	0	0	0	110
Medium	0	2,353	533	763	17	58
Low	0	4,327	0	112	96	0
Very Low	0	1,540	0	0	0	0

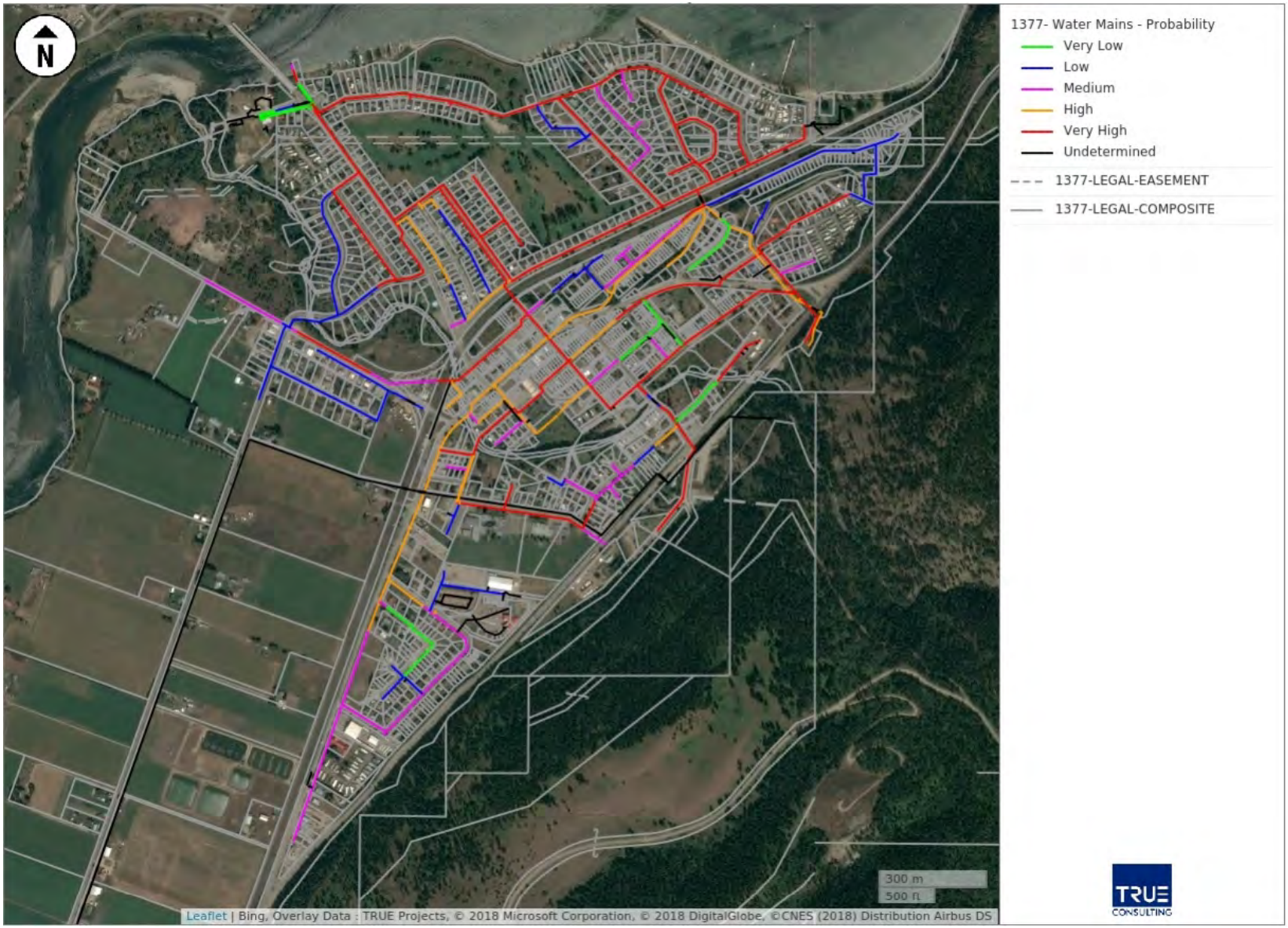


FIGURE 4-2: MAPPING OF WATER PROBABILITY

4.1.4 Risk

Because there is such a large amount of redundancy (looping) in this system, the driving factor behind the Risk throughout the water system is the Probability of failure. The majority (61%) of the system is considered to be “Medium” Risk. The highest Risk in this system is at the South Thompson River Intake. These pipes have the highest criticality and are some of the oldest in the system.

TABLE 4-4: BREAKDOWN OF WATER SYSTEM RISK BY MATERIAL AND LENGTH

	Pipe Material and Length (m)					
Risk	**AC**	**PVC**	**DI**	**CI**	**Gal/Steel**	**Poly/Pex**
Very High	64	0	0	0	0	0
High	0	0	0	0	17	0
Medium	14496	399	0	0	0	110
Low	0	2,353	533	763	0	58
Very Low	0	5,468	0	112	85	0

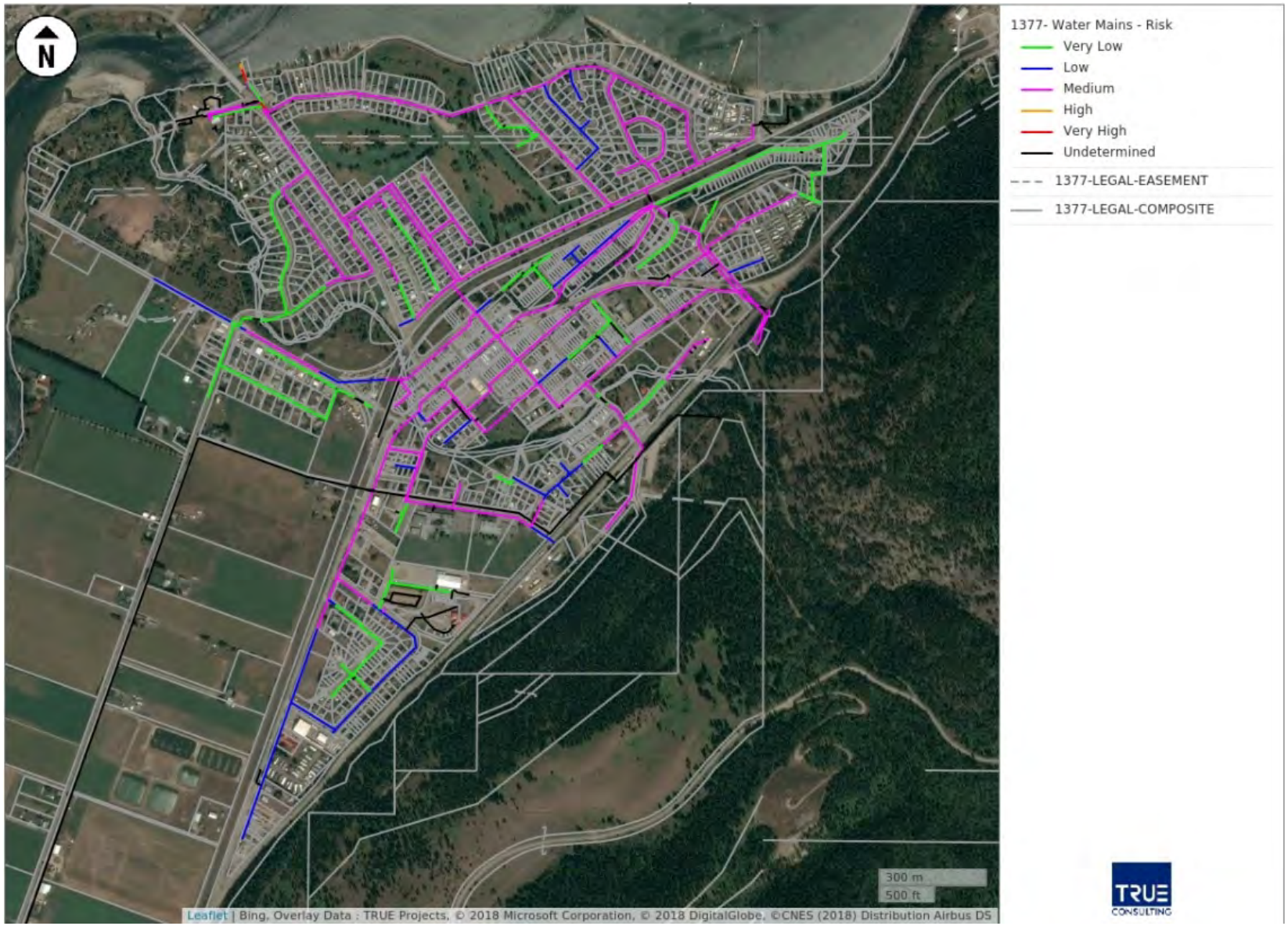


FIGURE 4-3: MAPPING OF WATER RISK

4.2 Sanitary Collection

4.2.1 Length

The sanitary system is composed of 22,849m of pipe; 3,714m of which is force main, and the remaining 19,135m is gravity main.

4.2.2 Criticality

Reviewing the mapping of the Criticality as shown below, the outlying areas of the system are less critical than those near the treatment location.

TABLE 4-5: BREAKDOWN OF SANITARY SYSTEM CRITICALITY BY LENGTH

Criticality	Length (m)
Very Low	283
Low	5371
Medium	8365
High	6874
Very High	1955

FIGURE 4-4: MAPPING OF SANITARY CRITICALITY

4.2.3 Probability

The entirety of the sanitary collection system is assumed to have a life expectancy of 75 years. Based on the TCA inventories provided from the Village of Chase, the install year is known; however, the pipe material is not. The assumption of a 75-year life expectancy provided an opportunity to analyze the probability and risk for the sanitary system. As asset data is gathered and updated, the probability and risk assessment will also be updated. In essence, the entire system is assumed to be one material and therefore the Probability is driven entirely by the installation year. It appears installation on the sanitary system began in 1982 and has been modified as recently as 2008. Because the system is relatively new and the material is assumed to have a life expectancy of 75 years, there are no pipe segments with a worse probability of failure than “Medium”.

TABLE 4-6: BREAKDOWN OF SANITARY SYSTEM PROBABILITY BY LENGTH

Probability	Length (m)
Very Low	775
Low	1337
Medium	17970
High	0
Very High	0

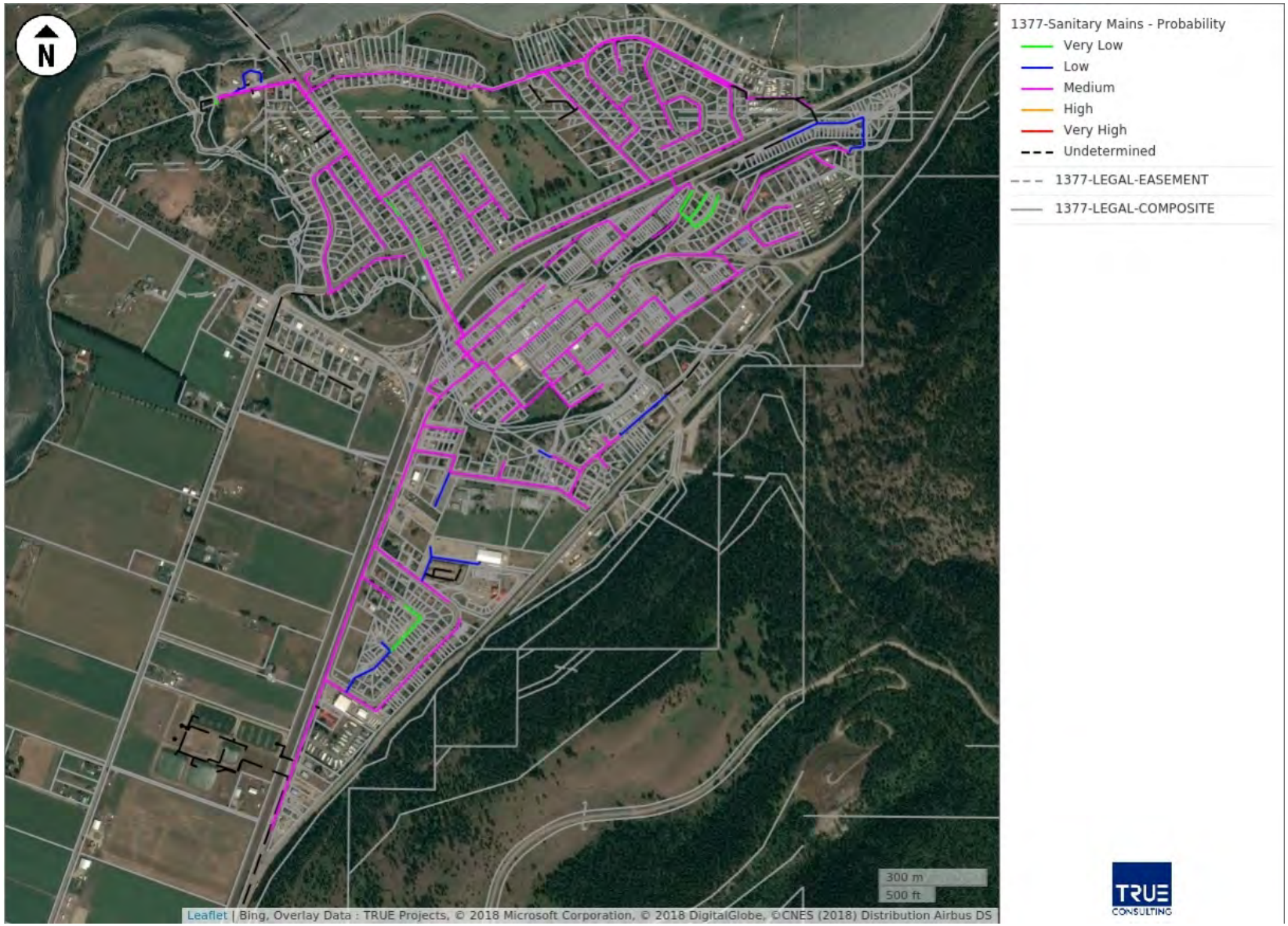


FIGURE 4-5: MAPPING OF SANITARY PROBABILITY

4.2.4 Risk

Criticality appears to be the driving factor in determining the Risk related to the sanitary collection system. This is generally due to the fact that the system is in essence composed of a consistent material and generally very young.

The relatively older age of the pipe works near the treatment facility assist in driving the Risk in that area to a ranking of Very High.

TABLE 4-7: BREAKDOWN OF SANITARY SYSTEM RISK BY LENGTH

Risk	Length (m)
Very Low	363
Low	5656
Medium	6735
High	7329
Very High	0

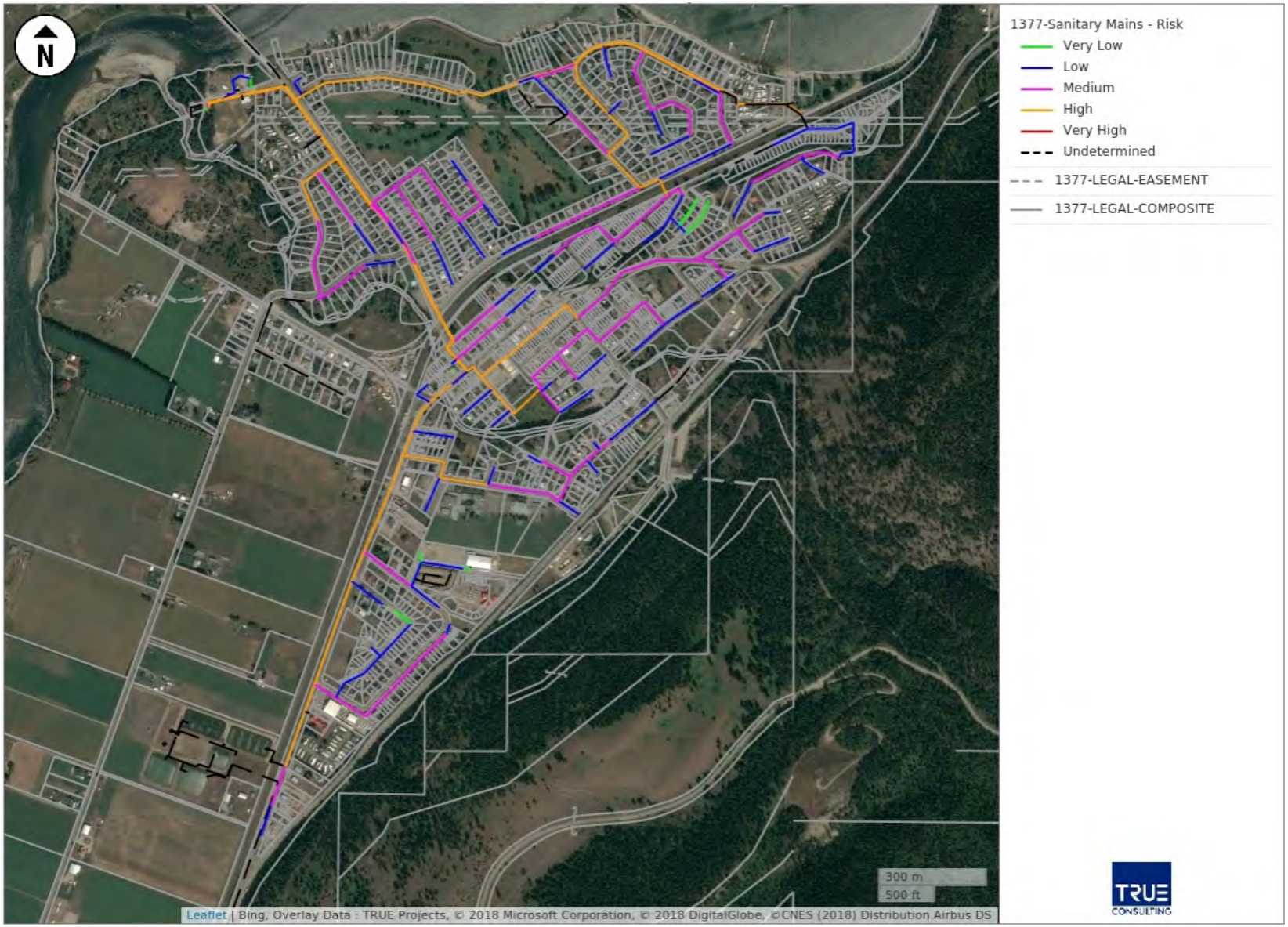


FIGURE 4-6: MAPPING OF SANITARY RISK

5.0 Next Steps

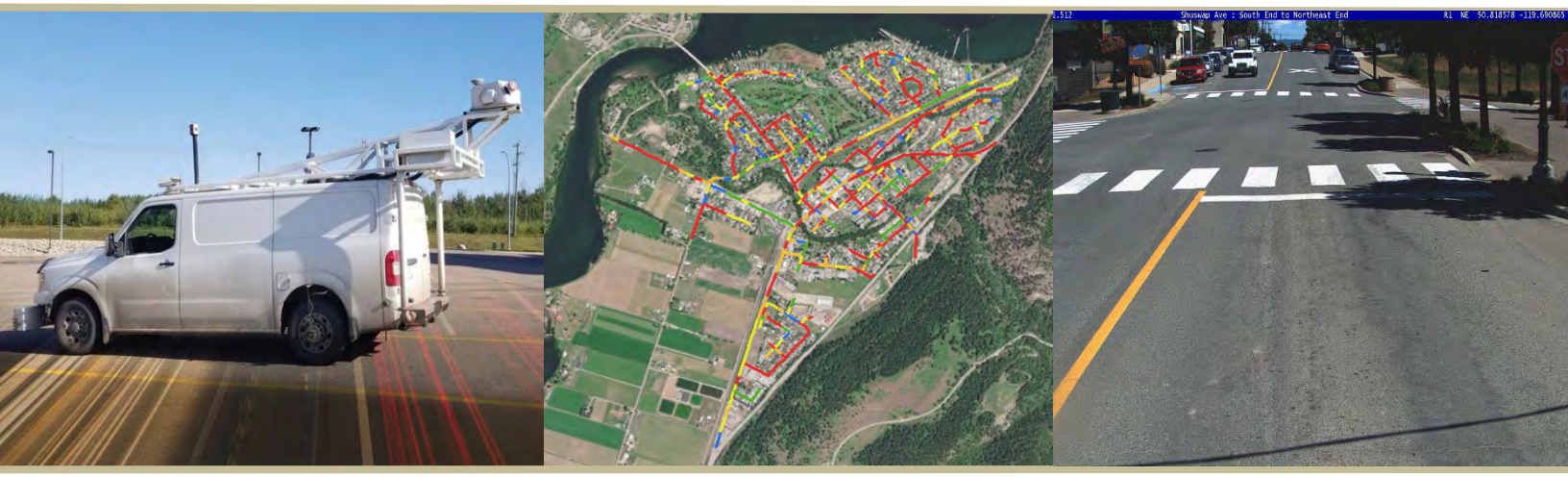
The Village now has a documented methodology for determining the criticality and probability of their linear infrastructure assets. Together with the Village's financial TCA information the community can begin building a structured long-term asset management investment plan for the lifecycle management of these assets.

However, the current analyses are only based upon the current inventory of known information. This dataset is understood to be rudimentary, as it is heavily reliant on the estimated values for expected lifespan. In order to improve upon these two ongoing pieces of information are required: actual conditions and actual age of failure.

Actual conditions for most assets can be measured or evaluated in some fashion, providing resources are available to do so.

Actual age of failure is dependant upon both time as well as the Village allowing the asset to reach the point of failure (which is unlikely).

Village of Chase 2021 Roadway Data Collection and Pavement Management Plan



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TRUE Consulting

SEPTEMBER 29, 2021
ISSUED FOR USE
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LIMITATIONS OF REPORT

This report and its contents are intended for the sole use of TRUE Consulting and their agents. Tetra Tech Canada Inc. (Tetra Tech) does not accept any responsibility for the accuracy of any of the data, the analysis, or the recommendations contained or referenced in the report when the report is used or relied upon by any Party other than TRUE Consulting, or for any Project other than the proposed development at the subject site. Any such unauthorized use of this report is at the sole risk of the user. Use of this document is subject to the Limitations on the Use of this Document attached in Appendix A or Contractual Terms and Conditions executed by both parties.

1.0 INTRODUCTION

1.1 General

Tetra Tech Canada Inc. (Tetra Tech) was retained by TRUE Consulting (TRUE) to collect pavement condition data for the Village of Chase (the Village) in 2021 and develop multi-year capital planning based on a Pavement Management System (PMS) analysis.

This report documents the methodology followed to collect and analyze the pavement data, reports the existing network pavement condition, and determines the funding required to improve the paved road network to desired service levels.

All data and results have been linked to an ESRI based GIS and are transmitted to TRUE in digital form as part of the reporting task for this project.

1.2 Project Definition

The Village's roadway network consists of approximately 21.9 centerline-km of paved roads including 3.8 centerline-km of Arterial roads, 7.0 centerline-km of Collector roads, and 11.1 centerline-km of Local roads.

The project included all roads in the Village as described in Table 1 with a breakdown of the pavement data collection activities.

Table 1: Roadway Data Collection

Road Classification	Centre-Line Length (km)	Pavement Distress	Roughness (IRI)	Rut Depth	Roadway Imagery	FWD Testing
Arterial	3.8	✓	✓	✓	✓	✓
Collector	7.0	✓	✓	✓	✓	
Local Roads	11.1	✓	✓*	✓	✓	
* Where survey speeds of at least 25 km/h could be met.						

1.3 TRUE Provided Information

The TRUE provided the following datasets to be incorporated into the 2021 PMS development:

- GIS shapefile of road centerlines;
- Roadway classification;
- A list of treatment types and associated unit costs; and
- A list of 2021 anticipated paving projects.

2.0 NETWORK DEFINITION BASED ON LINEAR REFERENCING

Tetra Tech considers correctly referenced data to be one of the most important aspects of pavement data management. Location referencing is the method whereby the pavement distress, historical data, and road attribute data are referenced to the basic road inventory.

The linear referencing used a standardized methodology (based on PolylineM) for the pavement segments in a Geographic Information System (GIS). These polylines called “Routes”, allow data defined by a linear distance from the origin of the line to be linked to the correct location along the polyline (Figure 1). Tetra Tech reviewed the roadway centerline layer provided by TRUE and found the network definition to be complete and accurate for defining the data collection and pavement management analysis.

Figure 1 - Example of Chase Routes in GIS

The list of roads for data collection was developed in conjunction with the Village. This list became the data collection “Master List” used for all field activities, including the necessary location descriptions and lengths so that the collection would be as complete and accurate as possible. The process defined a data collection direction for each roadway in the Village’s network so that future data collection can use the same directionality where possible can be accurately compared. The Master List was also used in field quality control as the base layer for the “TT Surveyor” application. TT Surveyor graphically displays the status and logs the completion of each segment during collection along with any relevant field notes during the data collection program.

3.0 PAVEMENT DATA COLLECTION

3.1 Field Pavement Data Assessment

Georeferenced pavement condition assessments were conducted with one of Tetra Tech’s Pavement Surface Profiler (PSP-7000) vehicles. The PSP was used to collect automated pavement surface distresses, International Roughness Index (IRI), and digital image logs for the roadways.

Figure 2 - Tetra Tech's PSP-7000 Vehicle

Tetra Tech collected the pavement condition data on 23.7 lane-km of the Village’s paved road network in June 2021, as shown in Table 2. The survey was generally conducted in the northbound or eastbound lanes of each road segment. Some segments were excluded mostly due to gravel surface or road closure with barriers (540 m in total).

Table 2: Extent of Pavement Data Collection by PSP

Road Class	GIS Centreline (km)	Survey (Lane-km)	Analysis Length (km)
Arterial	3.8	3.8	3.8
Collector	7.1	7.1	7.1
Local	11.2	11.1	10.7
Strata*	1.8	1.8	-
Network	**23.9**	**23.8**	**21.6**
* Strata roads are not included in analysis			

3.1.1 Pavement Surface Distress

Tetra Tech performed automated surface condition measurements with a 3D Laser Crack Measurement System (LCMS). The LCMS produces detailed 3D elevation maps of the pavement surface, which are used to automatically detect and classify surface distresses. The system detects and classifies cracks based on pavement surface elevation changes and differences in surface colour. The elevation data is automatically processed to generate severity and extent measures for cracks and other roadway distress types (Figure 3).

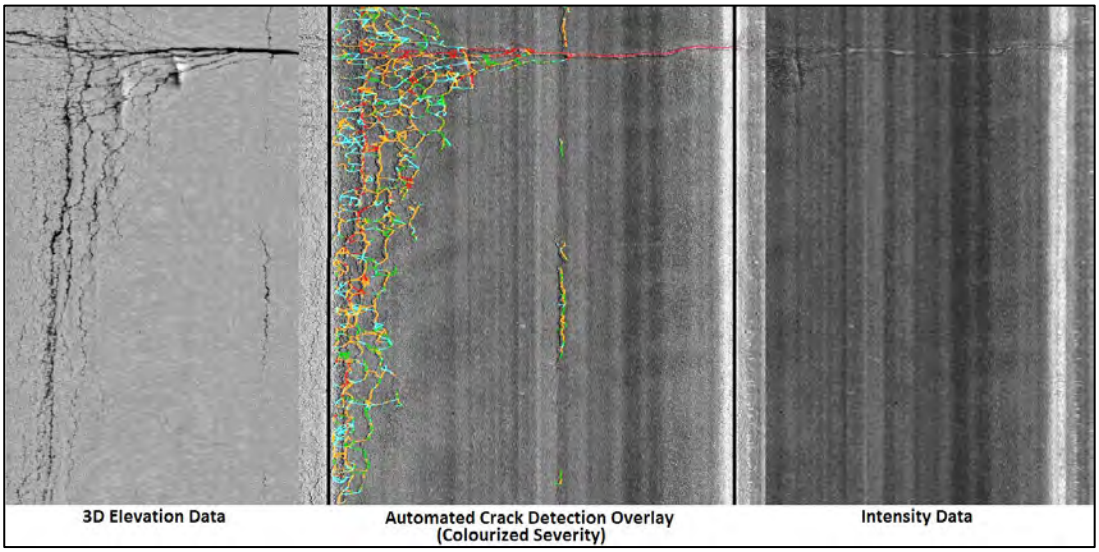

Figure 3 - Automated Distress Detection using LCMS

Distress data on all paved roads was consistent with ASTM D6433 methodology, whereby individual distresses are rated based on severity and extent. Surface distresses were inventoried for the width of the surveyed lane. The data was provided at a maximum interval of 50 m.

For this assignment, the recorded distresses included:

- Alligator Cracking (including longitudinal fatigue cracking)
- Longitudinal Cracking (excluding fatigue cracking)
- Transverse Cracking
- Weathering
- Raveling
- Potholes
- Rutting

Cracking associated with patching (within patches or around patches) is similarly captured by the LCMS, as cracking. Therefore, patching and utilities cuts were not rated as separate distress.

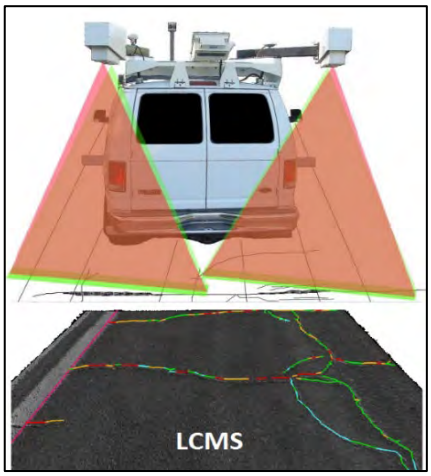

Figure 4 - Representation of the LCMS

3.1.2 Front and Top Down Digital Images

Digital images were collected for all PSP surveys using an integrated Digital Imaging System. This system provides a forward looking, right-of-way (ROW) full roadway view (the digital image spans from left side ROW to right side ROW). The imaging system provides a fully referenced record of the roadway corridor at the time of survey for the identification, inventory, and referencing of all infrastructure and appurtenances located within the driven ROW. Images are organized in folders for each roadway and delivered at a nominal spacing of 6 m. The direct linking of the ROW images into the project GIS was used as a data quality assurance tool. It provides users the ability to "virtually drive down the street" while sitting at their desk and was used in the validation of the condition data and analysis results.

In addition, the LCMS includes a high-resolution 2D imaging system with optics designed to increase the contrast and visibility of both small longitudinal and transverse cracks in roadways. Through precise laser and camera synchronization, it can capture high-resolution images of surfaces (Top Down) while travelling at normal traffic speeds. Figure 5 shows an example of PSP-7000 digital front and top down imagery.

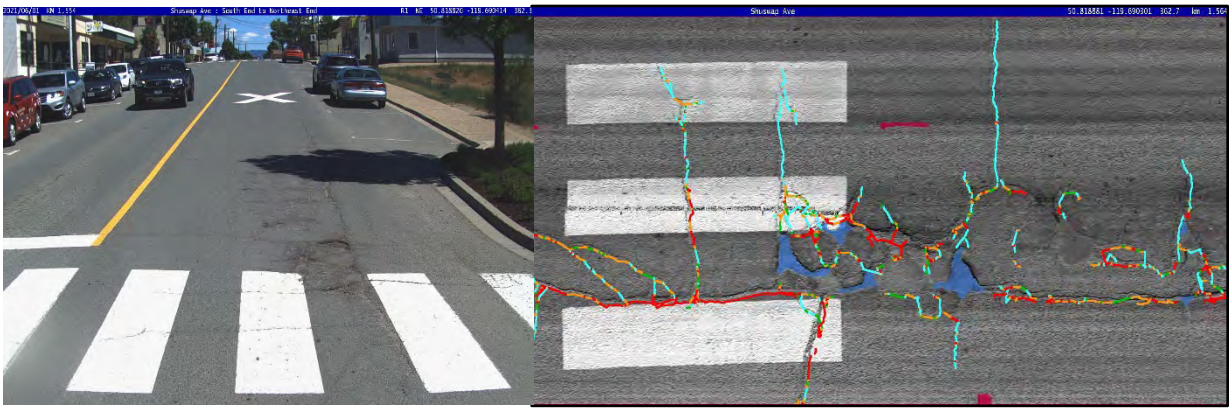

Figure 5 - Example of PSP-7000 Digital Image Log (Front & Top Down)

3.1.3 Pavement Roughness (IRI) and Rut Depth

The PSP-7000 vehicle's roughness measurement capabilities are provided by an inertial profiling system, which is a FHWA Class II profiler and ASTM E950, AASHTO M328-10 and AASHTO PP70-10 compliant. Roughness data was collected and processed to provide International Roughness Index (IRI) using a high precision laser sensor array and two-wheel path accelerometers. Data collection and processing for this project was conducted in conformance with the "Best Practice Guidelines", as described in the Transportation Association of Canada document "Standardization of IRI Data Collection and Reporting in Canada."

The roughness data was provided for all segments where the data collection platform was able to record valid roughness data. The system requires survey speeds greater than 25 km/h for valid IRI measurements.

Transverse profile rut measurements were collected using the LCMS. Rut depths are calculated for the left and right wheelpath using, depending on lane width, 3,000 to 4,000 relative height measurements across the survey lane.

IRI and Rut depth data was provided at maximum intervals of 50 m.

3.1.4 Falling Weight Deflectometer (FWD) Testing

Strength data was collected using a Falling Weight Deflectometer (FWD) with nine active sensors. The FWD is a non-destructive testing device which applies dynamic loads to the pavement surface, similar in magnitude and duration of a single heavy moving wheel load. Tetra Tech conducted FWD on arterial and collector roads for approximately 5.2 lane-km in June 2021. Strength testing was conducted at a frequency of 10 tests per kilometer in the outer wheel path in each direction, which provides a good measure of the existing pavement-subgrade system strength.

Figure 6 - Tetra Tech's Falling Weight Deflectometer

4.0 PAVEMENT CONDITION INDICES

A pavement condition index is a value which expresses the overall condition of a pavement by considering various factors such as surface distresses, structural defects, and ride quality. The selection of an appropriate pavement condition index depends on the objectives of whatever system is used to manage a particular pavement network. The following indices were used for this project considering the historical City indicators and pavement management practices:

- Pavement damaged surface area indices, for performance modelling and treatment selection.
- Pavement Condition Index (PCI) according to ASTM D6433 to report the overall pavement condition at the network level and useful for comparison to other municipalities.
- Pavement surface ruts depth (RUT); excessive rutting can pose a safety concern in wet weather on higher traffic speed roadways.
- Pavement Roughness (IRI) to quantify riding comfort and compare to historical condition.

4.1 Pavement Damaged Surface Area Indices

The individual pavement surface distresses are an important element of pavement management. They are of particular use in the treatment selection process. Tetra Tech uses the individual pavement surface distress indices as defined by the World Bank's Highway Development and Management Road Deterioration and Works Effects (HDM - RDWE) models.

The pavement cracking is classified into two categories: structural cracking and non-structural cracking. Each of these two categories of cracking are divided into a low and a high severity. The structural and age-related cracks are included in the fatigue crack index which is defined as the percent of the pavement surface area with load and age-related fatigue cracks including: alligator cracking and wheelpath longitudinal cracking. It is modelled as:

- AFCL (%): Narrow Fatigue Cracking Area;
- AFCW (%): Wide Fatigue Cracking Area; and
- AFCA (%): All Fatigue Cracking Area (AFCL+ AFCW).

The non-structural cracks are included in a thermal crack index which is defined as the percent of pavement surface area with cracks that are induced by low temperature as well as other non-structural cracking. The index includes transverse cracking and non-wheelpath longitudinal cracking such as joint cracking. It is defined as:

- TCL (%): Narrow Thermal and Other Cracking Area;
- TCW (%): Wide Thermal and Other Cracking Area; and
- TCA (%): All Thermal and Other Cracking Area (TCL + TCW).

The ACA Index is defined as total area of cracking including all fatigue cracks and thermal cracks:

- ACA (%) = AFCA + TCA.

These Cracking Indices are usually easily understood by the general public and municipal council because they represent what is visible on the road irrespective of the cause of the cracking. The fatigue cracking is very important and has the largest impact on maintenance and rehabilitation costs. It is often caused by traffic loading and indicates where pavements may need strengthening, deeper patching repairs, or even replacement. Thermal and most other cracks are less of a concern; however, when unsealed they can allow moisture to enter the roadbed and ultimately lead to loss of strength.

Raveling is the dislodging of coarse aggregate particles. Raveling may be caused by insufficient asphalt binder, poor mixture quality, insufficient compaction, segregation, or stripping. Weathering is the wearing away of the asphalt binder and fine aggregate matrix primarily through oxidization of the bitumen due to age and environment. Since 2009, ASTM has treated these two distresses separately because the mechanism causing these distresses is different. They have, therefore, been recorded separately in this report:

- WRL (%): Low severity Weathering Area;
- WRH (%): Moderate to High severity Weathering Area; and
- RVH (%): Moderate to High severity Raveling Area.

4.2 Pavement Condition Index (PCI)

The PCI is a standard index commonly used in North America. It is therefore useful for comparing the overall condition of one agency's network to other agencies. It expresses the condition of the pavement surface as a function of the severity and extent of the visible surface distresses. The PCI is a numerical rating that ranges from 100 to 0 with 100 as the best possible condition and 0 as the worst possible condition. The PCI is determined using the methodology documented in the American Society for Testing and Materials standard ASTM-D6433.

4.3 Pavement Rutting

The pavement surface ruts can pose safety concerns where they are deep enough to affect the handling characteristics of a vehicle at higher speeds and can affect the ability of an agency to effectively clear snow and ice in the winter. The rut depth is measured in millimetres and the average of the inner and outer wheelpath rut depths has been used for the condition report and pavement performance modelling.

4.4 Pavement Roughness

Pavement roughness is a measure of the irregularities in the surface of a pavement that adversely affect the ride quality from a vehicle or user standpoint. The roughness is attributed to deviations of the surface from a true plane with characteristic dimensions that affect vehicle dynamics, ride quality, dynamic loads and drainage, expressed as the International Roughness Index (IRI). The IRI is calculated from a measured longitudinal profile as the vertical suspension motion divided by distance travelled of a quarter-car model. It is reported in millimetres per metre (mm/m) or equivalently metres per kilometre (m/km).

Since its introduction in 1986, IRI has become the road roughness index most commonly used worldwide for evaluating and managing higher speed road systems. Vehicle operating costs including fuel consumption, tire wear, and depreciation rise with increasing roughness and have been correlated to IRI. Even on a lower speed municipal network, due to the high repeatability of IRI measurements, it is also a good indicator of overall network health for comparison to a future year's pavement condition survey.

5.0 POPULATE DATABASE AND PAVEMENT CURRENT CONDITION

The condition indices of each 50 m sample unit, the roadside inventory data and other important information were transformed and consolidated into analysis segments using the dynamic data transfer functions within the analysis software. The analysis segments are generally block-to-block segments that are used to aggregate raw data into longer management segments that will become the basis for rehabilitation projects.

5.1 2021 Paved Road Condition

As described in Section 4, PCI, damaged surface area indices, Rut and IRI are used to report pavement condition status. The current status is based on the average values within each pavement management segment and weighted by centreline length. Table 3 provides a breakdown of the average pavement condition in 2021 for each roadway classification. Detailed tabular data of 2021 pavement condition indices are presented in Appendix B.

Table 3: Average 2021 Pavement Condition

Road Class	Length (km)	Fatigue Crack (AFCA, %)	Thermal and Other Crack (TCA, %)	Total Cracking (ACA, %)	PCI	RUT (mm)	IRI (mm/m)
Arterial	3.8	10.3	11.8	22.2	33	8.4	3.2
Collector	7.1	6.5	9.4	15.9	52	3.8	3.7
Local	10.7	9.4	12.6	22.1	42	4.3	4.8
Network	**21.6**	**8.6**	**11.4**	**20.1**	**44**	**4.9**	**4.2**

As can be seen in Table 3, the average PCI of the road network was 44 in 2021. Arterial roads had the lowest PCI and collector roads had the highest average condition, compared with the other road classifications in 2021.

Moreover, arterial roads had better surface smoothness in terms of IRI, compared with the other road classifications in 2021 (IRI=3.2 mm/m). However, the average Rut of the arterials is higher than others, likely due to heavier traffic loading. Most of the analysis segments with moderate severity ruts were located on Shuswap Ave (Figure 7).

Figure 7 - High Severity Rut- Segment located on Shuswap Ave (from Brooke Dr to Mason St)

Pavement condition represented by PCI, AFCA, and IRI can be classified into five categories as good, satisfactory, fair, poor or very poor. Table 4 provides the range of values used for each condition description. The maps displaying the 2021 PCI, AFCA and IRI are presented in Appendix B.

Table 4: Index Ranges for Condition Description

Rating	PCI[1] (%)	Cracking Index (AFCA[2], %)	IRI (mm/m)[3]		Colour Code
			ART	COL / LOC	
Good	85-100	0 - 1	< 2.28	< 2.86	
Satisfactory	70 - 85	1 - 5	2.28 - 3.59	2.86 - 4.49	
Fair	55 - 70	5 - 10	3.59 - 4.54	4.49 - 5.69	
Poor	40 - 55	10 - 30	4.54 - 6.25	5.59 - 8.08	
Very Poor	0 - 40	30 - 100	> 6.25	> 8.08	

1. The PCI is based on ASTM D6433
2. The AFCA is defined based on treatment options: Good - no maintenance required; Satisfactory - light maintenance only; Fair - heavy maintenance or light rehabilitation, Poor - heavy maintenance and rehabilitation and Very Poor – reconstruction.
3. The IRI condition range is based on (Yu, Chou, & Yau, 2006), normal travel speed of 50 km/h for ART and 40 km/h for COL/LOC

The distribution of PCI values for the network and for each roadway classification are shown in Figure 8. The road segments in poor to very poor condition are defined as “backlog roads”. The figure indicates that the Village currently has 68% of its pavements in backlog with PCI< 55 in 2021.

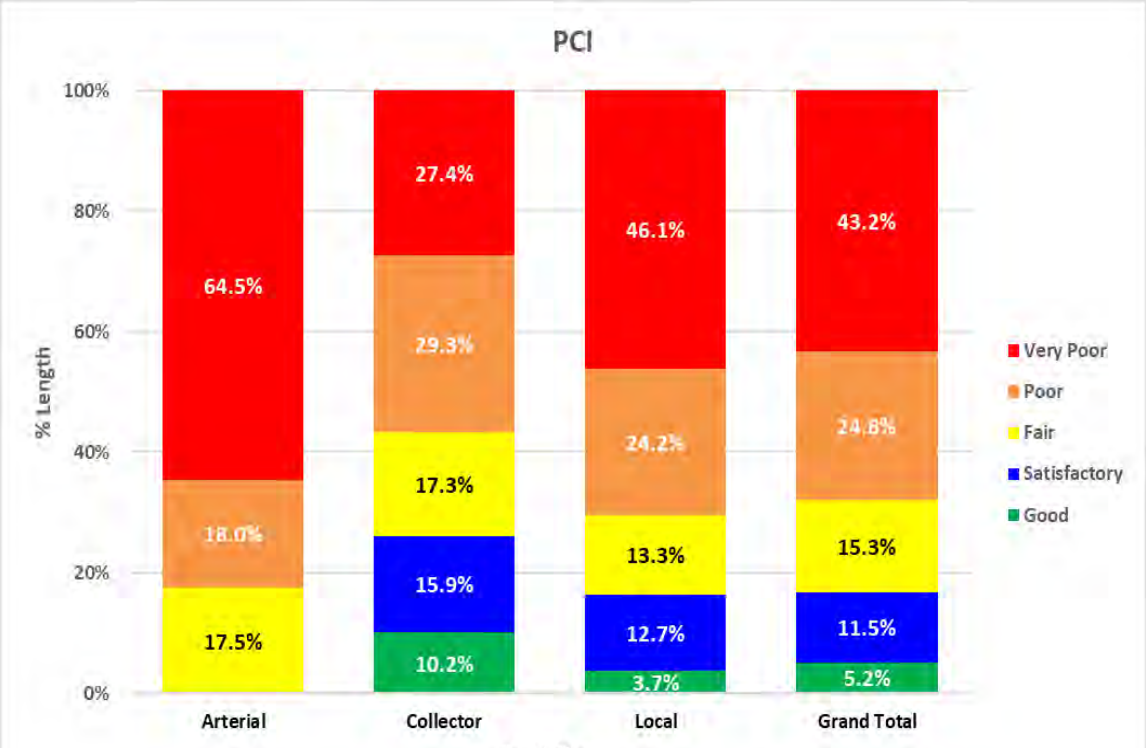

Figure 8 - 2021 Pavement Condition Distribution in Terms of PCI

The distribution of AFCA values for the network and for each roadway classification is shown on Figure 9. The figure indicates that the Village currently has 32% of the network, based on AFCA, was in poor or very poor condition in 2021.

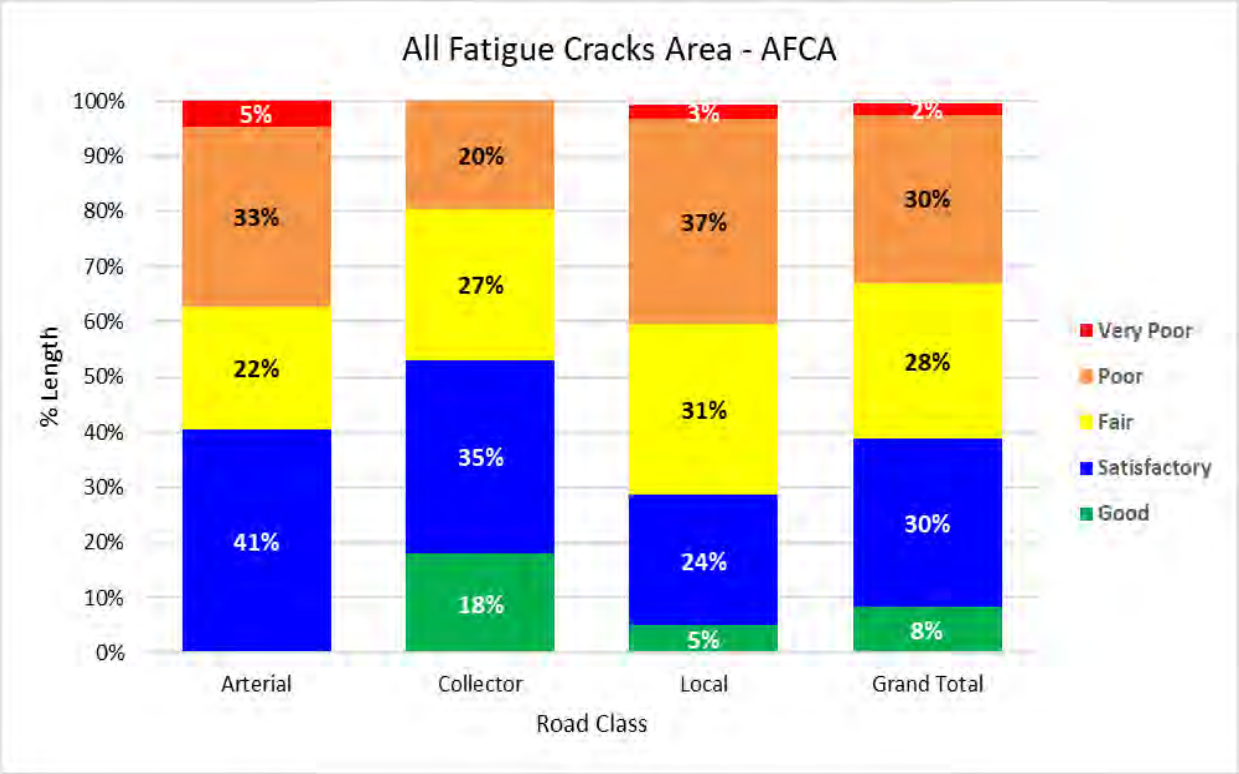

Figure 9 - 2021 Pavement Condition Distribution in Terms of AFCA

6.0 ANALYSIS METHODOLOGY

6.1 Pavement Performance Modelling

Tetra Tech used the World Bank's Highway Development and Management (HDM) modelling framework that has been developed and updated by a worldwide team of experts over more than 20 years. These models, when locally calibrated, can predict the propagation of individual distresses such as cracking indices (AFCL, AFCW, TCL and TCW), rutting, and roughness. Figure 10 illustrates the progression of these models from required inputs through to predicted condition. Tetra Tech have been calibrating these models in the lower mainland of British Columbia since the late 1990s. This enables systems using these models to select appropriate treatments, and to accurately assess current condition and value.

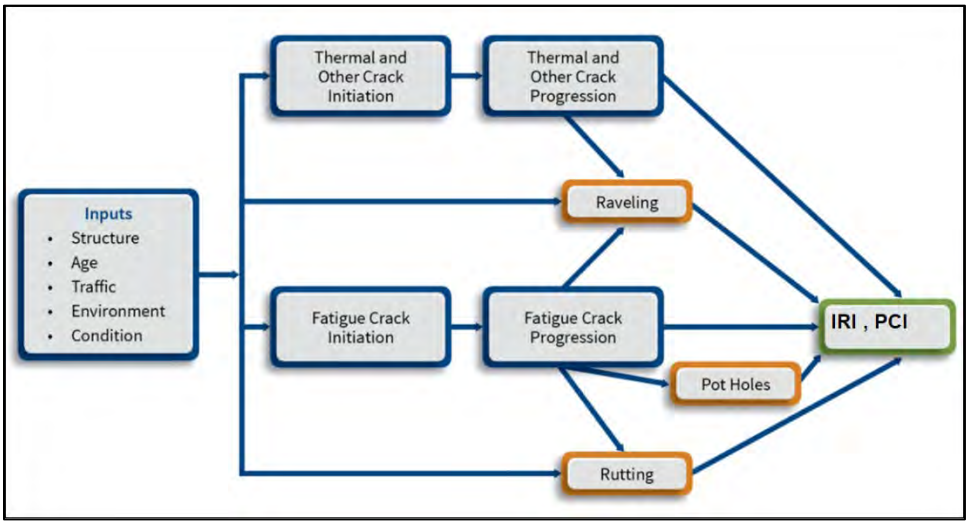

Figure 10 - Predicting Pavement Performance

The modelling of severity and type of cracking enables true life cycle cost analysis because the cost of maintenance and rehabilitation treatments is highly dependent on the extent of cracking to be repaired. If cracking is left unrepaired maintenance costs increase, most noticeably in the form of pothole patching. This enables systems using these models to select appropriate treatments, and to accurately assess current condition and value.

6.2 Rehabilitation and Maintenance Treatments

Maintenance and rehabilitation treatments used were established based on TRUE's input. The treatments and their unit costs are shown in Table 5. Typically, crack sealing and surface patching are considered maintenance treatments and the other treatments are considered resurfacing/major rehabilitation treatments.

Table 5: Treatments and Unit Costs used in the Analysis

Type	Treatment	Unit Cost
Preventive Maintenance	Crack Sealing	$2.0/L-m
Reactive Maintenance	Shallow Patching	$55/m²
Resurfacing	Overlay (nominal 50 mm)	$20/m² + (Crack Area Patching Cost*)
	Mill & Inlay (nominal 50 mm)	$27/m² + (Crack Area Patching Cost *)
	Mill & Inlay (nominal 75 mm)	$34/m² + (Crack Area Patching Cost *)
	Mill & Inlay (nominal 100 mm)	$42/m² + (Crack Area Patching Cost *)
Major Rehabilitation	Full Depth Reclamation	$45/m²
	Reconstruction	LOC $135/m² ART/COL $150/m²
* Crack Area Patching Cost = $70/m² * AFCA, where: AFCA = All fatigue crack (%)		

6.2.1 Treatment Triggers

The feasibility of applying a treatment on a given analysis segment is usually limited by physical or other constraints. For example, thick overlays cannot be directly applied to segments with curb and gutter. Similarly, a treatment should never be applied in the absence of any surface distress and an overlay should not be considered if the pavement is too severely distressed. A set of "triggers" were developed so that only feasible strategies are explored. The triggers (shown in Table 6) limit the number of strategies to those that can feasibly be applied.

Table 6: Maintenance and Rehabilitation Triggers

Type	Curb Existence	Trigger Criteria	Variable
Crack Sealing	-	AFCL > 1% or TCL > 1%	AFCL: Narrow fatigue crack (%) AFCW: Wide fatigue cracking (%) AFCA: All fatigue cracking (%) TCL: Narrow thermal cracking (%) TCW: Wide thermal cracking (%) PCI: Pavement Condition Index
Shallow Patching	-	AFCW > 1% or TCW > 2%	
Overlay (50 mm)	No	**Local Road:** (AFCA > 10% or PCI < 55) and AFCA < 25% **Collector and Arterial:** (AFCA > 8% Or PCI < 60) and AFCA < 25%	
Mill &Inlay (50 mm)	Yes	**Local Road** and (AFCA > 10% Or PCI < 55) and AFCA < 25%	
Mill &Inlay (75 mm)		**Collector Road** and (AFCA > 8% Or PCI < 60) and AFCA < 25%	
Mill &Inlay (100 mm)		**Arterial Road** and (AFCA > 8% Or PCI < 60) and AFCA < 25%	
Full Depth Reclamation	No	AFCA ≥ 25%	
Reconstruction	Yes		

6.2.2 Treatment Resets

With the selection and application of any given rehabilitation treatment, the condition of a road will improve. For example, with the treatment of 50 mm overlay, ruts would be filled, cracking would be overlaid with localized repair of fatigue cracks, roughness would decrease, and strength would increase. Therefore, to predict performance over time and account for and compare possible interventions, the performance models must adjust the measured and forecast distress data to reflect the application of the treatment. These changes to the value of the analysis variables as a result of the application of a treatment are called resets. Some heavy rehabilitation treatments, such as reconstruction, might reset virtually all the analysis variables.

6.3 Life Cycle Cost Analysis

The objective of pavement management is to provide and preserve the network of pavements as economically as possible (lowest life cycle cost). Tetra Tech used Deighton's Total Infrastructure Management System (dTIMS), that is programmed by Tetra Tech engineers to perform Life Cycle Cost Analysis (LCCA). There are usually several alternative strategies for preserving a given pavement segment. Each alternative strategy includes one or more treatment options. Each alternative strategy is also associated with different routine maintenance and operating costs. Figure 11 illustrates three example strategies:

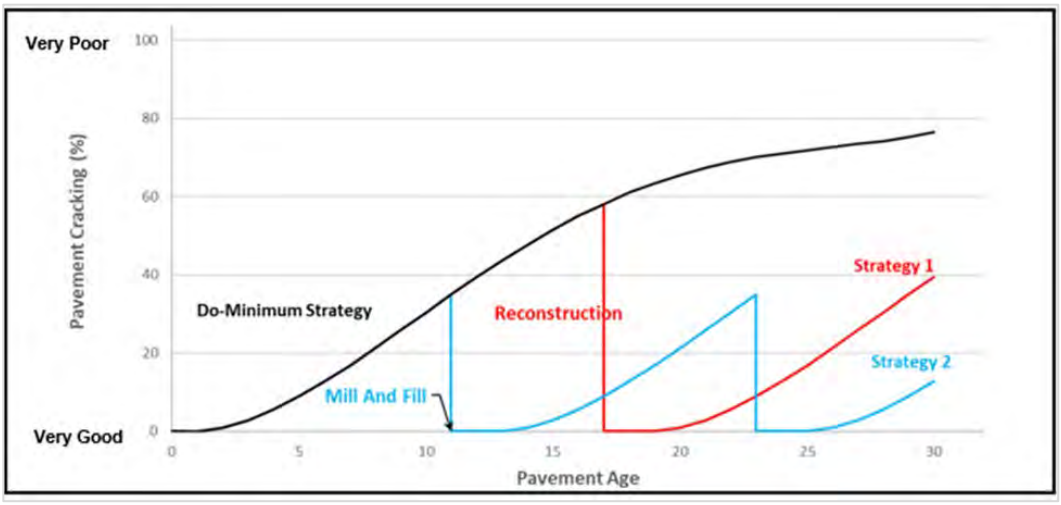

Figure 11 - Life Cycle Cost Analysis Example

- The Do-Minimum strategy (base case strategy);
- Strategy 1 – Comprises a Reconstruction; and
- Strategy 2 – Comprises two Mill and Fill treatments.

The do-minimum strategy will result in no capital/ rehabilitation costs but extremely high reactive maintenance and operating costs. It will also have associated with it a large rehabilitation "debt". Strategy 1 will have a higher initial treatment cost than Strategy 2; however, Strategy 2 involves two lower cost treatments spread over a period of several years. For a given road, it is not immediately obvious which strategy or even which year of strategy initiation results in the lowest possible operating and maintenance cost. Indeed, for a network it is generally not possible to pick the best option for each road segment as that may exceed the available funding in one or more years.

In this study several initial rehabilitation treatments such as mill/fill, full depth reclamation, and reconstruction are considered. However, the timing of the initiation of a rehabilitation treatment is also variable. There is a window of opportunity to apply an overlay that spans several years. The amount of cracking and pavement failure that must be deep patched prior to application of the overlay increases in each year so the overall cost of the overlay increases each year. The analysis is further complicated by the fact that subsequent treatments can also be applied over a span of several years. In fact, for a given road segment there are potentially hundreds of feasible strategies, each with its own stream of predicted pavement conditions, (as defined by the models and the resets), its own stream of rehabilitation and maintenance costs and its own stream of benefits. Without a definition of "Cost and Benefit" it is not immediately obvious which strategy or even which year of strategy initiation results in the most cost-effective strategy.

The overall cost of rehabilitation treatments, routine maintenance and operating costs required to preserve the pavement under a given strategy scenario is called the Life Cycle Cost (LCC) of the strategy. In general, the LCC of a pavement is defined as the total cost over the analysis period expressed in terms of today's cost i.e. Present Value (PV). The total costs include four parameters:

$$\mathbf{LCCpv = CC + (R+M)Cpv}$$

Where:

LCCpv	Present Value of all Life Cycle Costs
CC	Initial construction costs of the pavement structure
(R+M)Cpv	Present value of the sum of all rehabilitation and maintenance costs over the analysis period

Note however, when planning preservation, the original pavement structure already exists. Therefore, the initial construction cost term, CC, does not apply. It is assumed that each paved road would remain beyond any analysis period, therefore, salvage cost has not been considered.

6.3.1 Method to Measure Benefit

One method to derive the benefit is to multiply the area under the pavement performance curve and the length of the pavement segment. The Area under the Curve was calculated by summing the present value of the difference between the condition index (such as damaged surface area index) resulting from a strategy and the condition index for the do-nothing strategy (base case strategy) for each year in the analysis period. A strategy is a collection of treatments over time that addresses the deficiency of the road segment. Figure 12 shows an example of calculating the benefit for a strategy with one overlay, early in the 20-year analysis period.

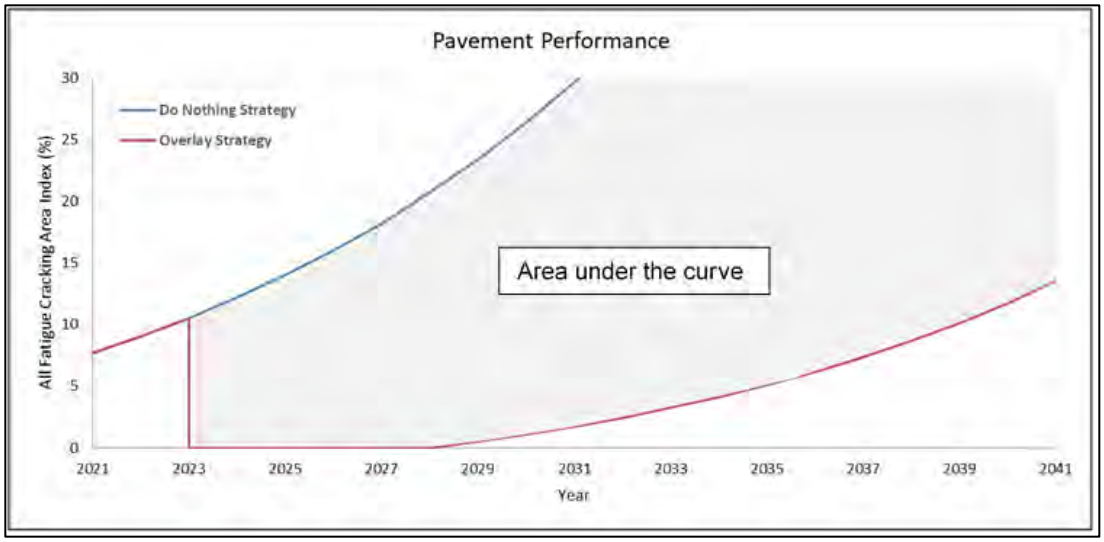

Figure 12 - Example of calculating the benefit for an Overlay Strategy

Up to this step, all things being equal, a local road with the same amount of cracking area would rank equally with an arterial road. The arterial road would have more traffic and should be a clear priority since there are insufficient funds to address all roads in the network at once. Therefore, a user priority factor is required to be combined with pavement condition data.

Table 7 shows user priority factors developed based on road classification and route type (truck, bus, or bike route).

Table 7: User Priority Factor

Road Class/ Route type	User Priority Factor
Arterial Road	5
Collector Road	3
Local Road	1

To sum up, the benefit was defined combining both condition and user factor, as shown in the following formula:

$$\boldsymbol{Benefit} = \textbf{Present Value of Area under Pavement Performace Curve} \times \textbf{User Priority Factor}$$

6.3.2 Budget Scenarios

In order to assist the Village with its decision-making process, the following funding levels (Table 8) were modelled from 2022 to 2041. The Village already had selected 2021 paving projects (committed projects).

Table 8: Capital Budget Scenarios for Pavement Rehabilitation (2022 - 2041)

Budget Scenario	Annual Capital Budget
1	Unconstrained Budget (Needs Assessment)
2	$300,000
3	$350,000
4	$400,000

These funding scenarios are expressed in **2021 dollars**. It is noted that routine maintenance (Crack Seal and Patching) costs are part of a separate operations budget and therefore do not use the available capital budgets.

7.0 ANALYSIS RESULTS

7.1 Needs Assessment (Unconstrained Budget Analysis)

An unconstrained budget is sometimes called a needs-based budget which represents the funding stream for the theoretical scenario where funding could be provided for each road segment in the first year that a rehabilitation trigger is reached. This is not intended to be a practical scenario; it is only included to determine the maximum amount of work that could be done. Figure 13 summarizes the rehabilitation costs based on the unconstrained budget scenario. Under this theoretical scenario, the Village would require around $3.8 million in the first year for rehabilitation and roadway maintenance of the road network. In total, the Village would require $7.4 million or $372,000 per year for pavement rehabilitation and roadway maintenance over a 20-year period to address all of the triggered needs at the earliest possible time.

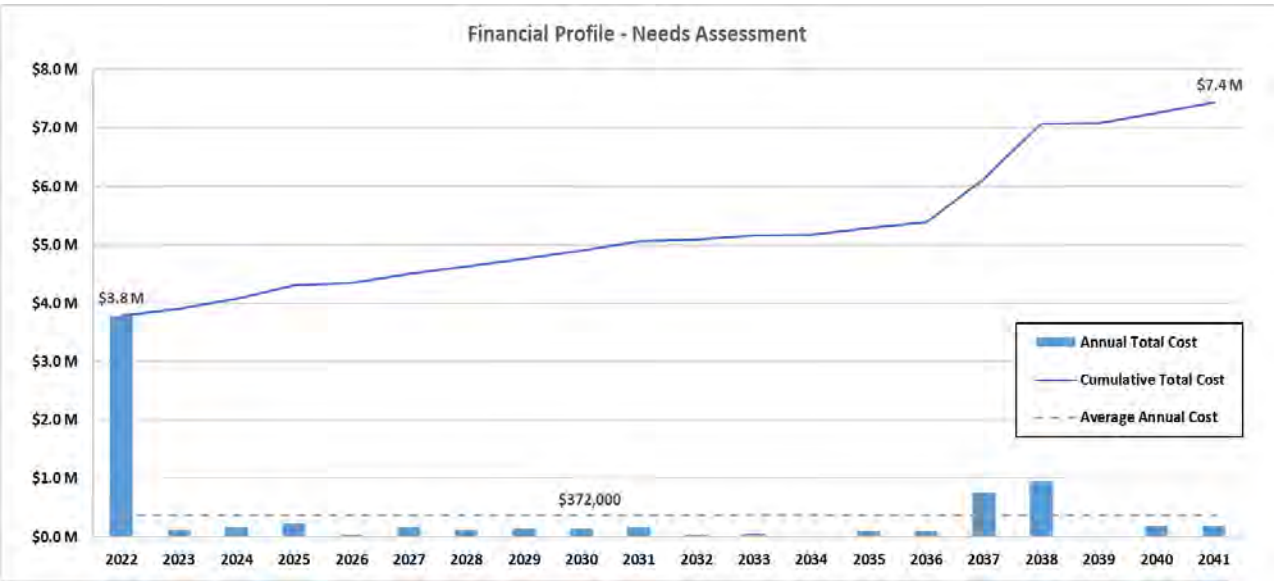

Figure 13 - Rehabilitation Needs based on Unconstrained Budget Scenario

7.2 Constrained Budget Analysis

A road is said to be in backlog where there was not enough money to construct the most cost-effective rehabilitation. In other words, the road segments in poor to very poor condition, are defined as “backlog roads”. In order to evaluate the consequence of various budget scenarios, the backlog cost is used. The backlog cost is the cost that would need to be applied in a single year to eliminate the backlog. If the backlog cost is growing over time, the network is getting worse (i.e. more expensive to repair). The effect of various funding levels in terms of backlog cost is also shown in Figure 14. It is projected that the backlog cost increases from $3.5 M in 2021 to $ 10.7 M in 2041 if the Village is not doing any of the major rehabilitation based on the current condition.

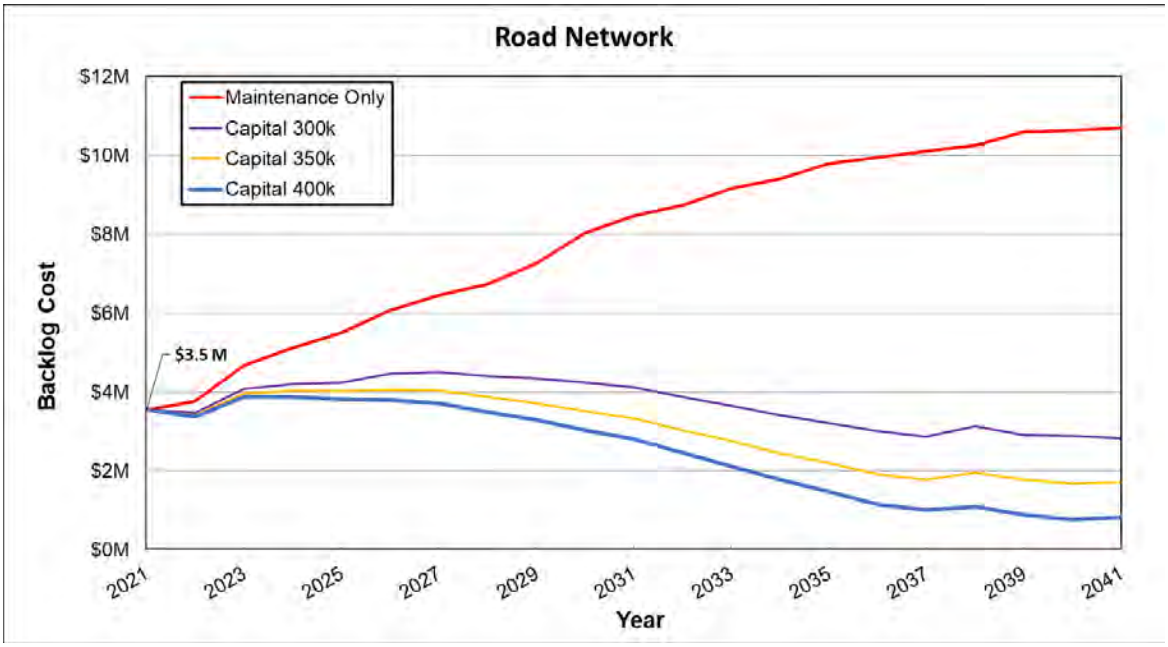

Figure 14 - Future Backlog Projection based on Various Annual Capital Budget Scenarios

The optimization method chosen was to maximize the present value of the pavement asset, weighted by User Priority Factors. This optimization effectively minimizes total cracking and especially high severity cracking because the asset value is defined as the as-new value minus the cost to repair those defects. Routine maintenance costs are excluded from the annual rehabilitation budgets.

Figure 15 shows the predicted average pavement condition in term of PCI for different annual capital budget levels. An annual capital budget of $350,000 is needed to improve the network average condition for the next 10 years and continue improving by the end of 20-year analysis cycle.

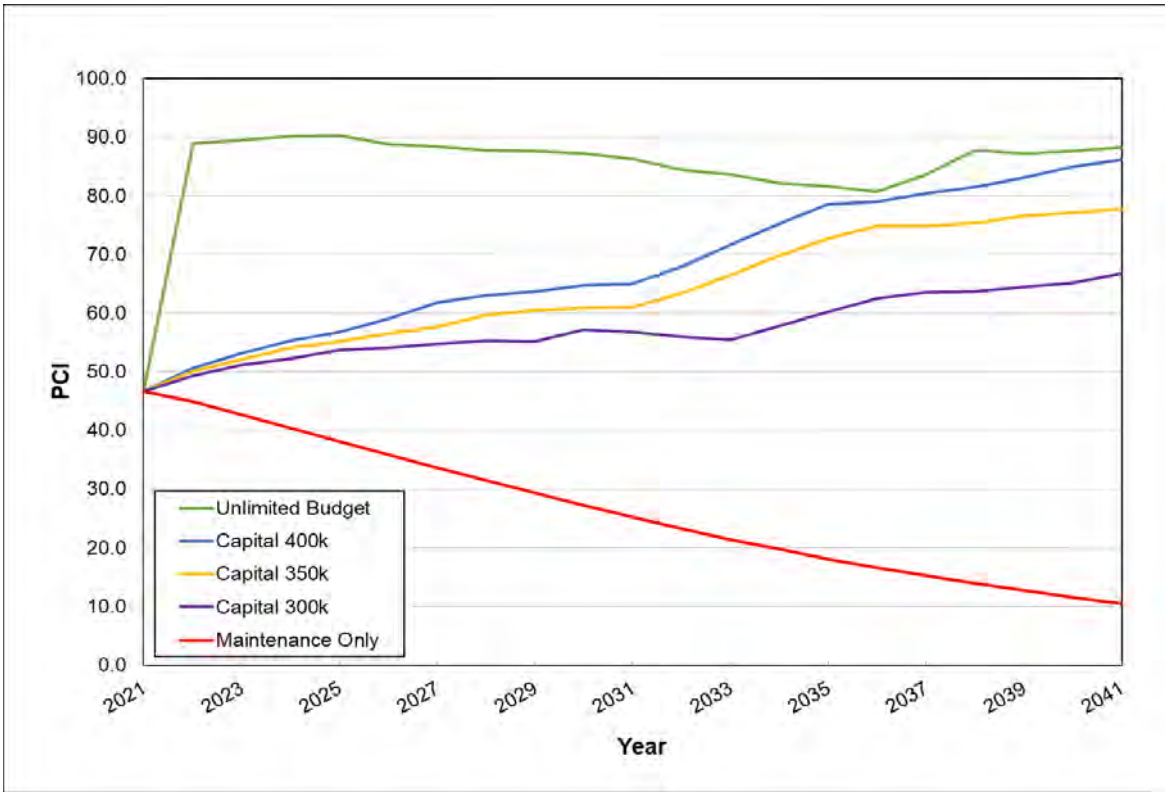

Figure 15 - Future PCI on Various Annual Capital Budget Scenarios

Table 9 shows a summary of a 20-year return on investment analysis for different budget scenarios. The return on investment (savings in maintenance cost and reduction in backlog in 2041) is increased with higher capital budgets.

Table 9: 20-Year Return on Investment for Different Budget Scenarios ($ Million)

	Budget Scenarios			
	Maintenance Only	**$300 K / Year**	**$350 K / Year**	**$400 k / Year**
Total Rehabilitation Cost (2021 to 2041)	0.0	5.9	6.9	7.9
Total Maintenance Cost (2021 to 2041)	3.5	1.8	1.4	1.2
Total Backlog Cost (in 2041)	10.7	2.8	1.7	0.8
Total Cost	14.2	10.5	10	9.9
Investment*	n/a	**5.9**	**6.9**	**7.9**
Return on Investment**		**9.6**	**11.1**	**12.2**

*Investment cost = total rehabilitation cost
**Return on investment = saving on total maintenance cost and backlog cost in 2041 compare to Maintenance Only strategy

Figure 16 shows predicted pavement condition distribution based on PCI at an annual capital budget of $350,000. As shown in the figure, the percent pavement segments in poor and very poor condition (% of backlog) will slightly decrease in the next ten years, this is because this limited budget level is not sufficient for the current backlog network and the program is focusing on repairing arterial and collector road as higher priority.

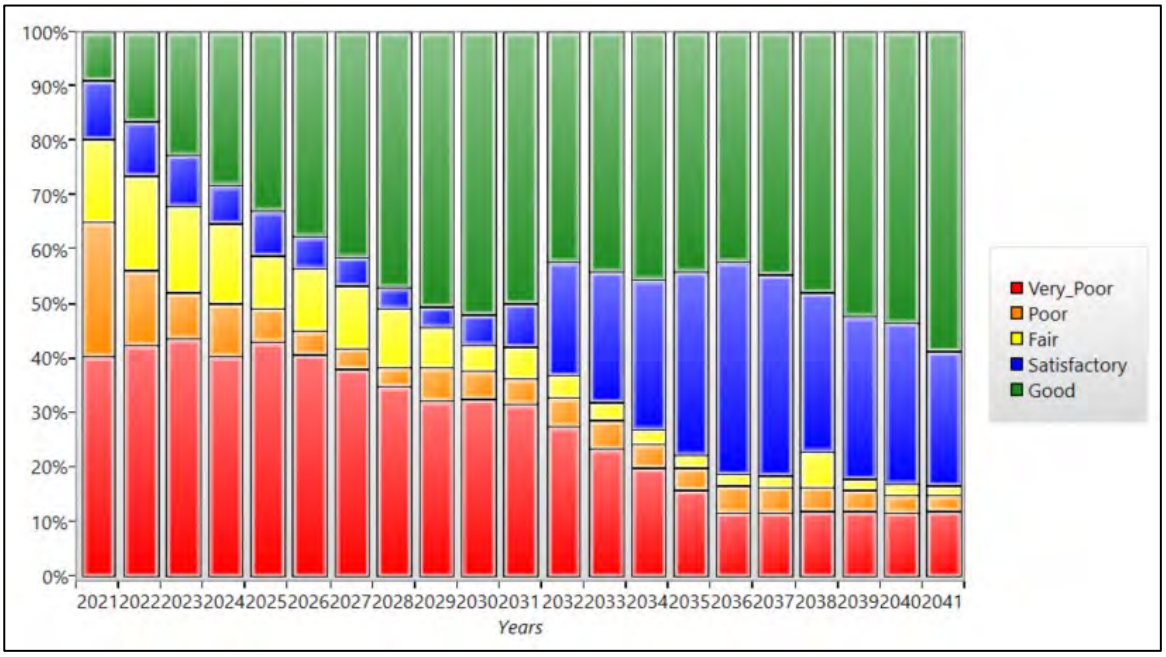

Figure 16 - Predicted PCI Distribution ($350,000 / year Capital Budget)

Effects of Road Class

As described in Section 6.3.1, road classification was considered in the benefit definition and prioritization (shown in Table 8). In other words, major roads, including arterial and collector were determined to be higher priority rather than local roads with the same pavement condition in the analysis process.

For instance, with the annual capital budget scenario of $350,000, this prioritization results in improving the pavement condition for major roads first, while local roads deteriorate as shown in Figure 17.

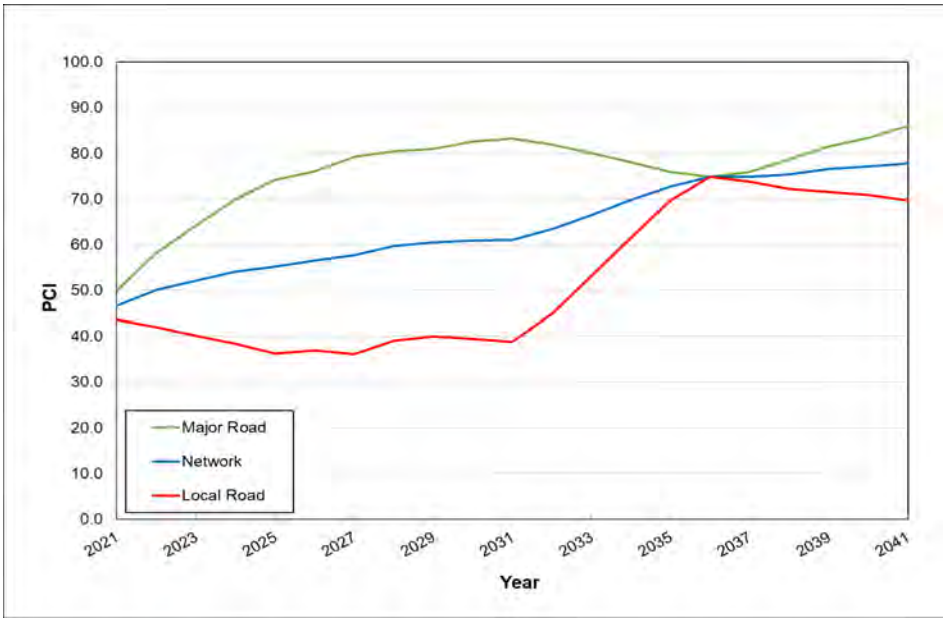

Figure 17 - Predicted Overall Pavement Condition in Different Road Classes ($350,000 / year capital budget)

Figure 18 and Figure 19 shows predicted pavement condition distribution based on $350 K for major roads and local roads respectively.

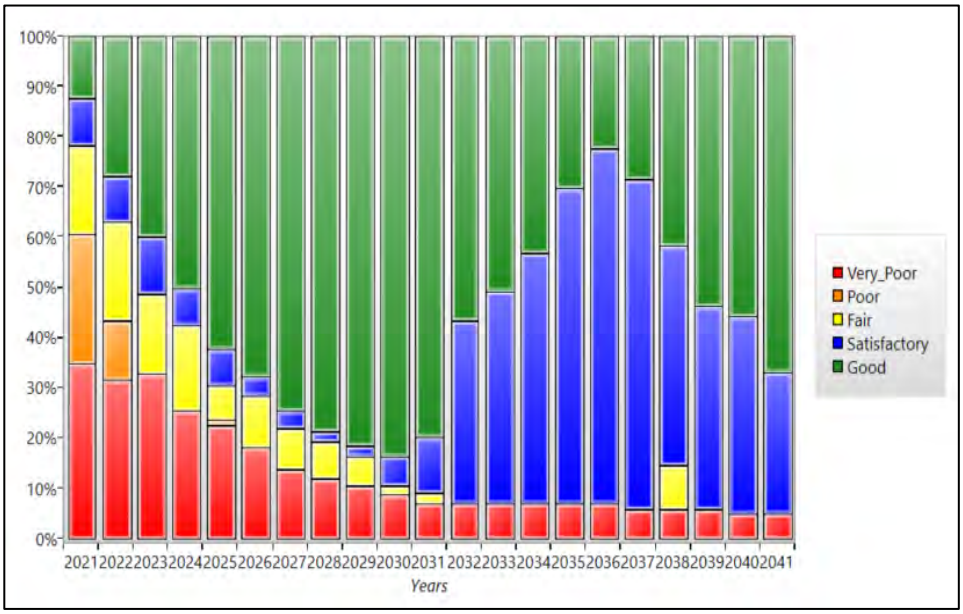

Figure 18 - Predicted PCI Distribution for Major Roads ($350,000 / year Capital Budget)

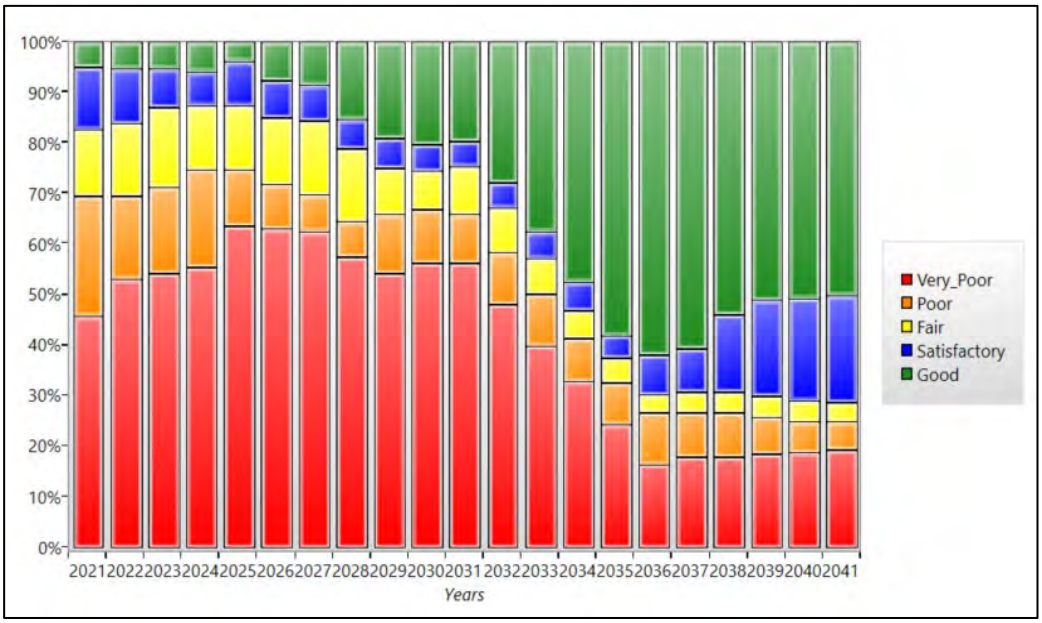

Figure 19 - Predicted PCI Distribution for Local Roads ($350,000 / year Capital Budget)

7.3 Multi-Year Rehabilitation Program

A ten-year paving plan based upon $350,000 capital budget (2022 and later) for the paved roads network are provided in Appendix C. This program includes only the rehabilitation treatments (not routine maintenance) chosen by the analysis. The rehabilitation program suggested should be confirmed by completing project-level assessments and designs.

8.0 CONCLUSIONS AND RECOMMENDATIONS

Life-cycle cost analysis was conducted for each paved road segment. The purpose was to forecast the overall condition of the network with alternative budget scenarios, determine the long-term funding required to sustain the pavement network and backlog cost, and to develop a rehabilitation program.

Based on the needs-based scenario (unconstrained budget), the Village would require around $3.8 million in the first year for rehabilitation of the road network. To remove all backlog roads as they arise over a 20-year period, the Village would require annual funding of $372,000.

The constrained budgets investigated were annual capital budgets of $300,000, $350,000, and $400,000 for the road network rehabilitation. A capital budget of $350,000 per year would be necessary to bring the overall pavement condition to satisfactory level (PCI >75) in the next twenty years.

The pavement rehabilitation plan is developed at a network-level. At the time of implementation, project-level assessments and designs should be completed. The Village should consider updating the plan with new data in four to five years. This will provide an opportunity to update deterioration model calibration, include new or rehabilitated pavements in the plan. This timeframe is consistent with other municipalities in western Canada.

9.0 CLOSURE

We trust this report meets your present requirements. If you have any questions or comments, please contact the undersigned.

Respectfully submitted,
Tetra Tech Canada Inc.

Sept 29 2021

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
A. J. REGGIN
31748

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/cy

REFERENCE

Yu, J., Chou, E., & Yau, J.-T. (2006). Development of Speed-Related Ride Quality Thresholds Using International Roughness Index. Transportation Research Record, No. 1974, 47-53.

APPENDIX A

TETRA TECH'S LIMITATIONS ON THE USE OF THIS DOCUMENT

LIMITATIONS ON USE OF THIS DOCUMENT

DESIGN REPORT

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Both electronic file and/or hard copy versions of TETRA TECH’s Instruments of Professional Service shall not, under any circumstances, be altered by any party except TETRA TECH. TETRA TECH’s Instruments of Professional Service will be used only and exactly as submitted by TETRA TECH.

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If any error or omission is detected by the Client or an Authorized Party, the error or omission must be immediately brought to the attention of TETRA TECH.

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The Client acknowledges that it has fully cooperated with TETRA TECH with respect to the provision of all available information on the past, present, and proposed conditions on the site, including historical information respecting the use of the site. The Client further acknowledges that in order for TETRA TECH to properly provide the services contracted for in the Contract, TETRA TECH has relied upon the Client with respect to both the full disclosure and accuracy of any such information.

1.5 INFORMATION PROVIDED TO TETRA TECH BY OTHERS

During the performance of the work and the preparation of this Professional Document, TETRA TECH may have relied on information provided by third parties other than the Client.

While TETRA TECH endeavours to verify the accuracy of such information, TETRA TECH accepts no responsibility for the accuracy or the reliability of such information even where inaccurate or unreliable information impacts any recommendations, design or other deliverables and causes the Client or an Authorized Party loss or damage.

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This Professional Document is based solely on the conditions presented and the data available to TETRA TECH at the time the data were collected in the field or gathered from available databases.

The Client, and any Authorized Party, acknowledges that the Professional Document is based on limited data and that the conclusions, opinions, and recommendations contained in the Professional Document are the result of the application of professional judgment to such limited data.

The Professional Document is not applicable to any other sites, nor should it be relied upon for types of development other than those to which it refers. Any variation from the site conditions present, or variation in assumed conditions which might form the basis of design or recommendations as outlined in this report, at or on the development proposed as of the date of the Professional Document requires a supplementary exploration, investigation, and assessment.

TETRA TECH is neither qualified to, nor is it making, any recommendations with respect to the purchase, sale, investment or development of the property, the decisions on which are the sole responsibility of the Client.

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Unless so stipulated in the Design Report, TETRA TECH was not retained to explore, address or consider, and has not explored, addressed or considered any environmental or regulatory issues associated with the project specific design.

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TETRA TECH may have undertaken design calculations and prepared project specific designs in accordance with terms of reference that were previously set out in consultation with, and agreement of, TETRA TECH's client. These designs have been prepared to a standard that is consistent with current industry practice. Notwithstanding, if any error or omission is detected by TETRA TECH's Client or any party that is authorized to use the Design Report, the error or omission should be immediately drawn to the attention of TETRA TECH.

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A Geotechnical Report is commonly the basis upon which the specific project design has been completed. It is incumbent upon TETRA TECH's Client, and any other authorized party, to be knowledgeable of the level of risk that has been incorporated into the project design, in consideration of the level of the geotechnical information that was reasonably acquired to facilitate completion of the design.

If a Geotechnical Report was prepared for the project by TETRA TECH, it may be included in the Design Report as appropriate. The Geotechnical Report contains Limitations that should be read in conjunction with these Limitations for the Design Report.

1.10 APPLICABLE CODES, STANDARDS, GUIDELINES & BEST PRACTICE

This report has been prepared based on the applicable codes, standards, guidelines or best practice as identified in the report. Some mandated codes, standards and guidelines (such as ASTM, AASHTO Bridge Design/Construction Codes, Canadian Highway Bridge Design Code, National/Provincial Building Codes) are routinely updated and corrections made. TETRA TECH cannot predict nor be held liable for any such future changes, amendments, errors or omissions in these documents that may have a bearing on the assessment, design or analyses included in this report.

APPENDIX B

2021 PAVEMENT CONDITION

Figure B1 – 2021 Percent Fatigue Cracking (AFCA)

Figure B2 – 2021 Percent Fatigue Cracking (PCI)

2021 Pavement Condition Indices Spreadsheet

C:\Users\alex.liang\Desktop\Chase\GIS\Village_of_Chase_Map_B1_IFU.mxd modified 9/27/2021 by ALEX.LIANG

309500 310000 310500 311000 311500

5634500 5634000 5633500 5633000 5632500 5632000 5631500

N W E S

Lakeshore Dr
Pine St
Second Ave
Hillside Ave
Third Ave
Aylmer Rd
Thompson Ave
First Ave
Chase St
Coburn St
VLA Rd
Shuswap Ave
Cedar Ave
Cottonwood St
Brooke Dr

LEGEND

AFCA

- Good (0 -1)
- Satisfactory (1 - 5)
- Fair (5 - 10)
- Poor (10 - 30)
- Very Poor (30+)
- Village Road Network

NOTES
Base Data Source:
Imagery provided from Maxar via ESRI basemaps, 2020

VILLAGE OF CHASE ROADWAY DATA COLLECTION AND PAVEMENT MANAGEMENT PLAN 2021

2021 Pavement Condition Percent Fatigue Cracking (AFCA)

PROJECTION: UTM ZONE 11	DATUM: NAD83			CLIENT: TRUE
Scale: 1:10,000 (200 100 0 200 Meters)				TETRA TECH
FILE NO.: Village_of_Chase_Map_B1_IFU.mxd				
OFFICE: Tt-VANC	DWN: AL	CKD: YL	APVD: AR	REV: 0
DATE: September 27, 2021	PROJECT NO.: TRN.ASMT03045-01			Map B-1

STATUS
ISSUED FOR USE

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309500 310000 310500 311000 311500

5634500 5634000 5633500 5633000 5632500 5632000 5631500

N W E S

Lakeshore Dr
Pine St
Second Ave
Hillside Ave
Third Ave
Aylmer Rd
First Ave
Chase St
Thompson Ave
Coburn St
VLA Rd
Shuswap Ave
Cedar Ave
Cottonwood St
Brooke Dr

LEGEND

PCI

- Very Poor (0 - 40)
- Poor (40 - 55)
- Fair (55 - 70)
- Sastisfactory (70 - 85)
- Good (85 - 100)
- Village Road Network

NOTES
Base Data Source:
Imagery provided from Maxar via ESRI basemaps, 2020

VILLAGE OF CHASE ROADWAY DATA COLLECTION AND PAVEMENT MANAGEMENT PLAN 2021

2021 Pavement Condition
Pavement Condition Index (PCI)

PROJECTION: UTM ZONE 11	DATUM: NAD83			CLIENT: TRUE
Scale: 1:10,000 (200 100 0 200 Meters)				TETRA TECH
FILE NO.: Village_of_Chase_Map_B2_IFU.mxd				
OFFICE: Tt-VANC	DWN: AL	CKD: YL	APVD: AR	REV: 0
DATE: September 27, 2021	PROJECT NO.: TRN.ASMT03045-01			Map B-2

STATUS: ISSUED FOR USE

Analysis ID	RoadName	From	To	StreetFrom	StreetTo	Length (m)	Class	Curb	Width (m)	ACA (%)	AFCA (%)	TCA (%)	PCI	SNP	RUT (mm)	IRI (mm/m)
Ana-001	Arbutus Pl	0	76	Southwest End	Northeast End	76	LOC	N	8	26.3	9.5	16.8	33.2	-	4.5	2.5
Ana-002	Arbutus St	0	297	Arbutus Pl	Lakeshore Dr	297	LOC	N	9	19.4	7.4	12.0	40.8	-	3.1	5.3
Ana-003	Arbutus St	297	439	Lakeshore Dr	Second Ave	142	LOC	N	9	31.2	18.3	12.9	26.6	-	4.2	6.6
Ana-004	Ash Dr	0	120	Shuswap Ave	Pavement Change	120	LOC	N	8	22.0	9.5	12.5	29.8	-	5.7	7.0
Ana-005	Ash Dr	120	202	Pavement Change	Leighton Ave	82	LOC	B	8	7.5	3.8	3.7	66.7	-	4.1	5.2
Ana-006	Aspen Dr	0	75	Southeast End	Pavement Change	75	LOC	N	7	2.0	0.4	1.6	89.6	-	1.7	5.9
Ana-007	Aspen Dr	75	220	Pavement Change	Northwest End	145	LOC	N	7	2.8	0.6	2.2	88.6	-	1.8	4.4
Ana-008	Aulin Ave	0	77	Southwest End	Wilson St	77	LOC	N	6	32.0	25.0	7.0	-	-	2.0	11.0
Ana-009	Aylmer Rd	0	431	Northwest End	Northwest End	431	LOC	N	6.5	27.4	11.7	15.7	21.0	-	8.1	5.4
Ana-010	Aylmer Rd	431	675	Northwest End	Third Ave	244	COL	N	6.5	13.1	3.9	9.2	42.9	3.5	5.6	3.8
Ana-011	Aylmer Rd	675	860	Third Ave	Pavement Change	185	COL	N	7	7.3	0.6	6.7	82.8	4.5	1.8	2.6
Ana-012	Aylmer Rd	860	1010	Pavement Change	Curb Change	150	COL	N	7	1.6	0.6	1.0	87.0	3.6	1.3	1.9
Ana-013	Aylmer Rd	1010	1219	Curb Change	Shuswap Ave	209	COL	L	7	0.1	0.0	0.1	100.0	3.9	1.0	1.9
Ana-015	Balsam Pl	0	37	Lakeshore Dr	Northeast End	37	LOC	N	12	18.9	12.3	6.6	23.6	-	5.0	2.5
Ana-016	Bay Dr	0	442	Bay St / Okanagan Ave	East End	442	LOC	N	5.5	17.0	7.8	9.2	41.6	-	3.5	5.6
Ana-017	Bay St	0	81	Bay Dr / Okanagan Ave	Thompson Ave	81	LOC	N	5.5	30.8	14.3	16.5	36.6	-	4.8	5.9
Ana-018	Beach Cres	0	237	Beach Dr / Beach Pl	Beach Dr	237	LOC	N	7	36.4	19.0	17.4	14.6	-	8.8	8.7
Ana-019	Beach Dr	0	196	Second Ave	Beach Cres	196	LOC	N	7	31.0	15.5	15.5	19.9	-	7.0	7.7
Ana-020	Beach Dr	196	372	Beach Cres	Lakeshore Dr	176	LOC	N	7	11.7	4.1	7.6	67.2	-	3.3	3.7
Ana-021	Beach Pl	0	77	Southwest End	Beach Cres / Beach Dr	77	LOC	N	7	35.4	22.3	13.1	13.4	-	5.8	2.5
Ana-022	Bell St	0	108	Shuswap Ave	Shepherd Rd	108	LOC	N	7	13.8	3.6	10.2	63.0	-	2.5	3.2
Ana-023	Birch St	0	148	Second Ave	Third Ave	148	LOC	N	7	41.3	19.7	21.6	21.9	-	4.8	5.3
Ana-024	Birch St	148	332	Third Ave	Fourth Ave	184	LOC	N	7	30.9	13.8	17.1	30.7	-	3.9	6.1
Ana-025	Blue Spruce Way	0	79	South End	Lakeshore Dr	79	LOC	N	7	17.5	9.1	8.4	28.4	-	6.0	13.3
Ana-026	Brooke Dr	0	310	Shuswap Ave	Leighton Pl	310	LOC	N	8	37.1	16.8	20.3	21.7	-	3.8	5.6
Ana-027	Brooke Dr	310	550	Leighton Pl	mall access	240	LOC	N	8	51.0	33.5	17.5	13.6	-	4.4	7.1
Ana-028	Brooke Dr	550	824	mall access	Shuswap Ave	274	COL	N	8	12.3	3.4	8.9	64.3	4.2	3.6	2.5
Ana-029	Cedar Ave	0	239	Cottonwood St	Coburn St_1	239	COL	N	7	12.9	6.3	6.6	56.7	-	2.2	2.8
Ana-030	Cedar Ave	239	305	Coburn St_1	Curb Change	66	COL	R	7	20.6	7.7	12.9	28.7	-	5.2	4.8
Ana-031	Cedar Ave	305	394	Curb Change	Coburn St	89	COL	N	7	29.6	18.2	11.4	13.2	-	7.8	3.7
Ana-032	Cedar Pl	0	39	Cedar Ave	Southeast End	39	LOC	N	8	47.5	30.1	17.4	4.9	-	10.7	2.5
Ana-033	Chase Bridge Rd	130	173	Northwest End	Mill Rd / Pine St	43	ART	N	9	22.1	9.9	12.2	41.6	4.7	4.2	3.6
Ana-034	Chase St	0	47	Northwest End	First Ave	47	COL	N	7	29.2	10.3	18.9	21.1	-	6.0	2.5
Ana-035	Chase St	47	190	First Ave	Pavement Change	143	COL	B	8	10.8	3.9	6.9	68.3	-	3.6	5.0
Ana-036	Chase St	190	317	Pavement Change	Okanagan Ave	127	COL	R	8	35.3	19.7	15.6	19.5	-	5.8	6.2
Ana-037	Chase St	317	404	Okanagan Ave	Thompson Ave	87	COL	B	8	19.5	7.7	11.8	40.4	-	4.0	7.5
Ana-038	Cherry Pl	0	22	Northwest End	Cedar Ave	22	LOC	N	8	22.5	7.5	15.0	32.9	-	4.9	2.5
Ana-041	Coburn St	0	156	Shuswap Ave	Okanagan Ave	156	COL	N	7.5	8.4	1.2	7.2	63.4	3.9	5.1	2.6
Ana-042	Coburn St	156	475	Okanagan Ave	Foothills Rd	319	COL	N	7.5	16.5	4.5	12.0	41.2	4.1	4.7	5.1
Ana-044	Cottonwood St	0	145	Shepherd Rd	Maple Ave	145	COL	N	8	21.2	10.0	11.2	33.3	-	2.7	3.0
Ana-045	Cottonwood St	145	358	Maple Ave	Cedar Ave	213	COL	N	8	14.9	6.3	8.6	44.7	-	2.7	3.5
Ana-046	Cottonwood St	358	421	Cedar Ave	NO NAME	63	LOC	N	8	20.8	6.9	13.9	29.4	-	6.9	8.6
Ana-047	Cummings St	0	119	Second Ave	North End	119	LOC	N	12	10.7	2.3	8.4	79.3	-	3.4	2.5
Ana-048	Currie Ave	0	153	Lake St	Hillside Ave	153	LOC	N	6.5	24.9	6.9	18.0	44.0	-	3.8	6.4
Ana-049	Drakes Landing Rd	0	287	VLA Rd	East End	287	LOC	N	7	52.4	12.5	39.9	44.7	-	4.9	5.1
Ana-050	Elm St	0	127	Northwest End	Cedar Ave	127	LOC	N	5.5	30.9	20.0	10.9	21.7	-	5.5	11.2
Ana-051	Fifth Ave	0	108	Juniper St	Pine St	108	LOC	N	7	29.5	14.7	14.8	17.7	-	7.2	8.8
Ana-052	First Ave	0	39	Southwest End	Pine St	39	LOC	N	7	15.7	1.8	13.9	61.2	-	3.4	2.5
Ana-053	First Ave	39	80	Pine St	Pavement Change	41	COL	N	7	33.8	13.5	20.3	25.7	-	3.7	7.8
Ana-054	First Ave	80	163	Pavement Change	Chase St	83	COL	N	7	14.5	6.5	8.0	40.5	-	4.3	4.4
Ana-055	First Ave	163	294	Chase St	Northeast End	131	LOC	R	7	36.5	23.7	12.8	15.1	-	5.3	6.5
Ana-056	First Ave	295	409	Southwest End	MacPherson St	114	LOC	N	3.5	32.7	14.3	18.4	14.5	-	9.7	2.5
Ana-057	First Ave	410	523	MacPherson St	Northeast End	113	LOC	N	3.5	29.6	13.3	16.3	17.4	-	12.0	2.5
Ana-058	Foothills Rd	0	143	South End	Coburn St	143	LOC	N	8	21.6	12.4	9.2	26.2	-	4.1	3.6
Ana-059	Fourth Ave	0	170	Pine St	Birch St	170	LOC	N	6.5	41.8	21.7	20.1	12.3	-	6.9	7.3
Ana-060	Frontage Rd	0	82	South End	Ash Dr	82	LOC	N	7	4.0	0.8	3.2	75.1	-	3.6	2.5
Ana-061	Frontage Rd	83	161	Ash Dr	Brooke Dr	78	LOC	N	5	4.1	1.8	2.3	41.5	-	6.9	2.5
Ana-062	Haldane St	0	85	First Ave	Shuswap Ave	85	COL	L	9	5.1	0.8	4.3	76.3	-	2.7	4.0
Ana-063	Haldane St	85	175	Shuswap Ave	Sicamous Ave	90	COL	N	10	22.4	14.1	8.3	37.4	-	3.5	2.5
Ana-064	Hendry Ave	0	103	Southwest End	Wilson St	103	LOC	N	8	25.1	8.4	16.7	39.3	-	4.4	6.8
Ana-065	Hillside Ave	0	70	Shuswap Ave	Pavement Change	70	COL	N	6.5	9.6	2.0	7.6	56.9	-	3.6	4.2
Ana-066	Hillside Ave	70	200	Pavement Change	Pavement Change	130	COL	N	6.5	15.7	6.0	9.7	50.0	-	2.8	4.7
Ana-067	Hillside Ave	200	395	Pavement Change	Lake St	195	COL	N	6.5	34.7	21.3	13.4	20.1	-	4.7	6.1
Ana-068	Hillside Ave	395	533	Lake St	Currie Ave	138	COL	N	6.5	36.1	20.3	15.8	13.0	-	7.7	7.2
Ana-069	Hillside Ave	533	662	Currie Ave	Northeast End	129	LOC	N	6.5	32.7	10.5	22.2	35.3	-	4.9	5.1
Ana-072	Hysop Pl	0	53	Hysop Rd	North End	53	LOC	N	11	21.8	8.3	13.5	32.1	-	3.3	2.5
Ana-073	Hysop Rd	0	263	Pine St	Pavement Change	263	LOC	N	7	27.8	8.0	19.8	45.4	-	2.9	4.1
Ana-074	Hysop Rd	263	475	Pavement Change	Southeast End	212	LOC	N	7	13.4	5.5	7.9	47.0	-	5.0	3.8
Ana-075	Juniper St	0	356	Third Ave	Fifth Ave	356	LOC	N	7	20.4	8.8	11.6	38.8	-	4.5	5.1
Ana-076	Lake St	0	52	Hillside Ave	Currie Ave	52	LOC	N	6.5	10.8	0.5	10.3	81.3	-	3.2	12.7
Ana-077	Lakeshore Dr	0	158	Arbutus St	Arbutus St	158	COL	N	7	13.5	3.1	10.4	53.4	-	3.6	4.7
Ana-078	Lakeshore Dr	158	424	Arbutus St	Blue Spruce Way	266	COL	N	7	19.6	6.7	12.9	51.9	-	4.0	4.6
Ana-079	Lakeshore Dr	424	550	Blue Spruce Way	Beach Dr	126	COL	N	7	24.3	8.4	15.9	31.9	-	4.5	5.9
Ana-080	Lakeshore Dr	550	644	Beach Dr	Pavement Change	94	LOC	N	7	4.0	1.3	2.7	72.5	-	3.2	3.3
Ana-081	Lakeshore Dr	644	734	Pavement Change	Pavement Change	90	LOC	N	7	35.2	19.0	16.2	19.7	-	4.4	6.5
Ana-082	Lakeshore Dr	734	946	Pavement Change	Second Ave	212	LOC	N	7	12.0	3.8	8.2	57.6	-	3.3	3.7
Ana-083	Larch St	0	312	Third Ave	Fifth Ave	312	LOC	N	8	15.1	5.3	9.8	60.3	-	3.5	4.4
Ana-084	Leighton Ave	0	195	Southwest End	Ash Dr	195	LOC	B	8	12.0	3.5	8.5	66.2	-	2.1	2.9
Ana-085	Leighton Pl	0	124	Northwest End	Brooke Dr	124	LOC	B	8	26.8	10.6	16.2	34.7	-	3.1	4.2
Ana-086	MacPherson St	0	99	First Ave	Hillside Ave	99	LOC	N	3.5	33.4	13.5	19.9	18.9	-	5.8	9.5
Ana-087	MacPherson St	100	194	Sicamous Ave	Okanagan Ave	94	LOC	N	7.5	34.8	18.1	16.7	26.7	-	5.0	2.5
Ana-088	MacPherson St	194	279	Okanagan Ave	Thompson Ave	85	LOC	N	7.5	3.3	1.4	1.9	83.9	-	1.7	4.2
Ana-089	Maple Ave	0	63	Cottonwood St	North End	63	LOC	N	11	19.5	7.9	11.6	36.8	-	3.4	2.5
Ana-090	Margery St	0	144	Thompson Ave	Shuswap Ave	144	LOC	N	5.5	43.1	17.0	26.1	12.0	-	7.0	2.5
Ana-091	Mason St	0	108	Shuswap Ave	Shepherd Rd	108	COL	N	7	18.1	7.2	10.9	45.7	-	3.3	2.9
Ana-092	Mill Rd	81	286	Southwest End	Chase Bridge Rd / Pine St	205	LOC	N	8	2.7	1.1	1.6	82.3	-	3.4	3.4
Ana-093	NO NAME	0	20	Cottonwood St	Northeast End	20	LOC	N	7	24.8	9.0	15.8	18.1	-	7.3	2.5
Ana-094	Okanagan Ave	0	77	Southwest End	Chase St	77	LOC	R	8	8.6	4.3	4.3	58.0	-	4.4	3.5
Ana-095	Okanagan Ave	77	183	Chase St	Coburn St	106	LOC	N	8	34.9	15.4	19.5	18.4	-	6.1	6.2
Ana-096	Okanagan Ave	183	293	Coburn St	MacPherson St	110	LOC	N	8	8.3	1.4	6.9	84.5	-	2.2	3.3
Ana-097	Okanagan Ave	293	357	MacPherson St	Shaw St	64	COL	N	8	3.3	0.9	2.4	87.8	-	2.1	2.9
Ana-098	Okanagan Ave	358	510	Shuswap Ave	Bay St	152	LOC	N	7	15.7	4.4	11.3	52.7	-	2.9	4.0
Ana-099	Okanagan Ave	510	629	Bay St	Clarke Rd	119	LOC	N	6.5	11.3	6.0	5.3	54.1	-	3.8	6.8
Ana-100	Paquette Rd	0	226	Coburn St	Northeast End	226	LOC	N	6.5	3.8	1.4	2.4	75.0	-	3.6	5.3
Ana-101	Pine St	0	190	Shuswap Ave	Second Ave	190	ART	B	8	31.0	14.4	16.6	27.6	4.3	8.3	4.8
Ana-102	Pine St	190	387	Second Ave	Third Ave	197	ART	B	10	28.5	15.1	13.4	13.4	4.9	10.4	3.7
Ana-103	Pine St	387	559	Third Ave	Fourth Ave	172	ART	B	9	31.4	17.7	13.7	10.8	4.7	10.6	3.0
Ana-104	Pine St	559	725	Fourth Ave	Fifth Ave	166	ART	B	9	35.7	22.0	13.7	6.4	4.3	11.8	3.1
Ana-105	Pine St	725	927	Fifth Ave	Hysop Rd	202	ART	B	9	35.9	19.8	16.1	15.0	4.5	9.3	2.8
Ana-106	Pine St	928	987	Hysop Rd	Chase Bridge Rd / Mill Rd	59	ART	B	9	22.5	7.1	15.4	36.1	4.7	7.0	3.4
Ana-110	Second Ave	0	214	Pine St	Birch St	214	COL	L	8	32.5	13.6	18.9	30.1	-	4.0	2.5
Ana-111	Second Ave	214	695	Birch St	Arbutus St	481	COL	L	8	21.3	7.2	14.1	43.4	-	4.0	1.8
Ana-112	Second Ave	695	987	Arbutus St	Lakeshore Dr	292	COL	L	8	9.0	2.6	6.4	71.2	-	2.9	1.6
Ana-113	Second Ave	987	1162	Lakeshore Dr	Cummings St	175	COL	L	8	2.2	0.0	2.2	90.0	-	1.9	2.2
Ana-114	Second Ave	1163	1215	Cummings St	Northeast End	52	LOC	B	8	4.4	2.2	2.2	61.7	-	4.8	7.1

Analysis ID	RoadName	From	To	StreetFrom	StreetTo	Length (m)	Class	Curb	Width (m)	ACA (%)	AFCA (%)	TCA (%)	PCI	SNP	RUT (mm)	IRI (mm/m)
Ana-115	Shaw St	0	47	First Ave	Hillside Ave	47	LOC	N	5.5	7.4	1.2	6.2	71.5	-	2.9	2.5
Ana-116	Shaw St	48	133	Sicamous Ave	Sicamous Ave	85	LOC	N	7	11.3	2.4	8.9	64.7	-	2.1	4.8
Ana-117	Shaw St	133	222	Sicamous Ave	Thompson Ave	89	LOC	N	7	1.9	0.3	1.6	91.3	-	1.9	3.8
Ana-118	Shepherd Rd	0	70	Brooke Dr	Pavement Change	70	LOC	B	8	13.8	1.7	12.1	64.1	-	2.6	2.8
Ana-119	Shepherd Rd	70	104	Pavement Change	North End	34	LOC	B	6.5	4.8	0.5	4.3	87.5	-	2.3	3.3
Ana-120	Shepherd Rd	105	155	South End	South End	50	LOC	N	7	1.3	0.0	1.3	93.3	-	2.3	2.5
Ana-121	Shepherd Rd	155	283	South End	Bell St	128	COL	N	7	2.7	0.4	2.3	85.7	-	2.0	4.0
Ana-122	Shuswap Ave	0	350	South End	Shuswap Ave_1	350	ART	N	8	11.1	2.0	9.1	63.0	5.3	5.3	2.0
Ana-123	Shuswap Ave	350	531	Shuswap Ave_1	Brooke Dr	181	ART	N	8	13.1	4.2	8.9	49.7	5.3	6.4	2.2
Ana-124	Shuswap Ave	531	845	Brooke Dr	Ash Dr	314	ART	N	8	8.1	1.3	6.8	61.1	5.1	6.8	1.6
Ana-125	Shuswap Ave	845	924	Ash Dr	Brooke Dr	79	ART	N	8	17.8	6.8	11.0	48.6	4.5	6.6	2.5
Ana-126	Shuswap Ave	924	1305	Brooke Dr	Bell St	381	ART	N	8	7.9	2.1	5.8	43.2	5.1	11.7	2.5
Ana-127	Shuswap Ave	1305	1445	Bell St	Bridge	140	ART	R	11	17.7	5.8	11.9	38.2	4.4	6.6	4.4
Ana-128	Shuswap Ave	1445	1550	Bridge	Wilson St	105	ART	B	9	19.0	4.7	14.3	37.6	5.6	9.8	3.9
Ana-129	Shuswap Ave	1550	1760	Wilson St	Chase St	210	ART	B	9	17.3	4.6	12.7	39.9	5.8	8.5	2.8
Ana-130	Shuswap Ave	1760	1870	Chase St	Coburn St	110	ART	B	9	18.3	6.5	11.8	36.5	4.5	5.9	4.7
Ana-131	Shuswap Ave	1870	2197	Coburn St	Margery St	327	ART	B	8	19.3	9.4	9.9	21.9	4.0	10.0	4.0
Ana-132	Shuswap Ave	2197	2511	Margery St	Shuswap Ave	314	ART	B	8	36.8	20.3	16.5	17.1	4.6	7.1	3.6
Ana-133	Shuswap Ave	2511	2687	Shuswap Ave	Northeast End	176	ART	B	4	50.2	31.5	18.7	7.9	5.3	8.6	4.0
Ana-135	Shuswap Ave_2	0	80	Shuswap Ave	Southeast End	80	ART	N	4	21.3	9.5	11.8	26.7	5.5	6.7	5.4
Ana-136	Sicamous Ave	0	106	Haldane St	Chase St	106	LOC	N	7.5	21.1	7.1	14.0	47.6	-	2.7	7.0
Ana-137	Sicamous Ave	106	216	Chase St	Coburn St	110	LOC	N	7.5	16.8	5.3	11.5	49.3	-	2.1	3.9
Ana-138	Sicamous Ave	216	390	Coburn St	Shaw St	174	LOC	N	7.5	22.7	7.7	15.0	45.1	-	2.2	3.6
Ana-139	Third Ave	0	176	Aylmer Rd / VLA Rd	Third Ave	176	COL	N	7	13.0	2.5	10.5	60.2	-	3.1	6.3
Ana-140	Third Ave	176	377	Third Ave	Larch St	201	COL	N	7	6.8	0.8	6.0	79.3	-	2.9	3.3
Ana-141	Third Ave	377	459	Larch St	Pine St	82	COL	N	7	7.9	1.8	6.1	67.6	-	3.8	3.3
Ana-142	Third Ave	459	541	Pine St	Willow St	82	COL	N	7	31.4	15.1	16.3	33.9	-	2.9	5.9
Ana-143	Third Ave	541	631	Willow St	Birch St	90	COL	N	7	7.6	3.6	4.0	67.3	-	2.9	2.9
Ana-144	Third Ave	631	718	Birch St	Aspen Dr	87	COL	N	7	1.8	0.6	1.2	84.2	-	2.4	2.3
Ana-146	Thompson Ave	86	191	Chase St	Coburn St	105	COL	B	8	24.7	15.0	9.7	29.5	-	4.0	6.7
Ana-147	Thompson Ave	192	289	Southwest End	Shaw St	97	LOC	N	7	30.4	16.4	14.0	18.6	-	5.0	6.4
Ana-148	Thompson Ave	289	426	Shaw St	Margery St	137	COL	N	7	38.4	20.3	18.1	20.1	-	5.3	5.5
Ana-149	Thompson Ave	426	588	Margery St	Shuswap Ave	162	COL	N	7	4.4	1.5	2.9	79.2	-	3.2	4.0
Ana-150	Thompson Ave	588	750	Shuswap Ave	Northeast End	162	LOC	N	7	46.8	26.4	20.4	11.2	-	6.6	14.1
Ana-151	VLA Rd	0	219	South End	Drakes Landing Rd	219	COL	N	6	10.9	2.2	8.7	17.1	-	10.6	3.5
Ana-152	VLA Rd	219	337	Drakes Landing Rd	Aylmer Rd / Third Ave	118	COL	N	6	7.8	1.9	5.9	72.4	-	2.3	3.4
Ana-153	Willow St	0	163	Second Ave	Third Ave	163	LOC	N	7	8.9	1.7	7.2	70.3	-	2.8	4.1
Ana-154	Willow St	163	345	Third Ave	Fourth Ave	182	LOC	N	7	23.7	7.0	16.7	43.8	-	3.7	4.6
Ana-155	Wilson St	0	166	Shuswap Ave	Aulin Ave	166	LOC	N	10	12.3	3.7	8.6	76.6	-	2.7	4.7

APPENDIX C

REHABILITATION PROGRAM

Map C – 5-Year Paving Plan (Capital Funding of $350,000 per year from 2022)

Rehabilitation Program Spreadsheet

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309500 310000 310500 311000 311500

5634500 5634000 5633500 5633000 5632500 5632000 5631500

N W E S

Lakeshore Dr
Pine St
Second Ave
Hillside Ave
Third Ave
Aylmer Rd
Thompson Ave
First Ave
Chase St
Coburn St
VLA Rd
Shuswap Ave
Cedar Ave
Cottonwood St
Brooke Dr

LEGEND

Treatment Year

- 2021 (Committed Projects)
- 2022
- 2023
- 2024
- 2025
- 2026
- Village Road Network

NOTES
Base Data Source:
Imagery provided from Maxar via ESRI basemaps, 2020

Detailed paving plan including treatment type and estimated capital cost are provided in Appendix C - Rehabilitation Program

VILLAGE OF CHASE ROADWAY DATA COLLECTION AND PAVEMENT MANAGEMENT PLAN 2021

Five-Year Paving Plan

PROJECTION: UTM ZONE 11			DATUM: NAD83	CLIENT: TRUE	
Scale: 1:10,000 (200 100 0 200 Meters)					
FILE NO.: Village_of_Chase_Map_C1_IFU.mxd				TETRA TECH	
OFFICE: Tt-VANC	DWN: AL	CKD: YL	APVD: AR	REV: 0	Map C
DATE: September 27, 2021	PROJECT NO.: TRN.ASMT03045-01				

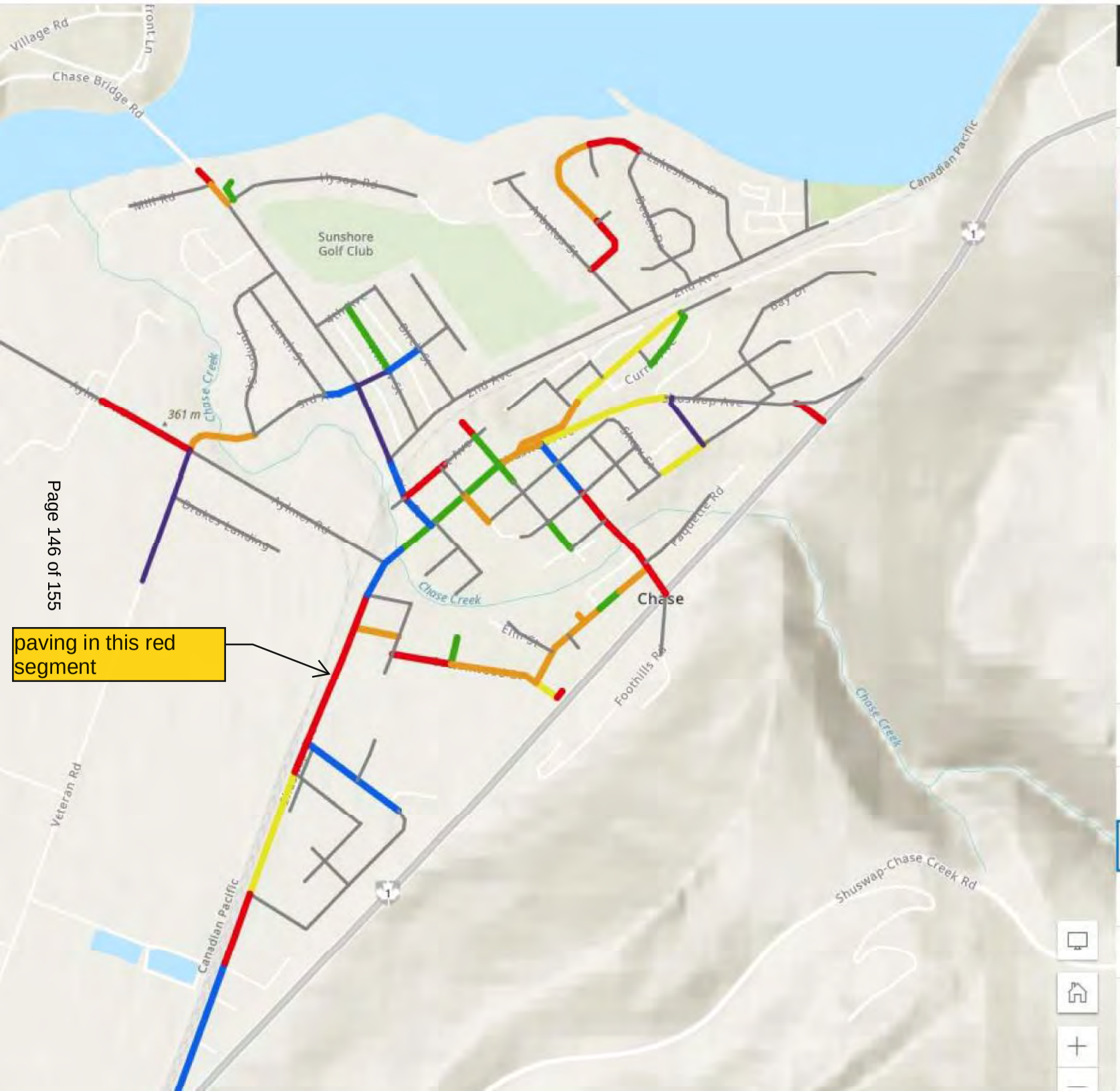
STATUS: ISSUED FOR USE

Analysis ID	RoadName	From	To	StreetFrom	StreetTo	Length (m)	Class	Curb	Width (m)	Treatment Year	Treatment Type	Treatment Cost
Ana-001	Arbutus Pl	0	76	Southwest End	Northeast End	76	LOC	N	8	2035	Full Depth Reclamation	$ 27,360
Ana-002	Arbutus St	0	297	Arbutus Pl	Lakeshore Dr	297	LOC	N	9	2028	Overlay 50	$ 93,019
Ana-003	Arbutus St	297	439	Lakeshore Dr	Second Ave	142	LOC	N	9	2033	Full Depth Reclamation	$ 57,510
Ana-004	Ash Dr	0	120	Shuswap Ave	Pavement Change	120	LOC	N	8	2035	Full Depth Reclamation	$ 43,200
Ana-005	Ash Dr	120	202	Pavement Change	Leighton Ave	82	LOC	B	8			
Ana-006	Aspen Dr	0	75	Southeast End	Pavement Change	75	LOC	N	7			
Ana-007	Aspen Dr	75	220	Pavement Change	Northwest End	145	LOC	N	7			
Ana-008	Aulin Ave	0	77	Southwest End	Wilson St	77	LOC	N	6	2030	Full Depth Reclamation	$ 20,790
Ana-009	Aylmer Rd	0	431	Northwest End	Northwest End	431	LOC	N	6.5	2035	Full Depth Reclamation	$ 126,068
Ana-010	Aylmer Rd	431	675	Northwest End	Third Ave	244	COL	N	6.5	2022	Overlay 50	$ 37,102
Ana-011	Aylmer Rd	675	860	Third Ave	Pavement Change	185	COL	N	7	2030	Overlay 50	$ 33,987
Ana-012	Aylmer Rd	860	1010	Pavement Change	Curb Change	150	COL	N	7	2030	Overlay 50	$ 27,557
Ana-013	Aylmer Rd	1010	1219	Curb Change	Shuswap Ave	209	COL	L	7	2032	Mill and Inlay 75	$ 60,204
Ana-015	Balsam Pl	0	37	Lakeshore Dr	Northeast End	37	LOC	N	12	2034	Full Depth Reclamation	$ 19,980
Ana-016	Bay Dr	0	442	Bay St / Okanagan Ave	East End	442	LOC	N	5.5			
Ana-017	Bay St	0	81	Bay Dr / Okanagan Ave	Thompson Ave	81	LOC	N	5.5	2034	Full Depth Reclamation	$ 20,048
Ana-018	Beach Cres	0	237	Beach Dr / Beach Pl	Beach Dr	237	LOC	N	7	2034	Full Depth Reclamation	$ 74,655
Ana-019	Beach Dr	0	196	Second Ave	Beach Cres	196	LOC	N	7	2034	Full Depth Reclamation	$ 61,740
Ana-020	Beach Dr	196	372	Beach Cres	Lakeshore Dr	176	LOC	N	7			
Ana-021	Beach Pl	0	77	Southwest End	Beach Cres / Beach Dr	77	LOC	N	7	2032	Full Depth Reclamation	$ 24,255
Ana-022	Bell St	0	108	Shuswap Ave	Shepherd Rd	108	LOC	N	7	2039	Full Depth Reclamation	$ 34,020
Ana-023	Birch St	0	148	Second Ave	Third Ave	148	LOC	N	7	2032	Full Depth Reclamation	$ 46,620
Ana-024	Birch St	148	332	Third Ave	Fourth Ave	184	LOC	N	7	2033	Full Depth Reclamation	$ 57,960
Ana-025	Blue Spruce Way	0	79	South End	Lakeshore Dr	79	LOC	N	7	2035	Full Depth Reclamation	$ 24,885
Ana-026	Brooke Dr	0	310	Shuswap Ave	Leighton Pl	310	LOC	N	8	2033	Full Depth Reclamation	$ 111,600
Ana-027	Brooke Dr	310	550	Leighton Pl	mall access	240	LOC	N	8	2032	Full Depth Reclamation	$ 86,400
Ana-028	Brooke Dr	550	824	mall access	Shuswap Ave	274	COL	N	8	2025	Overlay 50	$ 55,482
Ana-029	Cedar Ave	0	239	Cottonwood St	Coburn St_1	239	COL	N	7	2023	Overlay 50	$ 43,799
Ana-030	Cedar Ave	239	305	Coburn St_1	Curb Change	66	COL	R	7	2026	Mill and Inlay 75	$ 20,885
Ana-031	Cedar Ave	305	394	Curb Change	Coburn St	89	COL	N	7	2023	Overlay 50	$ 22,634
Ana-032	Cedar Pl	0	39	Cedar Ave	Southeast End	39	LOC	N	8	2029	Full Depth Reclamation	$ 14,040
Ana-033	Chase Bridge Rd	130	173	Northwest End	Mill Rd / Pine St	43	ART	N	9	2022	Overlay 50	$ 10,850
Ana-034	Chase St	0	47	Northwest End	First Ave	47	COL	N	7	2022	Overlay 50	$ 9,325
Ana-035	Chase St	47	190	First Ave	Pavement Change	143	COL	B	8	2026	Mill and Inlay 75	$ 46,703
Ana-036	Chase St	190	317	Pavement Change	Okanagan Ave	127	COL	R	8	2037	Reconstruct	$ 152,400
Ana-037	Chase St	317	404	Okanagan Ave	Thompson Ave	87	COL	B	8	2026	Mill and Inlay 75	$ 31,462
Ana-038	Cherry Pl	0	22	Northwest End	Cedar Ave	22	LOC	N	8	2023	Overlay 50	$ 4,767
Ana-041	Coburn St	0	156	Shuswap Ave	Okanagan Ave	156	COL	N	7.5	2025	Overlay 50	$ 26,919
Ana-042	Coburn St	156	475	Okanagan Ave	Foothills Rd	319	COL	N	7.5	2022	Overlay 50	$ 57,080
Ana-044	Cottonwood St	0	145	Shepherd Rd	Maple Ave	145	COL	N	8	2022	Overlay 50	$ 32,611
Ana-045	Cottonwood St	145	358	Maple Ave	Cedar Ave	213	COL	N	8	2023	Overlay 50	$ 44,611
Ana-046	Cottonwood St	358	421	Cedar Ave	NO NAME	63	LOC	N	8	2024	Overlay 50	$ 13,897
Ana-047	Cummings St	0	119	Second Ave	North End	119	LOC	N	12			
Ana-048	Currie Ave	0	153	Lake St	Hillside Ave	153	LOC	N	6.5	2026	Overlay 50	$ 30,057
Ana-049	Drakes Landing Rd	0	287	VLA Rd	East End	287	LOC	N	7	2036	Full Depth Reclamation	$ 90,405
Ana-050	Elm St	0	127	Northwest End	Cedar Ave	127	LOC	N	5.5	2033	Full Depth Reclamation	$ 31,433
Ana-051	Fifth Ave	0	108	Juniper St	Pine St	108	LOC	N	7	2034	Full Depth Reclamation	$ 34,020
Ana-052	First Ave	0	39	Southwest End	Pine St	39	LOC	N	7	2029	Overlay 50	$ 6,602
Ana-053	First Ave	39	80	Pine St	Pavement Change	41	COL	N	7	2022	Overlay 50	$ 8,845
Ana-054	First Ave	80	163	Pavement Change	Chase St	83	COL	N	7	2022	Overlay 50	$ 14,761
Ana-055	First Ave	163	294	Chase St	Northeast End	131	LOC	R	7			
Ana-056	First Ave	295	409	Southwest End	MacPherson St	114	LOC	N	3.5	2033	Full Depth Reclamation	$ 17,955
Ana-057	First Ave	410	523	MacPherson St	Northeast End	113	LOC	N	3.5	2034	Full Depth Reclamation	$ 17,798
Ana-058	Foothills Rd	0	143	South End	Coburn St	143	LOC	N	8	2034	Full Depth Reclamation	$ 51,480
Ana-059	Fourth Ave	0	170	Pine St	Birch St	170	LOC	N	6.5	2032	Full Depth Reclamation	$ 49,725
Ana-060	Frontage Rd	0	82	South End	Ash Dr	82	LOC	N	7	2035	Overlay 50	$ 14,104
Ana-061	Frontage Rd	83	161	Ash Dr	Brooke Dr	78	LOC	N	5	2028	Overlay 50	$ 9,204
Ana-062	Haldane St	0	85	First Ave	Shuswap Ave	85	COL	L	9	2028	Mill and Inlay 75	$ 29,641
Ana-063	Haldane St	85	175	Shuswap Ave	Sicamous Ave	90	COL	N	10	2023	Overlay 50	$ 29,555
Ana-064	Hendry Ave	0	103	Southwest End	Wilson St	103	LOC	N	8	2036	Full Depth Reclamation	$ 37,080
Ana-065	Hillside Ave	0	70	Shuswap Ave	Pavement Change	70	COL	N	6.5	2023	Overlay 50	$ 10,238
Ana-066	Hillside Ave	70	200	Pavement Change	Pavement Change	130	COL	N	6.5	2023	Overlay 50	$ 21,905
Ana-067	Hillside Ave	200	395	Pavement Change	Lake St	195	COL	N	6.5	2024	Full Depth Reclamation	$ 57,038
Ana-068	Hillside Ave	395	533	Lake St	Currie Ave	138	COL	N	6.5	2024	Full Depth Reclamation	$ 40,365
Ana-069	Hillside Ave	533	662	Currie Ave	Northeast End	129	LOC	N	6.5	2034	Full Depth Reclamation	$ 37,733
Ana-072	Hysop Pl	0	53	Hysop Rd	North End	53	LOC	N	11	2026	Overlay 50	$ 18,830
Ana-073	Hysop Rd	0	263	Pine St	Pavement Change	263	LOC	N	7	2036	Full Depth Reclamation	$ 82,845
Ana-074	Hysop Rd	263	475	Pavement Change	Southeast End	212	LOC	N	7	2029	Overlay 50	$ 48,645
Ana-075	Juniper St	0	356	Third Ave	Fifth Ave	356	LOC	N	7	2035	Full Depth Reclamation	$ 112,140
Ana-076	Lake St	0	52	Hillside Ave	Currie Ave	52	LOC	N	6.5	2041	Overlay 50	$ 9,135
Ana-077	Lakeshore Dr	0	158	Arbutus St	Arbutus St	158	COL	N	7	2022	Overlay 50	$ 25,188
Ana-078	Lakeshore Dr	158	424	Arbutus St	Blue Spruce Way	266	COL	N	7	2023	Overlay 50	$ 49,384
Ana-079	Lakeshore Dr	424	550	Blue Spruce Way	Beach Dr	126	COL	N	7	2022	Overlay 50	$ 23,704
Ana-080	Lakeshore Dr	550	644	Beach Dr	Pavement Change	94	LOC	N	7			
Ana-081	Lakeshore Dr	644	734	Pavement Change	Pavement Change	90	LOC	N	7	2032	Full Depth Reclamation	$ 28,350
Ana-082	Lakeshore Dr	734	946	Pavement Change	Second Ave	212	LOC	N	7	2028	Overlay 50	$ 40,958
Ana-083	Larch St	0	312	Third Ave	Fifth Ave	312	LOC	N	8			
Ana-084	Leighton Ave	0	195	Southwest End	Ash Dr	195	LOC	B	8			
Ana-085	Leighton Pl	0	124	Northwest End	Brooke Dr	124	LOC	B	8			
Ana-086	MacPherson St	0	99	First Ave	Hillside Ave	99	LOC	N	3.5	2031	Full Depth Reclamation	$ 15,593
Ana-087	MacPherson St	100	194	Sicamous Ave	Okanagan Ave	94	LOC	N	7.5	2034	Full Depth Reclamation	$ 31,725
Ana-088	MacPherson St	194	279	Okanagan Ave	Thompson Ave	85	LOC	N	7.5			
Ana-089	Maple Ave	0	63	Cottonwood St	North End	63	LOC	N	11	2026	Overlay 50	$ 21,972
Ana-090	Margery St	0	144	Thompson Ave	Shuswap Ave	144	LOC	N	5.5	2021*	Full Depth Reclamation	$ -
Ana-091	Mason St	0	108	Shuswap Ave	Shepherd Rd	108	COL	N	7	2023	Overlay 50	$ 20,374
Ana-092	Mill Rd	81	286	Southwest End	Chase Bridge Rd / Pine St	205	LOC	N	8			
Ana-093	NO NAME	0	20	Cottonwood St	Northeast End	20	LOC	N	7	2022	Overlay 50	$ 3,825
Ana-094	Okanagan Ave	0	77	Southwest End	Chase St	77	LOC	R	8			
Ana-095	Okanagan Ave	77	183	Chase St	Coburn St	106	LOC	N	8	2033	Full Depth Reclamation	$ 38,160
Ana-096	Okanagan Ave	183	293	Coburn St	MacPherson St	110	LOC	N	8			
Ana-097	Okanagan Ave	293	357	MacPherson St	Shaw St	64	COL	N	8	2029	Overlay 50	$ 13,199
Ana-098	Okanagan Ave	358	510	Shuswap Ave	Bay St	152	LOC	N	7	2028	Overlay 50	$ 30,643
Ana-099	Okanagan Ave	510	629	Bay St	Clarke Rd	119	LOC	N	6.5	2029	Overlay 50	$ 26,254
Ana-100	Paquette Rd	0	226	Coburn St	Northeast End	226	LOC	N	6.5			
Ana-101	Pine St	0	190	Shuswap Ave	Second Ave	190	ART	B	8	2025	Mill and Inlay 100	$ 89,316
Ana-102	Pine St	190	387	Second Ave	Third Ave	197	ART	B	10	2021*	Mill and Inlay 100	$ -
Ana-103	Pine St	387	559	Third Ave	Fourth Ave	172	ART	B	9	2030	Reconstruct	$ 232,200
Ana-104	Pine St	559	725	Fourth Ave	Fifth Ave	166	ART	B	9	2029	Reconstruct	$ 224,100
Ana-105	Pine St	725	927	Fifth Ave	Hysop Rd	202	ART	B	9	2031	Reconstruct	$ 272,700

Note: Treatment in 2021 are committed projects.

Analysis ID	RoadName	From	To	StreetFrom	StreetTo	Length (m)	Class	Curb	Width (m)	Treatment Year	Treatment Type	Treatment Cost
Ana-106	Pine St	928	987	Hysop Rd	Chase Bridge Rd / Mill Rd	59	ART	B	9	2023	Mill and Inlay 100	$ 25,947
Ana-110	Second Ave	0	214	Pine St	Birch St	214	COL	L	8			
Ana-111	Second Ave	214	695	Birch St	Arbutus St	481	COL	L	8	2027	Mill and Inlay 75	$ 177,467
Ana-112	Second Ave	695	987	Arbutus St	Lakeshore Dr	292	COL	L	8	2027	Mill and Inlay 75	$ 94,044
Ana-113	Second Ave	987	1162	Lakeshore Dr	Cummings St	175	COL	L	8	2031	Mill and Inlay 75	$ 56,181
Ana-114	Second Ave	1163	1215	Cummings St	Northeast End	52	LOC	B	8	2036	Mill and Inlay 50	$ 13,183
Ana-115	Shaw St	0	47	First Ave	Hillside Ave	47	LOC	N	5.5	2030	Overlay 50	$ 6,007
Ana-116	Shaw St	48	133	Sicamous Ave	Sicamous Ave	85	LOC	N	7	2040	Full Depth Reclamation	$ 26,775
Ana-117	Shaw St	133	222	Sicamous Ave	Thompson Ave	89	LOC	N	7			
Ana-118	Shepherd Rd	0	70	Brooke Dr	Pavement Change	70	LOC	B	8	2037	Mill and Inlay 50	$ 17,668
Ana-119	Shepherd Rd	70	104	Pavement Change	North End	34	LOC	B	6.5			
Ana-120	Shepherd Rd	105	155	South End	South End	50	LOC	N	7			
Ana-121	Shepherd Rd	155	283	South End	Bell St	128	COL	N	7	2030	Overlay 50	$ 23,205
Ana-122	Shuswap Ave	0	350	South End	Shuswap Ave_1	350	ART	N	8	2025	Overlay 50	$ 66,769
Ana-123	Shuswap Ave	350	531	Shuswap Ave_1	Brooke Dr	181	ART	N	8	2022	Overlay 50	$ 34,210
Ana-124	Shuswap Ave	531	845	Brooke Dr	Ash Dr	314	ART	N	8	2024	Overlay 50	$ 56,460
Ana-125	Shuswap Ave	845	924	Ash Dr	Brooke Dr	79	ART	N	8	2022	Overlay 50	$ 16,203
Ana-126	Shuswap Ave	924	1305	Brooke Dr	Bell St	381	ART	N	8	2022	Overlay 50	$ 67,055
Ana-127	Shuswap Ave	1305	1445	Bell St	Bridge	140	ART	R	11	2025	Mill and Inlay 100	$ 76,721
Ana-128	Shuswap Ave	1445	1550	Bridge	Wilson St	105	ART	B	9	2026	Mill and Inlay 100	$ 47,012
Ana-129	Shuswap Ave	1550	1760	Wilson St	Chase St	210	ART	B	9	2026	Mill and Inlay 100	$ 93,806
Ana-130	Shuswap Ave	1760	1870	Chase St	Coburn St	110	ART	B	9	2023	Mill and Inlay 100	$ 47,867
Ana-131	Shuswap Ave	1870	2197	Coburn St	Margery St	327	ART	B	8	2024	Mill and Inlay 100	$ 136,378
Ana-132	Shuswap Ave	2197	2511	Margery St	Shuswap Ave	314	ART	B	8			
Ana-133	Shuswap Ave	2511	2687	Shuswap Ave	Northeast End	176	ART	B	4	2028	Reconstruct	$ 105,600
Ana-135	Shuswap Ave_2	0	80	Shuswap Ave	Southeast End	80	ART	N	4	2022	Overlay 50	$ 8,872
Ana-136	Sicamous Ave	0	106	Haldane St	Chase St	106	LOC	N	7.5	2027	Overlay 50	$ 25,617
Ana-137	Sicamous Ave	106	216	Chase St	Coburn St	110	LOC	N	7.5	2027	Overlay 50	$ 24,027
Ana-138	Sicamous Ave	216	390	Coburn St	Shaw St	174	LOC	N	7.5	2036	Full Depth Reclamation	$ 58,725
Ana-139	Third Ave	0	176	Aylmer Rd / VLA Rd	Third Ave	176	COL	N	7	2023	Overlay 50	$ 28,248
Ana-140	Third Ave	176	377	Third Ave	Larch St	201	COL	N	7	2028	Overlay 50	$ 34,818
Ana-141	Third Ave	377	459	Larch St	Pine St	82	COL	N	7	2025	Overlay 50	$ 13,567
Ana-142	Third Ave	459	541	Pine St	Willow St	82	COL	N	7	2021*	Overlay 50	$ -
Ana-143	Third Ave	541	631	Willow St	Birch St	90	COL	N	7	2025	Overlay 50	$ 16,078
Ana-144	Third Ave	631	718	Birch St	Aspen Dr	87	COL	N	7	2029	Overlay 50	$ 15,413
Ana-146	Thompson Ave	86	191	Chase St	Coburn St	105	COL	B	8	2040	Reconstruct	$ 126,000
Ana-147	Thompson Ave	192	289	Southwest End	Shaw St	97	LOC	N	7	2033	Full Depth Reclamation	$ 30,555
Ana-148	Thompson Ave	289	426	Shaw St	Margery St	137	COL	N	7	2024	Full Depth Reclamation	$ 43,155
Ana-149	Thompson Ave	426	588	Margery St	Shuswap Ave	162	COL	N	7	2027	Overlay 50	$ 28,181
Ana-150	Thompson Ave	588	750	Shuswap Ave	Northeast End	162	LOC	N	7	2032	Full Depth Reclamation	$ 51,030
Ana-151	VLA Rd	0	219	South End	Drakes Landing Rd	219	COL	N	6	2021*	Overlay 50	$ -
Ana-152	VLA Rd	219	337	Drakes Landing Rd	Aylmer Rd / Third Ave	118	COL	N	6	2021*	Overlay 50	$ -
Ana-153	Willow St	0	163	Second Ave	Third Ave	163	LOC	N	7			
Ana-154	Willow St	163	345	Third Ave	Fourth Ave	182	LOC	N	7	2026	Overlay 50	$ 38,694
Ana-155	Wilson St	0	166	Shuswap Ave	Aulin Ave	166	LOC	N	10			

Note: Treatment in 2021 are committed projects.



Paving Plan ($350K)

Properties

Use the selector above to switch b
the map.

Information

Symbology

Paving Plan ($350K)

FirstMajorTrt_Year

- 2021
- 2022
- 2023
- 2024
- 2025
- 2026
- others

Appearance

Visible range

Refresh interval

Feature display order

Custom parameters

BC INTERIOR COMMUNITY FOUNDATION | HERE FOR GOOD

May 12, 2024

Village of Chase
Mayor and Councillors
Box 440, 826 Okanagan Ave, Chase B.C. VOE 1M0

Dear Mayor Lepsoe and Councillors,

As we finalize our accounting for the fiscal year 2023, we are delighted to inform you that, thanks to the invaluable support of our donors, the BC Interior Community Foundation disbursed a total of $573,456 to deserving students and charitable organizations operating within our region. This assistance serves to empower them in their endeavors, enabling them to pursue their objectives and sustain their important work.

Enclosed, you will find your annual Fundholder Statement and a Fund Activity Sheet for your review. Of note in the Fundholder Statement is the "Donations from another fund" category, indicating the grant made by BCICF to supplement your community's Smart and Caring Fund. While you may not have initiated the fund held at BCICF for your community, we are delighted to have the opportunity to provide grants that benefit local projects and initiatives in your area.

As always, we would like to make it easy for donors in your area to support your community. I am pleased to inform you that BCICF is equipped to accept donations in many forms, including cash, cheque, online donations, as well as donations of stocks and securities. We provide donors with tax receipts for their contributions and ensure that the gift is credited to your town's Fund, allowing for continued growth and impact.

Looking ahead, we're thrilled to announce the celebration of our Foundation's 40th Anniversary in 2024. Plans are underway for a special event to express our gratitude for your ongoing support. Please mark your calendars for September 12th as we embark on a journey through time together.

Furthermore, our Annual General Meeting will take place on June 12th, from 5 – 7pm at the DoubleTree by Hilton, 339 St. Paul Street, Kamloops. We invite you to join us for stories, appetizers and fellowship.

If you have any questions or would like to discuss potential collaborations, please do not hesitate to reach out. We are here to support you every step of the way.

Warm regards,

Wenda Noonan, Executive Director

Fundholder Statement for the following Fund: Chase Community Smart and Caring Fund

2 – 219 Victoria St, Kamloops, BC V2C 2A1 | 250.434.6995 | info@bcicf.com
CRA No. 11897 7107 RR0001 | Incorporated 17 September 1984

We recognize and acknowledge that our office is located on Tk'emlups te Secwépemc territory, situated within the unceded ancestral lands of the Secwépemc Nation

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BC INTERIOR COMMUNITY FOUNDATION | HERE FOR GOOD

Fundholder statement for January 1, 2023 to December 31, 2023

Chase Community Smart and Caring Fund

ENDOWMENT ACTIVITY

Opening Endowed Fund Balance: January 1, 2023	**$ 2,288.07**
Donations to fund	$
Automatic Transfers from interest	$
Transfers from other funds	$
Requested Transfer from interest	$ 2,711.93
Closing Endowed Fund Balance: December 31, 2023	**$ 5,000.00**

INTEREST ACTIVITY

Opening Interest Balance: January 1, 2023	**$ 1,456.58**
Donations from another fund	$ 2,498.13
Donations to top up interest (for granting)	$
Grants automatically made from this fund	- $
Grants made throughout the year	- $ 1,243.00
Automatic Interest transferred to endowed	- $
Requested Interest transferred to endowed	- $ 2,711.93
Interest transferred to another fund	- $
ANNUAL FUND EARNINGS	**$ 334.11**
BCICF Administration Fee	- $ 61.34
Closing Interest Balance: December 31, 2023	**$ 272.55**

Notes:

YOUR FUND AT A GLANCE

(December 31, 2023)

Endowed Fund Balance
$ 5,000.00

Net Fund Earnings
$ 272.77

2024 SCHEDULED FUND ACTIVITY

Automatic interest transfer and grant distributions.

Opening Interest ..... $ 272.55

Interest transferred to endowed ..... - $ 0.00

Scheduled grants..... - $ 0.00

Grants transferred to another fund..... - $ 0.00

Grants received from another fund..... - $ 0.00

Remaining funds available for granting or student awards ..... $ **272.55**

Note to scholarship and bursary fundholders: There may be unclaimed student awards included in this total.

Financial Stewardship

Investment Committee

Jeff Carter, Chair
Hugh Fallis
Greg Peace
Greg Reid

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Fundholder Activity Sheet

January 1, 2023 to December 31, 2023

Chase Community Smart and Caring Fund

Donations

Date	Donor	Tribute	Amount
	No Donations Received		$0.00

Total $0.00

Disbursements

Date	Event	Recipient	Student	Amount
29-Nov	2023 - Fall Community Grants	Chase & Area Young Learners Society		$1,243.00

Total $1,243.00

May 29, 2024

Dear Community Leaders,

As we look towards summer 2024 with the potential of extreme heat and wildfires, Interior Health (IH) would like to share information and resources that can protect people living in the IH region. Extreme heat and wildfire smoke can cause serious health outcomes in people of all ages. Collaborative planning and action by communities helps to minimize negative health impacts.

Heat and Health

Climate science projects that summer in the IH region will become hotter, with longer and more frequent heat events. Heat is the leading weather-related cause of death in Canada; even a few days of extreme heat can lead to severe illness and death. While everyone is impacted by extreme heat, certain groups are at higher risk including older adults, people with mental health conditions, and children.

During the 2021 heat dome in BC, 98% of deaths occurred indoors. Heat trapped indoors raises temperatures even after the sun goes down. Without air conditioners or adequate ventilation, indoor critical temperatures of over 31°C can make our homes dangerous, especially during consecutive days of heat. For people who are at higher risk of heat-related health impacts, the risk increases at indoor temperatures over 26°C.

Preparing for Extreme Heat

Preparation can save lives during extreme heat- BC Provincial Heat Alert and Response System (BC HARS): 2024 describes criteria that Environment and Climate Change Canada (ECCC) use to issue a Heat Warning or an Extreme Heat Emergency. Additionally, many municipalities are developing their own heat response plans. Preparing for extreme heat by developing systems and plans can save lives.

Actions community leaders can take:

- Develop a community preparedness and response plan for extreme heat
- Prepare community heat messages using trusted information from the British Columbia Centre for Disease Control (BCCDC) and/or Interior Health, and amplify heat warnings as appropriate
- Promote and encourage neighbourhood check-ins during heat events, especially for the elderly and those more socially isolated
- Extend the operating hours of indoor cooling spaces (e.g., libraries, community centres) and publicize their locations/hours through a variety of communication sources. For rural communities, consider using a local school, meeting hall or other gathering places (including shaded outdoor areas) as a temporary cooling space
- Extend operating hours and promote availability of outdoor public amenities like drinking water, spray parks, and shaded/covered areas

- Coordinate with local organizations to provide low-to-no cost access to indoor spaces (e.g., swimming pools, play centres)
- Consider establishing overnight cooling centres to support vulnerable populations
- Promote BC Hydro's Energy Conservation Assistance Program to support vulnerable individuals; income qualified customers can apply to receive a portable air conditioner installed by a qualified professional
- Add all cooling centre/space locations to the Community Response Locations Portal; this is a centralized database that is shared publicly through Emergency Maps BC

Wildfire Smoke and Health

Wildfire smoke impacts everyone's health. When exposed to wildfire smoke, people may experience health symptoms such as irritation of the nose and throat, cough, and shortness of breath. Those at higher risk for more severe health impacts include people with respiratory or heart conditions, seniors, pregnant women and their unborn babies, as well as infants and young children. Reducing both short and long-term exposure to wildfire smoke is key to lessen related health impacts. There is substantial concern that prolonged or recurrent exposure to high levels of wildfire smoke causes long-term health impacts like lung cancer or dementia. Research to evaluate this question continues.

Preparing for Wildfire Smoke and Poor Air Quality

As summers get hotter, wildfire activity due to climate change is predicted to increase. While heat is often more localized, wildfire smoke can blow in from other provinces and other countries; poor air quality can persist for days and be unpredictable. Preparing for wildfire smoke and poor air quality by developing systems and plans can save lives.

Actions community leaders can take:

- Pay regular attention to local air quality advisories and subscribe to and publicly share Smoky Skies Bulletins
- Communicate messaging and actions for the public to take to reduce wildfire smoke exposure based on the Air Quality Health Index (AQHI); for communities that do not have AQHI data, this map displays hourly average of fine particulate matter (PM2.5) from provincial monitoring network, PurpleAir and AQ Egg sensors
- During wildfire events, air quality conditions may vary within hours. Stay up to date and download the AQHI Canada app and set up notifications for alerts in your community; encourage residents to download the app
- Coordinate cleaner air spaces that are publicly accessible (e.g. libraries, shopping malls, community centres, etc.) and publicize their locations/hours through a variety of communication sources
- Contact public space operators to encourage and support them in planning and improving their HVAC systems during the summer. The filters that can provide adequate protection from wildfire smoke are MERV 13 or higher and HEPA filtration

- Encourage employers in your community to follow WorkSafe BC guidance to protect workers from heat and smoke related health outcomes
- While there is currently no formal provincial guideline in place, consider re-scheduling or cancelling outdoor public events to reduce time spent outside when the AQHI is high (7+) or very high (10+)
- Promote ways for residents to create cleaner air spaces including:

  Upgrading HVAC or furnace filters and utilize portable air cleaners
  - Improving home central heating and cooling system by choosing a filter with a minimum MERV 13 or as high a rating as your system can accommodate
  - Portable air cleaners and filters can be claimed as a medical expense with a prescription by those with chronic respiratory or immune illnesses

  Encourage community members to create their own air cleaner for less than $100
  - Support communities to hold BC Lung DIY Air Cleaner Workshops: a community-based initiative that teaches community members how to build simple devices that improve indoor air quality. Home-made box air fan filters are proven to clean air space
  - Consider well fitted respirators where cleaner spaces may be difficult to access
- For communities without an air quality monitoring station nearby, consider contacting Ministry of Environment and Climate Change Strategy. They will work with communities as their capacity allows to find the best solution for air monitoring needs including low-cost air sensors such as Purple Air.

Actions Interior Health will take:

- Support the development of community heat and wildfire smoke preparedness and response plans
- Share heat and wildfire smoke warnings and broadcast public health messages about the prevention of heat and smoke-related illness
- Provide public health messages to share through community heat and wildfire smoke response communications
- Develop and implement IH organizational heat and air quality response plans
- Monitor IH clients and patients who are vulnerable to heat and smoke-related illness
- Provide (where applicable) public health surveillance data from previous heat and smoke events to inform decision making
- Participate in regional briefing calls with local governments and First Nations to provide public health advice
- Support municipal staff in accessing resources to facilitate DIY Air Cleaner workshops
- Refer vulnerable IH clients to BC Hydro for free portable air conditioners

Funding Opportunities for Heat and Smoke Planning

- Local Government Climate Action Program (LGCAP) | BC Ministry of Environment and Climate Change Strategy |Eligibility includes initiatives that result in resilience to future climate conditions including preparing risk assessments
- Disaster Risk Reduction-Climate Adaptation | Union of BC Municipalities | Funding stream to reduce risks from disasters due to natural hazards and climate related risks including extreme temperature risk mapping, assessment, planning
- Community Climate Funding | gov.bc.ca | An all-in-one guide of funding opportunities for climate action projects in your community

Of Special Note

- If there is extreme heat during an air quality advisory, people should prioritize cooling down. Heat is typically more dangerous than short-term exposure to poor air quality
- While fans can help you feel more comfortable, they do not lower body temperature when outdoor and/or indoor temperatures are over 35°C. At that point, fans simply blow hot air over the skin and can cause increased body temperature. When outdoor air temperatures are cooler than indoor air temperatures, use fans in windows to blow cooler air from outside into a room
- Preparing for heat, and managing the health risks of extreme heat, must center on those who are socially isolated and living with lower socio-economic status

Interior Health is committed to working with community partners in all sectors to protect the health of the population. For more information on heat, wildfire and smoke health impacts and examples of community action, refer to IH's 2023 Medical Health Officer Report on Climate Change, Health and Well-being.

The IH Healthy Communities Program and Office of the Medical Health Officers are available to support community planning related to heat and wildfire smoke. Your assigned Healthy Communities team member can be contacted at healthycommunities@interiorhealth.ca.

Sincerely,

Dr. Martin Lavoie
Chief Medical Health Officer

Dr. Andy Delli Pizzi
Medical Health Officer

Dr. Jonathan Malo
Medical Health Officer

Dr. Silvina Mema
Deputy Chief Medical Health Officer

Dr. Sue Pollock
Medical Health Officer

Dr. Sanaz Vaseghi
Medical Health Officer

Interior Health would like to recognize and acknowledge the traditional, ancestral, and unceded territories of the Dãkelh Dené, Ktunaxa, Nlaka'pamux, Secwépemc, St'át'imc, Syilx, and Tŝilhqot'in Nations where we live, learn, collaborate and work together.

City of Campbell River
From the Office of the Mayor

May 28, 2024

The Honorable Bruce Ralston
Minister of Forests
Room 138 Parliament Buildings
Victoria, BC V8V 1X4

Via email: FLNR.Minister@gov.bc.ca

Dear Minister Ralston,

I am writing to express my deep concern regarding the provincial government's recent management of forest practices, which are having severe repercussions on local communities and the broader provincial economy. As you may be aware, two weeks ago, Canfor Corporation announced its decision to close a sawmill in Bear Lake, curtail production at a pulp mill in Prince George, and suspend plans for a new mill in Houston, BC. This announcement has sent shockwaves through these three BC communities, resulting in hundreds of job losses that that support families and sustain local economies.

The forest sector in BC is facing significant challenges, compounded by uncertainties surrounding fibre supply and the BC Government's Forest policies and directives. Our forests have supported communities and families for generations, and it is essential to maintain this legacy.

According to the BC Council of Forest Industries' 2024 report, the forest industry in BC supports approximately 100,000 jobs across the province. The industry contributes $17.4 billion in value-added activity, with significant portions derived from forestry, logging supported activities, wood products manufacturing, and pulp and paper manufacturing. Additionally, the sector generates approximately $9.1 billion in labour income and contributes $6.6 billion in government revenue, benefitting provincial, federal and municipal levels.

This decline in the forest sector is not just a statistic; it represents a real crisis affecting people and communities. It is imperative that all levels of government take immediate and decisive action to protect good forestry jobs and ensure a sustainable future for this vital industry.

Without significant change, announcements like the one Canfor made two weeks ago will become more frequent, affecting communities across BC, including Campbell River. It is vital that we prioritize the health and sustainability of our forest sector to protect our communities, families, and the economy. I urge you to consider the far-reaching impacts of current forest management practices and to work

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collaboratively with industry stakeholders to develop policies that support the long-term viability of BC's Forest sector.

Sincerely,

Kermit Dahl
Mayor