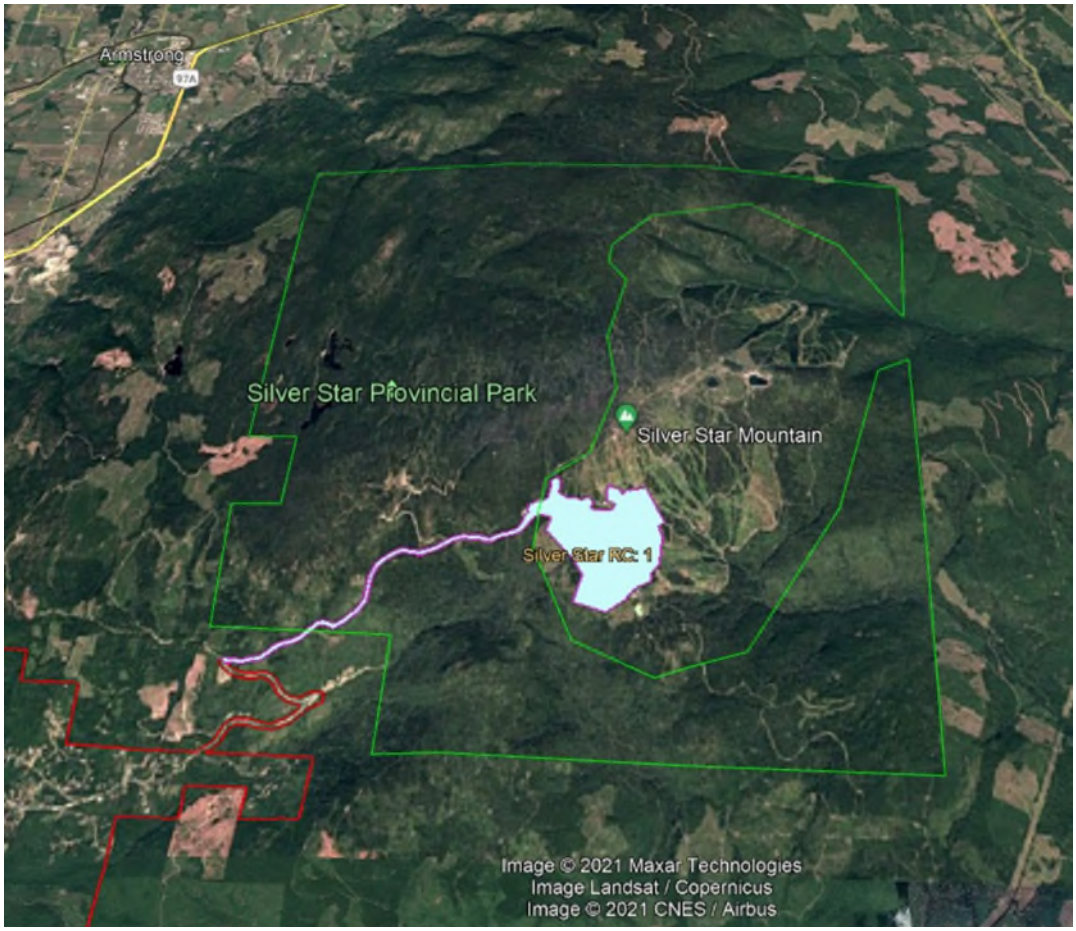
REGIONAL DISTRICT NORTH OKANAGAN

Area C Fire Protection Area

Silver Star Fire Rescue

50º21’32”N - 119º03’36”W

Community Structure Protection Plan



CONTENTS

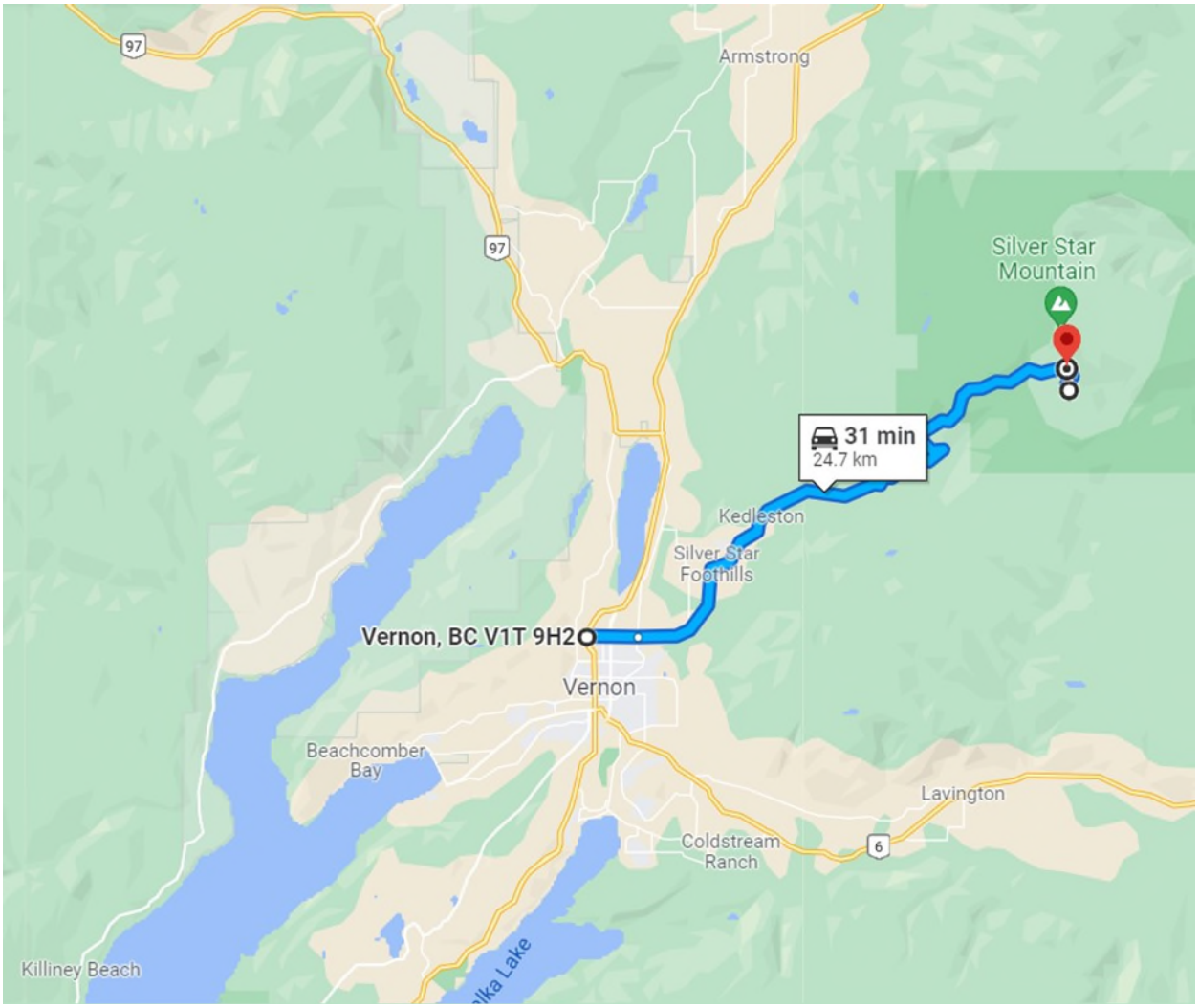
Silver Star

Fire Department

9885 Silver Star Road

Silver Star Mountain

250-549-1556



Silver Star Fire Protection Area

Silver Star Community Structure Protection Plan

Purpose

To create a Pre-plan management template for use by British Columbia Wildfire Service (BCWS) Structure Protection Specialist (SPS) that enhances response assessment to Wildland Urban Environment (WUE) events affecting communities by:

(1) Soliciting local information through a timely and simple process in a widely accessible medium.
(2) Explicitly including the priorities of local communities.
(3) Providing a means to Pre-plan and share situational awareness in response planning with convergent first responders who arrive at WUE events with limited understanding of local geographic, economic, environmental, and social/cultural issues.
(4) Leveraging available technologies to achieve objectives 1-3 above.

The intention of developing this plan is twofold. **Part I** is general information intended for review and implementation during non-emergency periods by local communities and partners. **Part II** is a more detailed section intended to provide an incoming Incident Management Team or Structure Protection Specialist with accurate predetermined structural and cultural priorities requiring protection as well as to identify tactical and operational information as necessary.

Disclaimer

The recommendations made in this plan are based on fire probabilities for the conditions observed at the time of the survey in 2022**. It must be understood that all fire scenarios cannot be addressed and that this plan is not an absolute.** This plan should be used as a guide and implemented in part or in whole as circumstances dictate. The key to continued credibility of this plan is the time and accuracy employed to maintain the information provided here. This document should be reviewed by community officials or their designate and updated on an annual basis prior to wildfire season.

Introduction

The goal of this plan is to provide response agencies with a strategic framework to use for the protection of improved properties or other values at risk in the event of a significant wildfire. This plan recognizes the capability of the local fire department and the contributions that can be made by local, regional, and provincial fire service resources.

The information contained in this plan was developed for use with wildfire operations however, an incident management team may find this a valuable tool in any disaster situation. Experience has proven that many homeowners will be reluctant to leave their home and belongings when an evacuation is ordered. Fire officials do not have the authority to force anyone to leave, nor do they have the time to educate evacuees after an order is issued. Preplanning and education of the community prior to an incident is imperative for a successful operation. Local authorities and community leaders are encouraged to inform their residents on evacuation processes and procedures.

Response Priority

This Response Structure Protection Defense Pre-Plan is subject to ongoing review and may be improved based on feedback following exercising and/or use at actual Wildland Urban Environment events in the upcoming wildfire season. Input from community officials is imperative for local knowledge and to help prioritize integral infrastructure, properties, and areas for protection. The loss of commercial and industrial properties is associated with unemployment and economic impacts that can seriously affect the viability of communities, particularly those with smaller populations. Community members are forced to relocate to urban areas for school and employment. British Columbia Wildfire Service (BCWS) is committed to understanding the values and priorities of Communities.

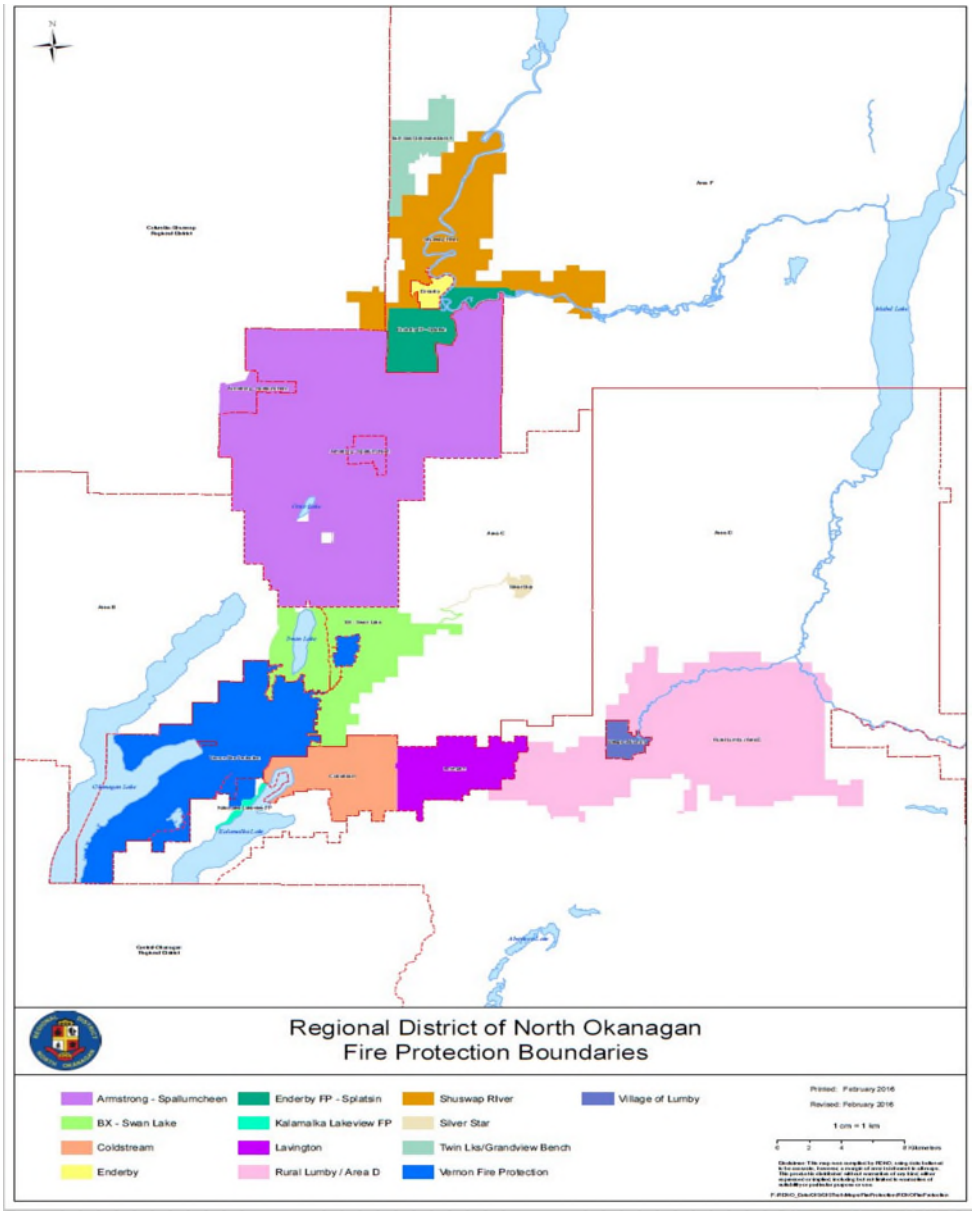
Through a consultation process facilitated by BCWS staff, the authority having jurisdiction (Municipality, Regional District, or First Nations Bands), have identified community priorities in their developed and natural environments. These priorities are included in the Structure Protection Defense Plan.

BCWS will determine strategies and allocate resources based on availability and the identified community priorities whenever possible. There will be a consultation process between BCWS and the Provincial Regional Operations Center and/or the Provincial Emergency Coordination Center.

Part I

Community Overview

Regional District of North Okanagan (RDNO) was incorporated in 1965 and provides a variety of services to more than 91,610 (2021 census) North Okanagan residents covering an area 7,512.58 sq km. RDNO population has grown by 8.6 percent since 2016 making it the seventh fastest growing regional district in BC. Within these geographical boundaries are five electoral areas and six municipalities.



Silver Star

Silver Star is an unincorporated community located within the Shuswap Highlands of the Monashee Mountains within Electoral Area 'C' of the Regional District of North Okanagan outside the boundary of Silver Star Provincial Park. Silver Star Provincial Park and the Controlled Recreation Area contained therein is situated on the divide between two major river systems. These are the Fraser River system via the Shuswap River, and the Columbia River system via the Okanagan Lake/River. The rural neighbourhood is recognized for its quiet country atmosphere located approximately 24 kilometers northeast of the City of Vernon. The Regional District has been provided legislative authority by the Province of BC, primarily though the "Local Government Act", to provide local government services to Silver Star. Fire Protection is provided by Silver Star Paid-On-Call Fire Department. Residential expansion into the forested area with only 1 primary access road to the west supports the need for a community wildfire structure protection plan.

Silver Star's proximity to Kelowna International Airport and a 5hr drive from greater Vancouver has resulted in a steady increase of visitors from outside the region who enjoy the unique recreational and social aspects of an all-season resort. The ski season runs from late November to mid-April. Summer mountain biking and hiking runs from the end of June through to September on the Nordic trails and through the provincial park.

Silver Star Fire Protection area is 2.34 sq km with a full-time population of 450 residents, with peak winter tourism population of 10,161 (in 2019) and peak summer population of 3000 with plans to grow.

Vernon resident Bert Thorburn became the first person to ski in the Silver Star area in 1930. He rode his bike up to the end of a logging road in the area and then walked a distance following forestry trails to a forest fire lookout. In 1981 Norm Crerar, Charlie Locke, John Hindle, Rob Marshall and John Gow formed Silver Star Mountain Resorts Ltd. and purchased the ski hill development. The first Nordic trails were cleared in 1981. In 1983 the Putnam Station Hotel was built by Russell Haubrich and Shella Ledingham, providing the first on hill hotel. In 2001 the Schumann family purchased Silver Star. In 2012, following the death of Desmond Schumann, daughter Jane Cann received 100% stake in Silver Star Resort. In 2019, Jane Cann sold Silver Star Resort and Silver Star Holidays to US adventure lifestyle company POWDR. POWDR is headquartered in Park City, Utah. POWDR owns ten resorts with Silver Star it's first Canadian property. Brad Baker is Operations Director.

Silver Star Temperature and Precipitation

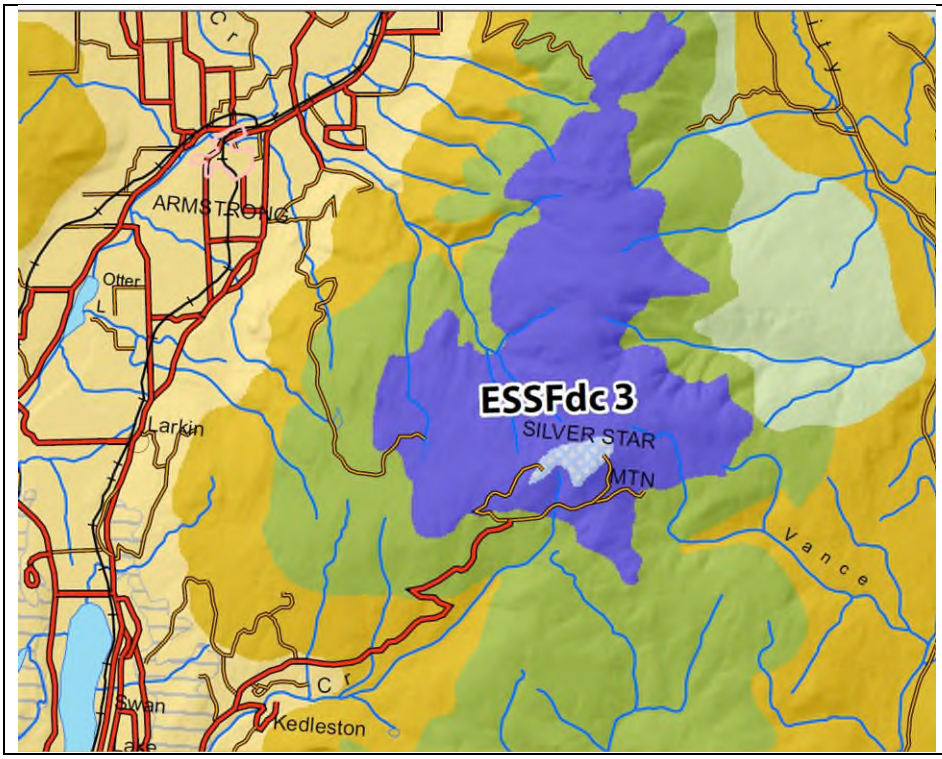
From June – August coincides with the busy summer tourism months and the greatest risk from wildfires to the community at Silver Star Mountain. July and Aug are the warmest and driest month. During 2021 highs in August were recorded at 88°F (31.1°C) with temperatures rarely dropping below 55.5°F (13.1°C) at night.

WEATHER BY MONTH // WEATHER AVERAGES SILVER STAR MOUNTAIN RESORT

	January	February	March	April	May	June	July	August	September	October	November	December
Avg. Temperature °C	-5.3 °C	-4.4 °C	-0.4 °C	4 °C	9.8 °C	13.4 °C	17.7 °C	17.6 °C	12 °C	5.3 °C	-0.3 °C	-4.5 °C
(°F)	(22.5) °F	(24.1) °F	(31.3) °F	(39.3) °F	(49.6) °F	(56) °F	(63.8) °F	(63.7) °F	(53.6) °F	(41.5) °F	(31.4) °F	(23.9) °F
Min. Temperature °C (°F)	-8.2 °C	-8.2 °C	-4.3 °C	-0.7 °C	3.9 °C	7.6 °C	11.2 °C	11.5 °C	7.2 °C	1.8 °C	-2.4 °C	-6.6 °C
	(17.3) °F	(17.3) °F	(24.2) °F	(30.7) °F	(39) °F	(45.7) °F	(52.1) °F	(52.8) °F	(45) °F	(35.2) °F	(27.6) °F	(20.1) °F
Max. Temperature °C	-1.2 °C	0.4 °C	4.5 °C	9.5 °C	15.8 °C	19.4 °C	24.3 °C	24.3 °C	17.8 °C	9.8 °C	2.7 °C	-1.5 °C
(°F)	(29.8) °F	(32.8) °F	(40) °F	(49) °F	(60.5) °F	(66.8) °F	(75.8) °F	(75.7) °F	(64.1) °F	(49.7) °F	(36.9) °F	(29.2) °F
Precipitation / Rainfall	58	41	51	52	68	73	42	34	46	64	77	62
mm (in)	(2.3)	(1.6)	(2)	(2)	(2.7)	(2.9)	(1.7)	(1.3)	(1.8)	(2.5)	(3)	(2.4)
Humidity(%)	76%	75%	68%	61%	55%	57%	47%	48%	61%	74%	77%	75%
Rainy days (d)	10	8	10	9	9	9	6	5	6	10	11	11
avg. Sun hours (hours)	5.0	6.2	7.7	10.1	11.7	12.2	13.1	11.9	8.9	6.5	4.8	4.1

Biogeoclimatic Zone

Biogeoclimatic Zone is a geographical area with a relatively uniform macroclimate, characterized by a mosaic of vegetation, soils and, to a lesser extent, animal life reflecting that climate. Zones are usually named for the potential climatic climax or self-perpetuating vegetation. The biogeoclimatic zone vegetation effect the wildfire behaviour.



Silver Star Fire response area is located within the biogeoclimatic zones classified as Engelmann Spruce-Subalpine Fir dry cold (ESSFdc3) at the village, and Interior Cedar-Hemlock moist cool (ICHmk1) from the turn off to Sovereign Lake Rd. to the Fire Response boundary between Silver Star FD and BX-Swan Lake FD.

Silver Star is situated on the edge of the Okanagan Highlands typified by rolling summits. The elevation at the top of Silver Star Mountain is 1890 metres above sea level. The base Village is situated at 1600 metres above sea level. Around the community of Silver Star, the forest cover is pine and fir with some larch and cedar. Above this area and extending to the summit of Silver Star Mountain, is a sub-alpine zone of open meadows and stunted spruce, fir, and hemlock. These open meadows create extensive and dynamic views over the Okanagan Valley to the west and eastward to the peaks of the Monashee Mountains.

The IDFmw1 and the Interior Cedar Hemlock moist cool (ICHmk1) has been fraught over the past 20 years with forest health challenges from mountain pine beetle, and then with Douglas-fir and spruce beetle. A forest fuel management program will reduce the risk of a crown fire and will support a community FireSmart initiative to reduce structure loss from a wildfire.

Wildfire trends in B.C. and Canada, show increased impacts to values from wildfires and associated suppression costs, increased threats to communities and infrastructure and increased losses of natural resources including mid-term timber supply. This is being driven by the effects of climate change, the mountain pine beetle fuel type and increasing community, critical infrastructure, and natural resource development on the forested land base.

Wildland Urban Interface Risk Classification

Wildland Urban Interface Risk Classification (WUI RC) is determined utilizing the updated 2021 Provincial Strategic Threat Analysis (PSTA) and the 2020 WUI structure density data and mapping. WUI RC ratings take into consideration the underlying fuel types related to land-based activities (e.g., wildfires, harvesting, fuel treatments, development), updated vegetation resources inventory or changes to fire weather inputs (e.g., increases in threat levels due to shifts in the weather data). Risk Classification is determined utilizing the spatial WUI attributes combined with the PSTA wildfire threat layer (for Crown land) to identify at-risk areas at a strategic scale. The level of risk ("Risk Class") reflects the analysis of weighted PSTA threat components within the individual WUI RC polygons. Five Risk Class ratings were applied to the WUI polygons, with "1" being a higher relative risk and "5" being the lower relative risk. The application of relative risk does not imply "no risk" since the goal is to identify areas where there is higher risk.

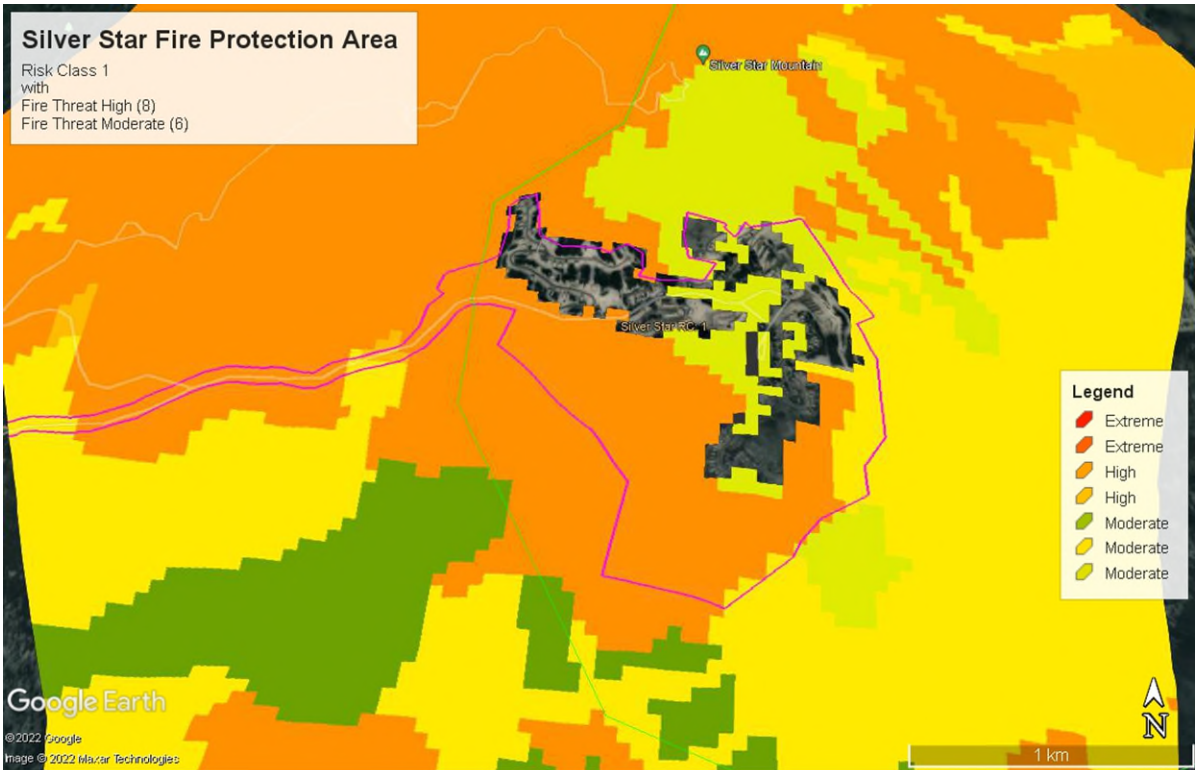
Silver Star Mountain is Risk Class 1

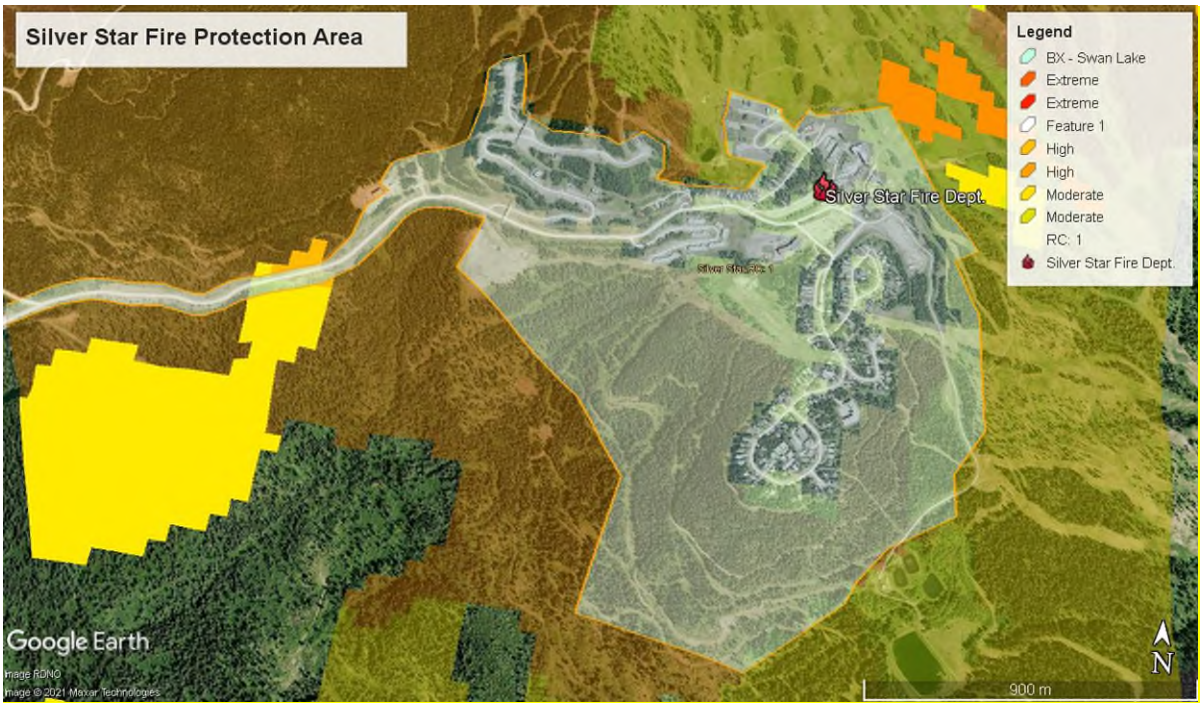
Wildfire Risk Assessment

Wildfire Risk Assessment is available in B.C. for provincial Crown land utilizing a two-kilometer-wide buffer zone to the edge of structures located in the WUI to indicate the distance that embers from a wildfire could reasonably expected to be carried by the wind and possibly ignite a structure. The wildland fuel Fire Threat is shaded with colours that are numbered from 1 (low) to 10 (extreme) to identify the level of wildfire risk if the fuel catches on fire.

The majority of Silver Star fire protection Area boarders on Fire Threat 8 (High) if the forest catches on fire.

Silver Star Wildfire Risk Assessment Map





Community Wildfire Hazard Rating

Community Wildfire Hazard Rating looks at homes and critical infrastructure as a fuel type and using a provincial assessment with multiple choice answers provides a score from Low to Extreme for consequences if a wildfire gets into the community. The assessment looks at specific information related to "Community Design" and "Community Challenges". The Silver Star Fire Protection Area assessment is based on input from the local fire department, RDNO and community members. The assessment resulted in a Community Wildfire Hazard Rating of 81. This indicates a need for improvement to better protect critical infrastructure and mitigate site hazards.

The letters in the rating section correspond to the recommendation section. The recommendations will need to be prioritize and modified to address interagency cooperation and funding to deliver on the actions in a timely and cost-effective way that reduces community wildfire risk.

COMMUNITY DESIGN	**Rating**	
ACCESS		
Two or more primary roads in and out. One primary and one secondary access. One road in and out (entrance and exit are the same).	0 3 5	5
BRIDGES *(Please note construction type and GVW)*		
No bridges or bridges with no weight and/or width restrictions. Low weight bridges restricting emergency vehicle access.	0 5	0
PRIMARY ROAD WIDTH *(main access/egress routes)*		
At least 7m wide. Less than 7m wide.	0 4	0
SECONDARY ROAD CHARACTERISTICS		
Majority of structures on primary access road. Majority of structures on secondary access roads with some primary road access. Majority of structures on secondary roads. Majority of structures located on secondary roads with some dead-end roads. Dead end road systems that limit emergency crews to remain in the area under certain fire conditions due to lack of egress.	0 1 2 4 5	5
EVACUATION PLAN		
Updated plan in place, community is aware. Plan in place not implemented community unaware. No plan.	0 3 5	3 **A**

FIRE DEPARTMENT		
Volunteer FD more then 25 members. Volunteer FD more then 20 less then 25. Volunteer FD less then 20.	1 3 5	5
FIRE SMART		
Community has FireSmart certified representative and strategies are in place. Community has started a FireSmart program, strategies not in place. Community presently has no FireSmart initiatives.	0 3 5	3 **B**
MUTUAL AID/AUTOMATIC AID		
Fire department has a mutual aid/auto aid agreement in place. Fire Department has no aid agreements.	0 5	0 **C**
TOTAL COMMUNITY DESIGN RATING is based on the community's ability to withstand fire front contact to critical infrastructure	**Rating 21**	

COMMUNITY CHALLENGES	**Rating**	
UTILITIES		
All utilities are underground. Some utilities are underground. No utilities are underground.	0 3 5	3
ACCESS TO CRITICAL INFRASTRUCTURE *(example: Pump house and reservoir)*		
Access more than 4m wide with hammerhead turnaround and access for fire apparatus. Driveway less than 4m wide no turnaround has access for fire apparatus. No access for fire apparatus.	0 3 5	3 **D**
No obstructions or overhead branches below 5m. Obstructions or overhead branches below 5m.	0 5	0
No bridges or bridges with no weight and/or width restrictions. Low weight bridges restricting emergency vehicle access.	0 5	0
Driveway slope less than 10%. Driveway slope greater than 10% present.	0 5	0
No gate/non-locking gate. Locked gate/restricted access.	0 5	5 **E**
Most Addresses clearly visible from road. Most Addresses not visible from road.	0 5	0
DOMINANT TREES *(take an average of what's around the community)*		
Deciduous (Hardwoods). Mixed (Hardwoods and Conifers) 50/50. Conifers (Pine and/or Red cedar).	1 5 10	10

HOME IGNITION ZONES *(take an average of what's around the community)*		
10% of structures are in the **interface** with very light conifer fuel loads. 10% of structures are in the **interface** with moderate conifer fuel loads. --- 70% of structures are in the **intermix** with moderate conifer fuel loads. 10% of structures are in the **intermix** with heavy conifer fuel loads and heavy brush.	0 3 3 5	3 5
LADDER FUELS *(take an average of what's around the community)*		
No conifers or conifer branches pruned up at least 2.5m. Conifer branches close to ground.	0 5	5
TYPE OF GROUND COVER *(Majority or Type surrounding the community)*		
Grass up to 15cm tall, pine needles, hardwood leaves. Tall grass, 15-30 cm. Grass more than 30cm tall. Shrubs with leaves. Shrubs with needles. Moderate to heavy slash.	3 5 8 8 10 15	15
SLOPE OF COMMUNITY		
Much of the community is flat (0-5%) Most of the community is on a moderate slope (6-20%). Community is located on a steep slope not accessible to fire apparatus. (more than 20%).	0 2 4	2
FUEL STORAGE (includes propane tanks, firewood, elevated tidy tanks)		
None. Located more than 10m from structure and has a proper fuel break established. Located 1.5-10m from structure and has a partial fuel break established. Located less than 1.5 m from structure no fuel break established.	0 1 3 5	5
CRITICAL INFRASTRUCTURE RESPONSE PLAN (wildfire mitigative tactics)		
Community has a critical infrastructure response plan in place. Community has no critical infrastructure response plan in place.	0 3	0 **F**
FIRE DEPARTMENT TRAINING		
FD members trained to Playbook Exterior + S-100-S185 or WSPP-115 & WFF 1. FD members trained to Playbook Exterior with some wildfire knowledge. FD members trained to Playbook Exterior. FD members not trained to Playbook no wildfire knowledge.	0 1 3 5	0
FIRE DEPARTMENT ENGINE/TENDER		
Fire Department has minimum 1 engine and 1 tender with wildland equipment. Fire Department has minimum 1 engine and 1 tender. Fire Department has no tender and no wildland equipment.	0 3 5	0
FIRE CONTROL WATER SUPPLY		
Pressurized hydrants with minimum 1800 lpm (135 L/s) spaced less than 300m apart. Pressurized hydrants with less than 1800 lpm (135 L/s) or more than 300m apart. Hydrants fed by a generating system (requires power). Dry hydrant/standpipe available. River/Creeks/Cisterns that are accessible for drafting. No water sources.	0 2 3 5 7 15	2 **G**

HELICOPTER DIP SITES (*min 1.5 m water depth year-round 45' obstruction clear)*		
Under 2-minute turnaround (< 1 kilometer). Within 4-minute turnaround (1-3 Kilometers). Within 6-minute turnaround (3-6 Kilometers). Beyond 6-minute turnaround (greater then 6 k) or unavailable.	0 2 3 5	2 **H**
COMMUNITY MAPS		
There are updated maps available. There are no maps available.	0 5	0 **I**
TOTAL COMMUNITY CHALLENGES	**Rating 60**	

CALCULATING YOUR WILDFIRE HAZARD RATING

COMMUNITY DESIGN RATING	COMMUNITY CHALLENGES RATING	TOTAL
21	60	81

Low Fire Risk: **Overall Wildfire Hazard Rating = 0-25 points**
The chances of your community's critical infrastructure surviving a wildfire are GOOD. Little is needed to improve your situation. Keep up the good work!

Moderate Fire Risk: **Overall Wildfire Hazard Rating = 26-59 points**
The chances of your community's critical infrastructure surviving wildfire are FAIR. Some minor improvements will make the identified structures more fire resistant. Check the categories on the form where you scored poorly.

High Fire Risk: **Overall Wildfire Hazard Rating = 60-119 points**
The chances of your community's critical infrastructure surviving a wildfire are NOT GOOD.
Improvements in structure and site hazards are necessary.

Extreme Fire Risk: **Overall Wildfire Hazard Rating = 120 or more points**
Your community's critical infrastructure MAY NOT SURVIVE if a wildfire passes through the area. Take a serious look at your community and make improvements. If you don't, you could be facing disaster. You'll find that even small changes could make the difference between losing or saving your home.

Notes & Recommendations from Community Wildfire Hazard Assessment Scores:

A – Evacuation Plan

Primary evacuation via Silver Star Mtn Rd. to Vernon. It will require a very coordinated emergency response for structure protection at a time when a high volume of persons will be evacuating on the same road that emergency vehicles will need to use.

Fire Dept. has a community airhorn (siren) with a community identified muster/ Safety Zone location at Parking Lot B. An alternate route via Deafies FSR would be subject to an Incident Command decision as the road is gated and locked and may not be suitable for some vehicles.

Recommendation – assess evacuation route "Silver Star Mtn Rd." to identify and mitigate hazard trees that could fail resulting in a road blockage. To put the risk in perspective the 2018 Camp Fire in California had 85 deaths with many in Paradise attributed to a tree that fell across and blocked the evacuation route.

Recommendation - Coordinate tree hazard mitigation with BC Hydro powerline vegetation management as a tree contact with the powerline could result in a wildfire that could block the evacuation route.

Recommendation – consider installation of a positive pressure air exchange for the Silver Star Admin. Office located at 152 Main St. Site has potential to provide space for an EOC and could provide a Safety Zone for emergency responders to be in a position to deploy after the wildfire. A timely return after the wildfire can extinguish creeping ground fires from burning down structures.

B – FireSmart Initiatives

Most homes destroyed in forest fires are from fire brands (embers) carried in the wind that ignite spot fires in dry fuel (standing dead grass, firewood, patio cushions, welcome mat) on or within 1.5m of the structure.

Recommendation – Critical Infrastructure should be FireSmarted by its owners to provide an example for community members to follow. Verify that building openings such as attic vents use fine steel mesh screen to stop fire brands from blowing in. For structures such as the Water Treatment facility and Pump houses – install clean crush rock 1.5m wide around the perimeter of the structure. Space out trees for an even mix of conifer and deciduous to have a minimum of 3m from the branches of one tree in

proximity to the next tree. Remove all tree branches from the ground up to 4m to prevent a ground fire from igniting the lower tree limbs and then candling up the tree with the potential of igniting the structures. From the buildings out to the property line or 10m; mow ground material (grass and weeds) so they don't exceed a height of 5cm during fire season. For the private 3ph powerline -brush out 1.5m radius around the wood poles and apply fire retardant to the wood poles from ground up to a height of 4m.

Recommendation – Evaluate the existing FireSmart neighbourhood private property initiatives for homes with the Community Wildfire Resiliency Plan or Crown Land Wildfire Risk Reduction Fuel Management Tactical Plan to assess local threat conditions and wildfire risk reduction priorities. In cases where local assessments provide evidence of higher wildfire risk than is indicated by the WUI Risk Class, that information should be used to guide risk reduction activities.

Recommendation – Some community members are keen to pre-install roof top sprinklers; however, the Silver Star Water utility will not authorize the connection of any such sprinklers to the water system, as they can cause reservoirs to drain quickly, resulting in water loss in the entire system, which would compromise fire suppression for the whole area. There is also a strong potential to cause water damage to buildings and other infrastructure, which the Silver Star Water Utility and fire department would not be liable for. In addition, improperly specified sprinklers can not be supported by the water system due to pressure and flow limitations and would not be of any benefit. The water utility is recommending that a Community Sprinkler Policy be developer in consultation with the local fire department to at minimum identify and specify sprinkler types to use, how many, spacing, operation, roles, and responsibilities. Silver Star Water is clear that only the Fire Dept. or its delegate would be allowed to connect to pre-installed sprinklers, and that any such connection would be made to an emergency water system (temporary above ground system comprised of portable fire pumps, houses, portable water bladders, etc.) independent of the Silver Star Water system.

It must be noted that sprinklers are most effective when FireSmart initiatives have been completed to prevent radiant heat and direct flame contact on the structure. In many cases FireSmart initiatives can make a structure "Stand Alone" resulting in sprinklers not being necessary to protect the structure from a wildfire.

Recommendation – a map that identifies FireSmart properties will help prioritize the installation and operation of sprinklers for Structure Protection.

Recommendation - a map that identifies properties with Fire Dept. approved pre-installed sprinklers for effective timely activation.

Recommendation – Building Bylaws that include establishing and maintaining a 1.5m defensible space around all new construction. (Non-flammable material such as clean gravel, or concrete sidewalks). Regional District bylaws that support FireSmart will help

reduce structure losses from Wildfires. Neighbours need to work together to implement the plan as the weakest link will be neighbour who's house catches on fire that results in the house next door catching on fire.

Communication to property owners - During fire season, when not at home, store flammable patio furniture indoors or 10m away from the house. The "Welcome" mat at the front door is usually flammable and therefore not welcome during fire season.

When a forest fire is near, close all windows and doors to prevent blowing fire brands from entering the building. Move all flammable material on decks and patios or next to the house, at least 10m away including BBQ propane cylinders and gas cans. For firewood sheds, seal off the opening with a tarp to minimize the risk of fire brands igniting the wood pile.

Sprinklers are effective when placed up high to wet the entire perimeter of the building from the top down for 30 min prior to fire arrival and running while the fire passes by. Running sprinklers days in advance of the fire is a waste of water which is a critical resource required for fighting fire. Sprinklers can cause water damage to a structure if not properly set up and monitored.
At the community level, start with critical infrastructure and follow the recommendations above. Work with Silver Star community representatives to facilitate meetings with private property owners to promote FireSmart. Property owners work from the homes outward. When the community is FireSmart than expand to work on forest fuel modifications such as harvesting around the perimeter of the community on the crown land to open the tree canopy and remove the ladder fuels. If the fuels aren't managed next to the homes an ember from the wildfire could blow in from more than 2km away and ignite a spot fire that could burn down the structure.

C - Mutual Aid

An agreement is in place with BX-Swan Lake FD, Coldstream FD, Lumby FD, Armstrong FD, Enderby FD, and City of Vernon FD. *See Part II Silver Star Fire Protection Area - Mutual Aid, for list of apparatus.*

D - Critical Infrastructure

Critical Infrastructure includes the Silver Star Fire Hall, water treatment plant, water booster pump station, well pump houses, water storage reservoirs (tanks).

Silver Star Alpine Training Centre in an emergency could be a location for people to use as temporary refuse if they cannot leave before the fire arrives.

Recommendation - upgrade the Alpine Training Centre with positive pressure ventilation to create smoke-free space to shelter in place with backup power. See Part II Critical Infrastructure.

Recommendation - The private 3 phase power line at Silver Star is critical for operation of reservoir gate valves, pumps, and wells. Maintain a vegetation free zone for 1.5m around the power poles and from 1.5 to 3m remove all vegetation that exceeds 1m in height. Consider an application of a product like "Wood Guard" fire retardant (used by BC Hydro on its high-risk wood poles).

Recommendation - Build Load transfer switch for backup 3 phase power at Vance.

E – Locked Gates

Locked gates for Deafies FSR, Parking Lot E, Pinnacles Rd. Critical Infrastructure - Silver Star Maintenance Shop.

F - Critical Response Plan

Preplans on all commercial, strata, and sewer plant. Private homes are not critical infrastructure and therefore not included in the Critical Response Plan. Plans are accessible on tablets in the fire trucks.

Recommendation - Confirm ability to Email PDF files to mutual aid response crews.

G - Hydrant Protection

Much of the Silver Star Fire Protection Area has Hydrant protection. Fire Control Water Supply via hydrants is limited by the size of the community reservoirs for neighbourhoods such as the Ridge. The booster pump station for the Ridge Reservoir (tank) gets power from a 3-phase overhead powerline that could be impacted from a wildfire. The pump station does not have backup power and has a limited 56 imp gal/min (4.2 L/s) refresh rate.

Non-hydrant protected areas include the sewer treatment plant, Mid-T Water Treatment Plant, Well #1, Well #2, Well #12, Paradise control building, Vance Creek pump station control building, Env Canada Doppler Radar and Communication antenna (Telus, BC Ambulance, RDNO, SS Fire Dept, Resort Repeaters). Private 3 phase power line from Solid Waste Transfer site to top of summit as well to Paradise and Vance storage reservoirs. Private 3 Ph NATC to Wastewater Treatment plant.

Recommendation - for the Ridge booster station consider installing backup power or at minimum install a transfer switch to allow connection to an external generator. Significantly increase the flow volume to the Ridge reservoir is recommended to support Structure Protection if more than one home catches on fire.

Recommendation - Relay Tanks: initially filled from hydrants, and then supported from tenders when reservoirs reach a critical level, should be used for the Ridge, Alpine Meadows, Pinnacles, and the Knoll, as a water source for MK3 pumps to boost water pressure to operate sprinklers installed above the roof height.

Recommendation – community has clean potable water from community reservoirs that supports the rapid deployment of Wasp sprinklers from the Provincial Urban Structure Protection Trailer. However, most buildings do not have eves trough. Installation of plastic wasp mounts on critical infrastructure that have hose bibs will help with rapid sprinkler deployment when threatened by wildfire. Managers of critical infrastructure should ensure they have hose bibs with adequate water pressure to connect these sprinklers, and gutter brackets where eves trough are not present.

Recommendation - installation of strategically placed 10,000 – 20,000 gal cisterns to hold water storage during wildfire season for both filling Tenders and or water supply for MK3 pump for roof top sprinkler deployment. Consider the top of the Ridge due to limited municipal water if power is lost. Consider the top of the Knoll due to hydrant flow rate. The tender turn around time during initial wildfire suppression could be the difference between a quick fire knock down or the loss of a community.

For proposed perimeter sprinklers in the glade area around the Knoll a contractor has prepared a separate report. Glade sprinklers, aerial retardant, cat guards, and burn off at the time of the wildfire event would be strategies considered by the Incident Commander to support Structure Protection.

Recommendation – To supply Tenders with water for 2,500-gal relay tanks used for Structure Protection sprinklers, consider installing a hydrant directly attached to the Paradise Reservoir waterline that supplies the Water Treatment Plant. The Silver Star Water Utility is investigating the feasibility of this option. It would provide the ability to access the full storage of Paradise Reservoir in the village without electricity. The recommended infrastructure could pose operational challenges to the Silver Star Water Utility, so further analysis is being undertaken.

Recommendation - RDNO invest in BB4 and B2X pump heads along with 20,000 ft of 2.5inch structure hose to be used in the North Okanagan when communities are threatened by wildfire. For Silver Star the equipment could provide an effective portable hydrant line for Structure Protection from Attridge pond, Brewers ponds, Paradise, and Vance reservoirs. Provincial Wildfire assets could be in short supply if the province experiences a “heat dome” fire season like 2021.
Well 13 is owned by POWDR and could be connected to add water to the 150mm water line running from Paradise to the Mid-T Water Treatment Plant. There would need to be an agreement of use between POWDR and RDNO and the well would need to be tested annually before the spring season to ensure still operational.

H –Helicopter Fill Sites

Brewer’s Pond, Attridge pond, Paradise reservoir, and Vance reservoirs. Further away Procter Lake and Swan Lake. Helicopters hoover and fill Bambi Buckets for quick water delivery during initial fire containment.

I – Maps

Silver Star composite maps (Brad Baker).

Recommendation – printed maps 60cm x 100cm for each Section showing Escape Routes, Safety Zone, Critical Infrastructure, Tender Filling sites, Hydrants, and property address. Include Overview to provide Structure Defense teams for operational planning.

The implementation of the recommendations is beyond the scope of this document.

Silver Star fire protection area is surrounded by forest that is Risk Class 1 (highest relative risk) with Wildfire Threat High (8) bordering on a community assessed as High Fire Risk (81). A repeat of the summer of 2021 combined with a lightening strike in timber in the vicinity of Silver Star has the potential of becoming a fast-moving wildfire. If properties have not undertaken FireSmart recommendations and hot embers blow into residential neighbourhoods, they could ignite spot fires that will result in significant structure loss. The information should be used to promote FireSmart strategies on and around homes where they back onto both private and crown forests, and to prioritize the investment in forest fuel treatment plan.

Part II

Responder Safety Check List

All responders will receive a pre-deployment safety briefing that includes:

- Current wildfire location, rank, and direction of travel and any changes expected during the operational period;
- Current weather and any changes expected during the operational period;
- Current and planned air operations;
- Current and planned fuel mitigation activities (backburns, land clearing)
- Check-in procedures and intervals;
- Other hazards in operational areas;
- Safety zone locations;
- Medical unit location(s);
- Reporting structure, assignment, and radio call-sign;
- Assigned radio frequency(ies);
- Contingency communications (cell phone, satellite phone numbers); and
- Expectations for personal protective equipment.

"Drought conditions, the build-up of hazardous fuels, and more homes in fire-prone landscapes are changing how we experience Wildfires in British Columbia."

Silver Star Fire Protection Area

Latitude: 50o21’32”N **Longitude:** 119o03’36”W

Toporama Map: 82L SW

Fire Department Jurisdiction: RDNO Electoral Area C, Silver Star Fire Dept. has approx. 450 permanent residents that reaches 11,000 tourists per night during peak winter season. Peak summer tourists per night reach 3,000. The community has a potential build out to serve 18,000. The fire protection area is 2.34 sq km.

Silver Star Fire Dept:

- has 16+ Paid-On-Call individuals
- operates three apparatus plus Type 3 SPU.
    - Type 1 Engine (SS E1) with 1250/1000/25F, (5 passenger)
    - Type 2 Engine (SS E1-2/Tender) with 1250/1000/0F (3 passenger)
    - Type 3 SPU (4 pumps, and 60 sprinklers with 2,000ft 1½.
    - Rescue Truck (SS R1) F550 no water or pumps.

Mutual Aid – 1Ex2 = 2 Type 1 Engines, 2Tx1 = 1 Type 2 Tender

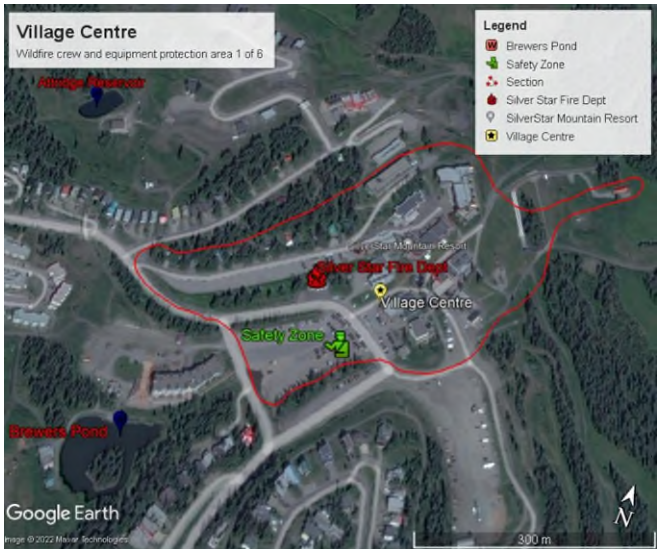
- BX-Swan Lake FD mutual aid apparatus
    - 2E/2Tx1 (BX E1-2) or 2Tx1 (BX T-1), and 3Ex1 (BX E1-3), 6Ex1 (BX R1-2) and 2SPUx1
- Coldstream/Lavington FD mutual aid apparatus
    - 2Ex1, and 2Tx1
- Lumby FD mutual aid apparatus
    - 2Ex1, and 2Tx1
- Armstrong FD mutual aid apparatus
    - 1Ex1 and 1Tx1
- Enderby FD mutual aid apparatus
    - 1Tx1
- City Vernon FD mutual aid apparatus
    - 1Ex1, and 2Tx1

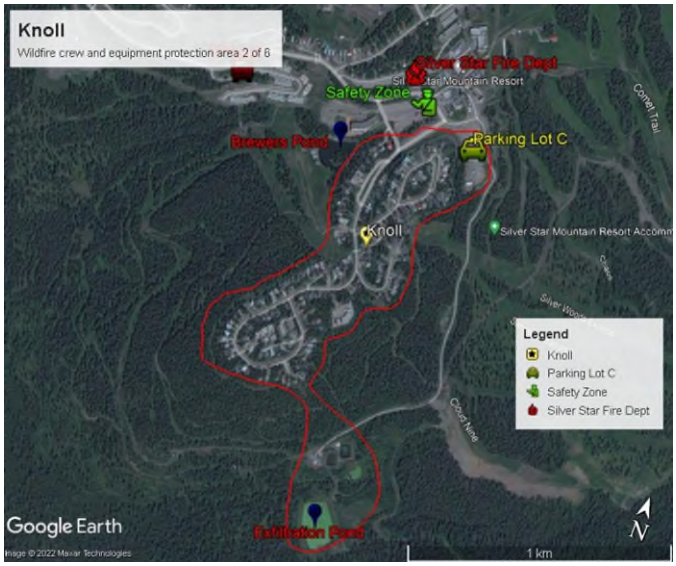
Estimated Number of Private Dwellings:

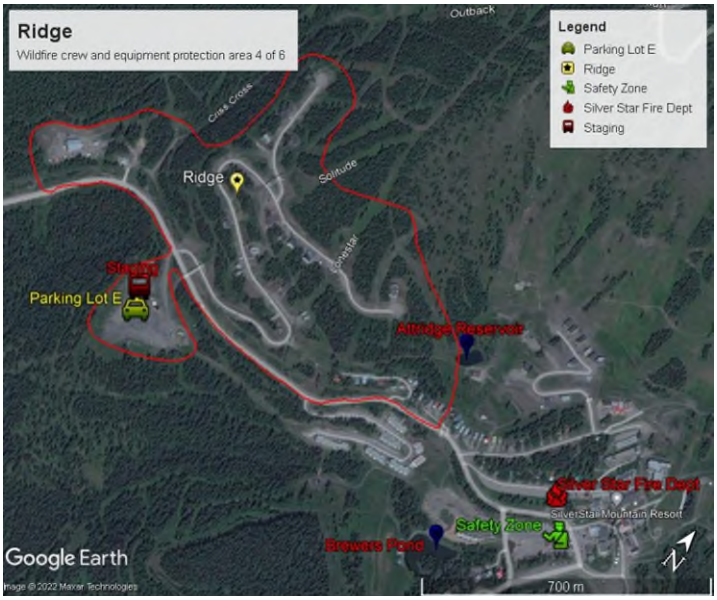
For purposes of allocating resources to protect structures from a wildfire, Silver Star Fire Protection Area has been divided into 6 Wildfire Protection Areas.

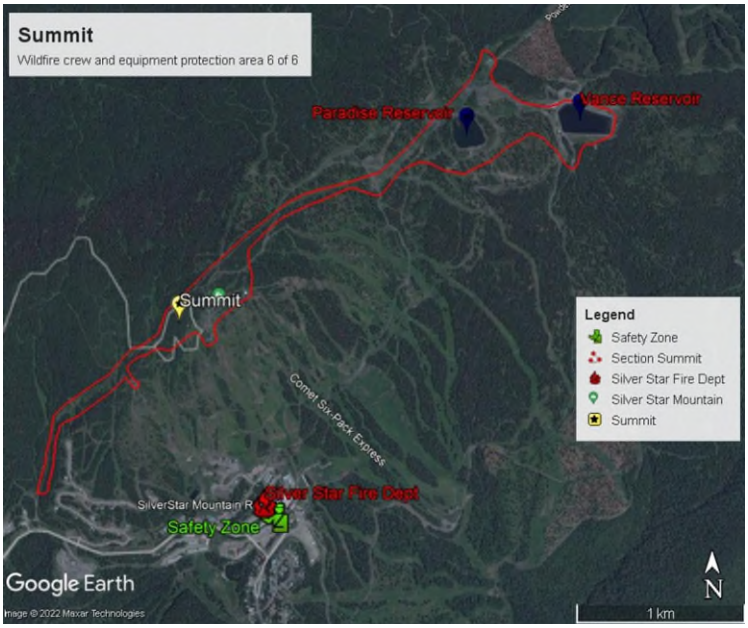
2019 Pillow Count (from Silver Star Mtn sewer and water capacity)

Residential	6,615	Planned Future Development	7,444
Commercial	4,255		
2019 Total	**10,870**	Total Amount	**18,314**

Area	Total # Properties with potential infill of another 78 building lots
1 Village Centre Wildfire Protection Area 1 of 6 (Silver Star Rd, Main Street, Shortt St, Parking Lot B)	 15 Residential, 19 Commercial, High Voltage-Aerial powerline

2 Knoll Wildfire Protection Area 2 of 6 (Monashee Rd, Silver Queen Rd, Odin Rd, Monashee Crt, Mistaya Lane) Parking Lot C – RV camping area & also includes the Sewer Treatment Plant 9 vacant lots	 135 Residential, 5 Commercial,
3 Creekside Brewers Wildfire Protection Area 3 of 6 (Creekside and Fire Light Lodge 140 Monashee Rd)	 0 Residential, 10 Commercial

4 Ridge Wildfire Protection Area 4 of 6 (Cathedral Dr and Purcell Dr.) Includes Silver Star Maintenance Area at 9675 Silver Star Rd. (2 buildings and fuel storage) along with Well #2 and Parking Lot E – Staging Area for incoming resources. 44 vacant lots	 56 Residential, 2 Commercial, above ground fuel tanks, shipping containers, mobile equipment, natural gas valve station, high voltage-aerial powerline
5 Attridge Pinnacles Wildfire Protection Area 5 of 6 Ski overpass boundary between Area 4 and 5 (Pinnacles Rd to Arnica Lane) Includes Mid -T Water Treatment Plant 25 vacant lots	 62 Residential, 3 Commercial

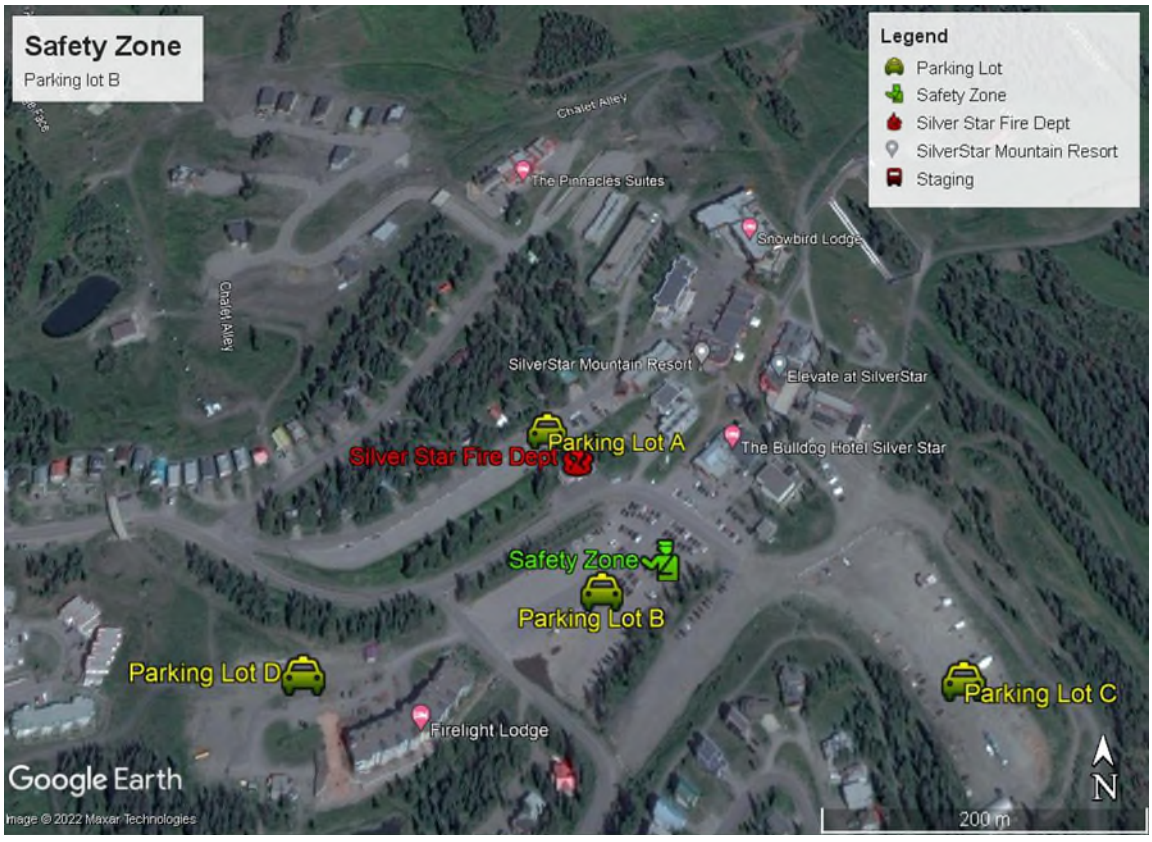
6 Summit Wildfire Protection Area 6 of 6 Includes 3 phase private power line to Paradise and Vance Reservoir, old forestry lookout, numerous communication towers, and Doppler Antenna.	 19 nonresident Structures, high voltage-aerial powerline
TOTALS	SSW provides potable water to 39 commercial and 268 residential connections. Most connections are seasonal and are only occupied during the winter ski season. 307 properties with Primary structures (home/cabin). This does not include Secondary structures (detached garage, woodsheds, and other outbuildings).

Safety Zone

This section considers safety zones large enough to hold responders' equipment and to shelter during fire passage for speedy return to mop up after fire front passes. Safety zones provide a quick response to extinguish spot fires that could ignite structures after the fire front has passed. Safety Zone options depending on the number of crews and vehicles.

Silver Star Emergency Response Plan has assessed the five (5) parking lots A – E as follows:

- Parking Lot A is too small.
- Parking Lot B is allocated for the Evacuation Muster location and Safety Zone and can provide a shelter area for people unable to evacuate
- Parking Lot C is allocated for seasonal RV camping and may not have adequate space for the Safety Zone.
- Parking Lot D has fuel storage and is too small due to buildings and forest edge.
- Parking Lot E (not on image below) is located across from the Ridge entrance and is allocated for Staging of responding agencies.



Safety Zone Areas identified in 1 Village Centre and 6 Summit.

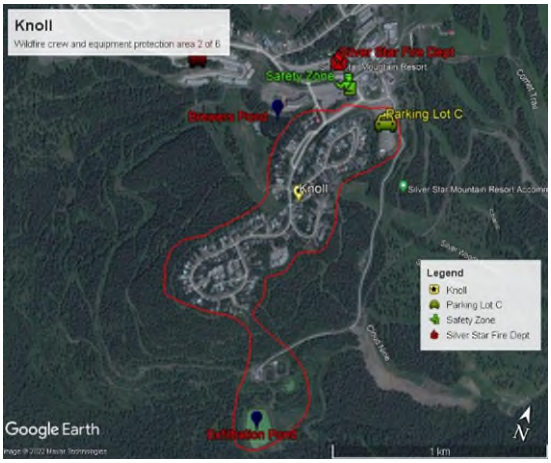
1 Village Centre Wildfire Protection Area 1 of 6	Parking Lot B used for community muster location and Safety Zone. See map on previous page.
Silver Star Admin. Office 152 Main St. Located within Village Centre Wildfire Protection Area 1 of 6 Possible EOC Contact Brad Baker Ph 250-542-0224	 Admin – EOC – (SS Admin. Has auto switch backup Gen power, set up with Mountain UHF radios, Fax, Internet, multi seat board room, large zoom TV, Kitchen, washrooms, showers)
6 Summit Wildfire Protection Area 6 of 6 Includes old forestry lookout and Doppler Ant. And 3 phase private power line	Paradise and Vance Shale Pit temporary safety zone Crews working in the vicinity of the Summit near Paradise/Vance Reservoirs have the Shale Pit for temporary refuse.

Critical Infrastructure

Critical infrastructure are structures that if damaged or destroyed would have a significant impact on the quick recovery of a community following a forest fire. For this reason, critical infrastructure is identified as the highest priority for structure protection.

1 Village Centre Wildfire Protection Area 1 of 6 (Silver Star Rd, Main Street, Shortt St, Parking Lot B) Parking Lot B used for community muster location and Safety Zone. See the map on previous page.	
Silver Star Village	
Silver star Admin 152 Main Street Possible EOC - (has auto switch backup Gen power, set up with Mountain UHF radios, Fax, Internet, multi seat board room, large zoom TV, Kitchen, washrooms, showers) Contact Brad Baker	

Silver Star Fire Dept	
Silver Star Admin Building Back-up Generator	
Silver Star Patrol Clinic / First Aid	
National Altitude Training Centre	

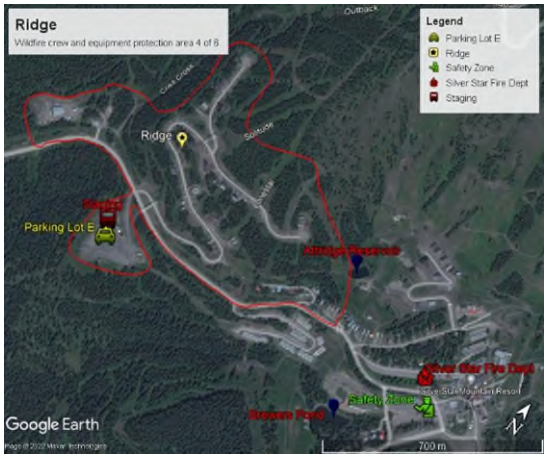
2 Knoll Wildfire Protection Area 2 of 6 (Monashee Rd, Silver Queen Rd, Odin Rd, Monashee Crt, Mistaya Lane) Parking Lot C – RV camping area & also includes the Sewer Treatment Plant Silverhawk Wastewater treatment Road access is via a forestry road accessed from Parking Lot C	 
3 Creekside Brewers Wildfire Protection Area 3 of 6 (Creekside and Fire Light Lodge 140 Monashee Rd) Well 3 pump house is located beside the first Creekside Building down the strata road.	

4 Ridge

Wildfire Protection Area 4 of 6

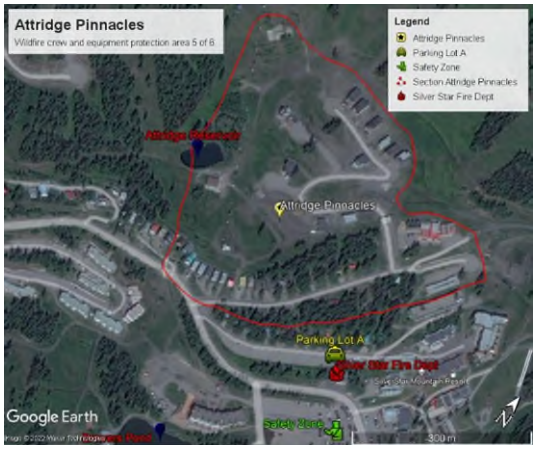
(Cathedral Dr and Purcell Dr.)

Well 12 (not pictured), down slope of parking lot E (difficult to access during the winter)



Well # 2
Located behind the transfer station

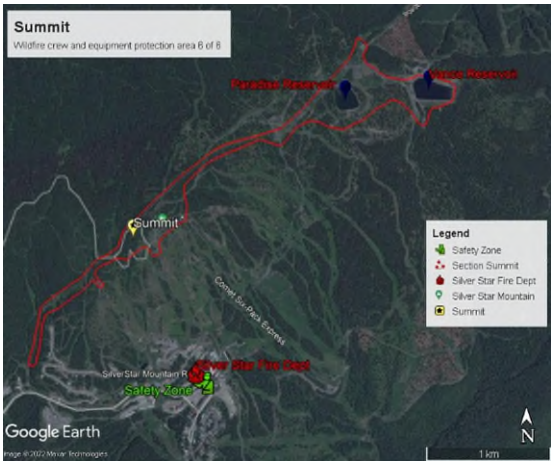
Fortis natural gas valve and water well #5
Located at the southeast corner of parking Lot E

Silver Star Maintenance and Fuel Tanks	
5 Attridge Pinnacles Wildfire Protection Area 5 of 6 Ski overpass boundary between Area 4 and 5 (Pinnacles Rd to Arnica Lane) Includes Mid -T Water Treatment Plant Mid T Water Treatment Plant 9837 B Pinnacles Rd. Pumps up to the Mid-T Reservoir The Mid-T reservoir is an enclosed reservoir (tank). Missing pictures of the Mid T reservoir and well 1	  The Mid-T Water Treatment Plant (WTP) has a backup generator to supply power during short-term outages. The generator also provides power to Well #1, but if power is out when demands are greater than the pumping capacity of Well#1 then source water can be supplied by gravity from the Paradise Lake open water reservoir. Paradise Reservoir gravity flows to the Water Treatment Plant.

6 Summit

Wildfire Protection Area 6 of 6

Includes 3 phase private power line to Paradise and Vance Reservoir, an old forestry lookout and Doppler Ant.



Radio Site at Summit

Radio site and Doppler Radar at Summit

Radio Site RCMP and BCAS at Summit

Cell and Radio Site Forestry lookout at Summit	
Paradise pump houses	
Vance Creek Reservoir Pump Building	

Well 1,2,3,4,5,10,12

Well 1- Behind (60 m east of) 366 Monkshood Ln- **1.67 L/s (22 igpm) capacity**

Well 2- 120 m northeast of Transfer Station (9695 Silver Star Rd)- **2.22 L/s (29 igpm) capacity**

Well 3- On north side of entrance road to 9802 Silver Star Rd, Creekside Apartments, 45 m east of first apartment building. – **2 L/s (26 igpm) capacity**

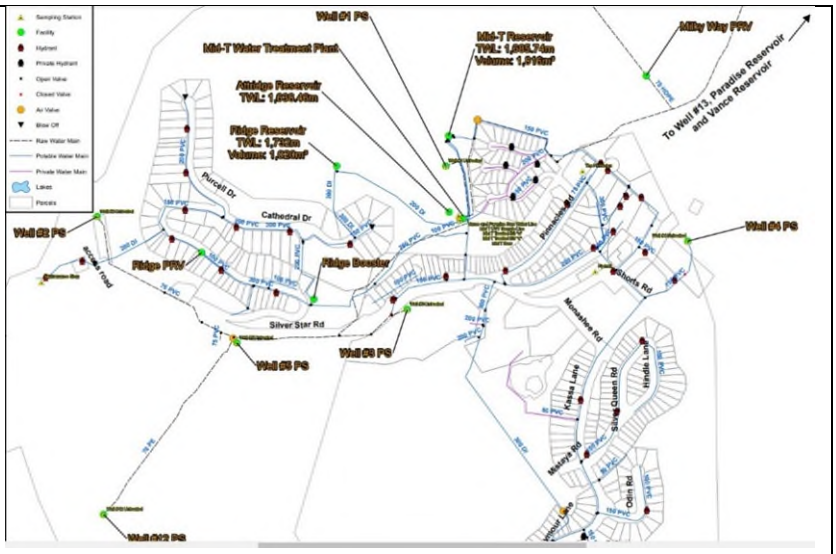
Well 4- Behind (60 m west-southwest of) the town hall (150 Main St)- **0.5 L/s (6.6 igpm) capacity**

Well 5- Between Silverstar Rd and Parking Lot E- 185 m southeast of Silver Star Rd/ Cathedral Dr Intersection. 40 m northeast of horse barn.- **1.27 L/s (17 igpm) capacity**

Well 10- 750 m north-northeast of Mid-T Reservoir- adjacent to top of gondola and radar station.- 0.44 L/s (5.8 igpm) capacity

Well 12- 600 m southwest of Cathedral Dr and Silver star Rd Intersection. Accessed from Parking lot E.- **1.06 L/s (14 igpm) capacity**

Critical Infrastructure needing protection from wildfire. The wells are not a site to fill Tenders or operate sprinklers from.



The identified critical infrastructure for the most part follows the recommended FireSmart guidelines and serves as an example for the public. **FireSmarting around the critical public infrastructure increase its resilience to wildfire and stand as an example to the public of proper FireSmarting methods.**

Water Fill Sites

Before utilizing the Silver Star Water (SSW) contact the system operator Warren McKim or the Manager, Small Utilities (RDNO) Keiko Parker.

The Regional District of North Okanagan (RDNO) Keiko Parker manages the Silver Star Water Utility (SSW) in Electoral Area "C". Small Utilities is responsible for the operation and management with oversight provided by the Utilities, General Manager, Zee Marcolin and the RDNO Board of Directors. The SSW operations is contracted to Aberdeen Electric Ltd. Warren McKim is the chief operator. The backup operator, Nicholas McKim.

There is a limited summer season where summer activities are promoted, however the flows observed are only a fraction of the winter season.

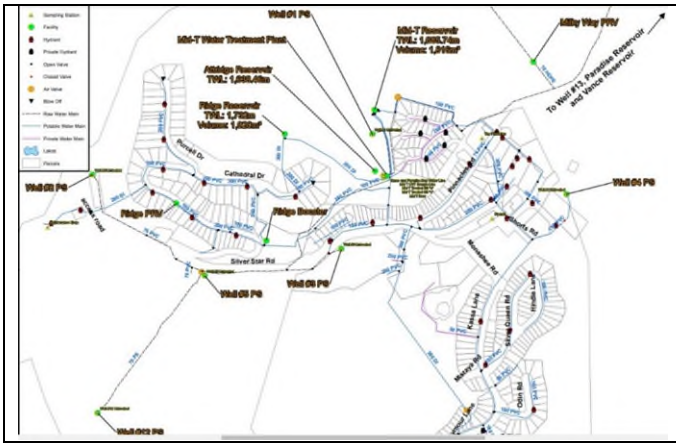
Table 22: Monthly Consumption Data

Month	Consumption	
	Total Monthly Consumption (m^3)	Average Daily Consumption (m^3)
January	15,101	503
February	11,402	496
March	12,971	463
April	5,655	202
May	5,260	175
June	5,589	200
July	8,009	258
August	8,154	263
September	5,697	190
October	5,131	166
November	7,277	243
December	15,028	485
2019 Monthly Min	**5,131**	**166**
2019 Monthly Max	**15,101**	**503**
2019 Monthly Average	**8,773**	**304**
2019 Total	**105,274**	**3,644**

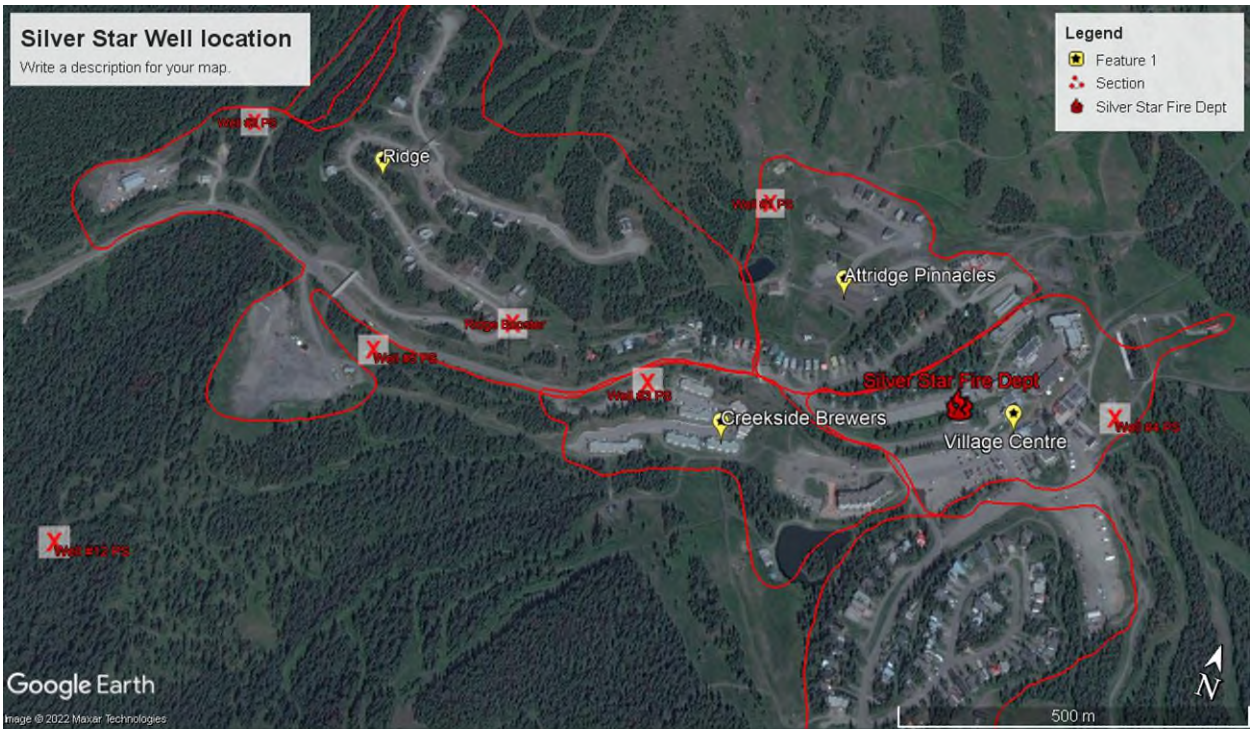
The rates bylaw defines the peak season from December 1 to March 31 and low season from April 1 to November 30. The total population during peak season is 10,161. All connections are metered.

The water source for the SSW utility comes from 2 of the 3 surface runoff collection reservoirs and 7 bedrock wells. Two open water surface reservoirs Vance Creek (Vance) and Paradise Lake (Paradise), used to store water for peak season at Silver Star and are filled by runoff collected from snow melt. Attridge, located in the Village beside the Treatment Plant, is no longer connected to the water system but still collects groundwater from French drains installed in the adjacent ski slope,

There are six operational bedrock wells connected to the water system and are identified as Wells #1, 2, 3, 5, 10 and 12. Well 4 is still operational but not connected to the water system and is designated as an emergency back up well. Well 13 is owned by POWDR and could be connected to add water to the 150mm water line running from Paradise to the Mid-T Water Treatment Plant.

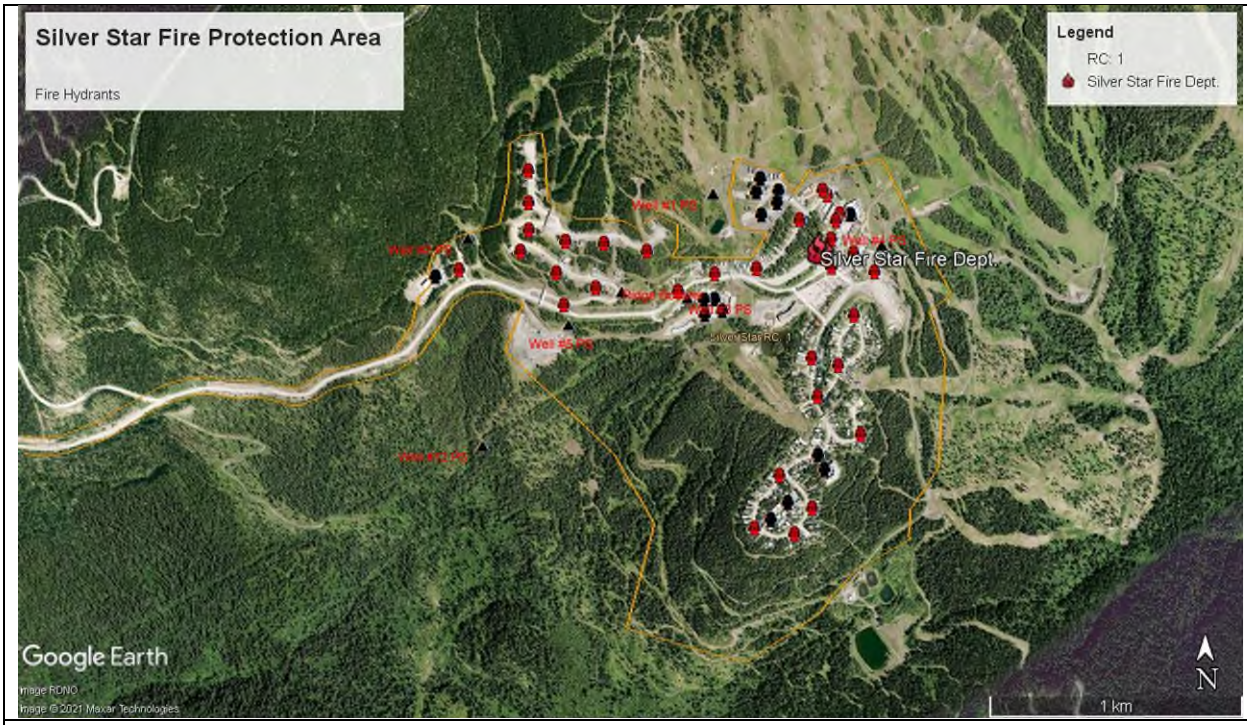


All water from the groundwater and surface water sources (apart from Well 4 that is designated as an emergency backup well) is directed to the Mid-T Water Treatment Plant where it is treated with UV and chlorine, then directed to the Mid-T reservoir storage capacity of 479,732 gal (2,180 cu.m).



Hydrants

Silver Star Fire Protection Area has 48 fire hydrants. Hydrants are intended for Structure Suppression (structures on fire). Hydrants may be able to support Structure Protection (sprinklers deployed to increase humidity around the perimeter of each structure) provided the water supply can meet the fire department needs to extinguish structure fires. 2,500 gal Relay Tanks with MK3 pumps used to operate Structure Protection Sprinklers should be positioned near neighbourhood hydrants for refilling and when the hydrants water supply is needed for Structure Suppression the Relay Tanks would be filled by Tenders or managed the same as non-hydrant areas where MK3 and BB4 pumps from surface reservoirs such as Attridge, Brewers, Putnam, and Paradise with surface hose lays (4", 2.5", and 1.5") are used to run the Structure Protection sprinklers. Tenders may be able to fill from Attridge and Brewers to haul water to fill Relay Tanks, but it may be a shorter turn around time for hauling water by using hydrants that are gravity fed from Paradise Reservoir.



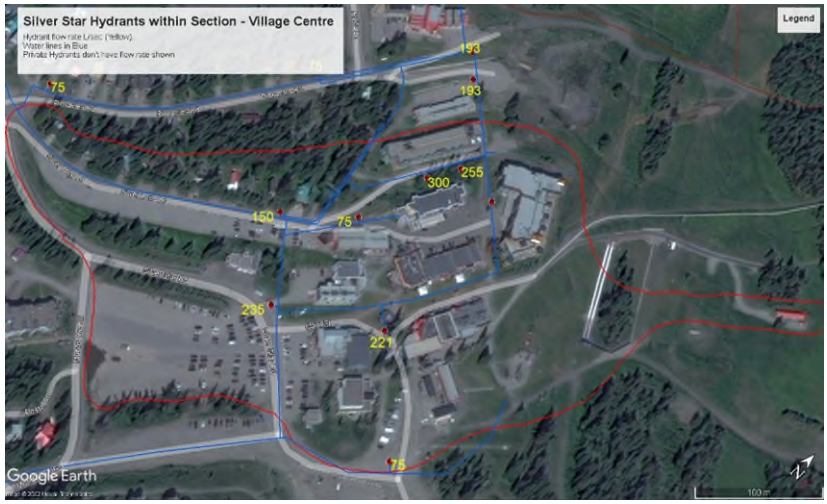
Hydrants identified above that are Red, are RDNO. Hydrants identified above in Black are private but available to the Fire Dept. in an emergency.

Gravity from Mid-T Reservoir provides water to hydrants and customers in the Village and on the Knoll. A booster station located at the first switch back of Cathedral Drive pumps water to the Ridge reservoir that gravity supplies hydrants and customers at the Ridge and Alpine Meadows subdivisions.

1 Village Centre

Wildfire Protection Area 1 of 6 (Silver Star Rd, Main Street, Shortt St, Parking Lot B)

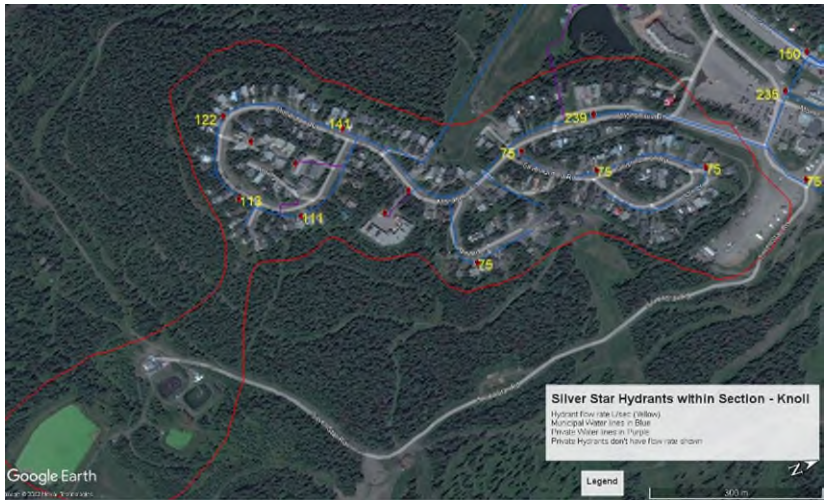
8 Fire Hydrants
Gravity from Mid-T Reservoir provides water to hydrants and customers in the Village and on the Knoll.
TWL 1,685.74, Volume 479,732 gal= 339,464.1 imp gal, Reservoir refresh rate 264 imp gals/min. Takes 25hrs to fill.



2 Knoll

Wildfire Protection Area 2 of 6 (Monashee Rd, Silver Queen Rd, Odin Rd, Parking Lot C – RV camping area & also includes the Sewer Treatment Plant.)
13 Fire hydrants and Brewers Pond
Gravity from Mid-T Reservoir provides water to hydrants and customers in the Village and on the Knoll.

TWL 1,685.74, Volume 479,732 gal= 339,464.1 imp gal, Reservoir refresh rate 264 imp gals/min. Takes 25hrs to fill.



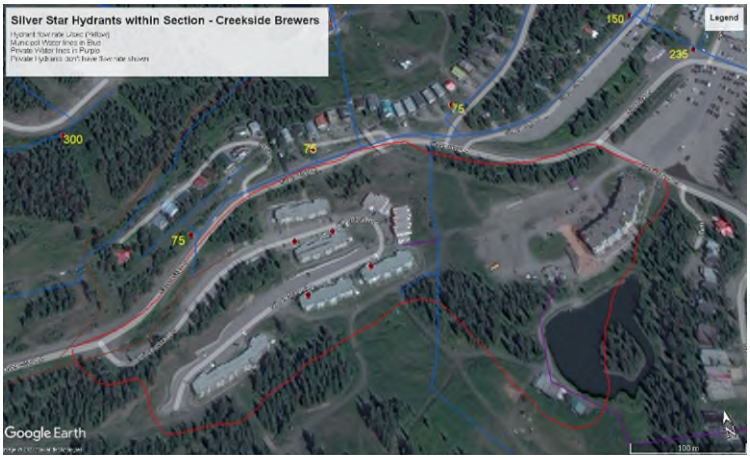
3 Creekside Brewers

Wildfire Protection Area 3 of 6

(Creekside and Fire Light Lodge 140 Monashee Rd)

4 Fire Hydrants and Brewers Pond.

Gravity from Mid-T Reservoir provides water to hydrants and customers at Creekside Brewers along with the Village, and Knoll.



4 Ridge

Wildfire Protection Area 4 of 6

14 Fire Hydrants

During a wildfire threat the Ridge community will need tenders to fill 2,500-gal Relay Tanks. Tenders may be able to fill from Attridge pond, Brewers Pond, and from hydrants gravity fed from Mid-T Reservoir such as Village Centre Protection Area.

Ridge Booster station
9792 Cathedral Dr.
No backup power

Ridge Reservoir
7682 Cathedral Dr.

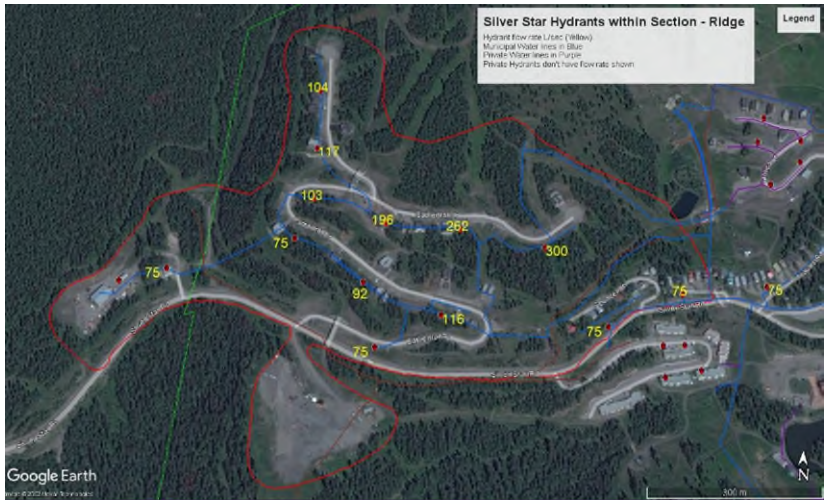
Gravity to hydrants and customers at the Ridge and Alpine Meadows subdivisions and the Mtnce Yard and Transfer site.

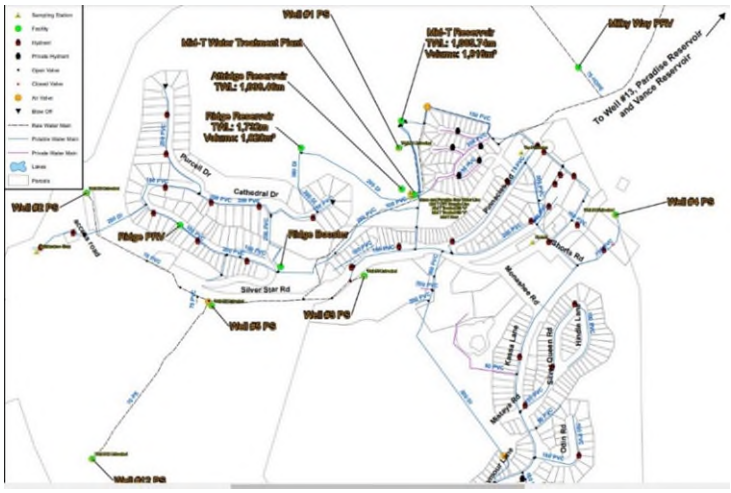
TWL 1,732m

Volume - 269,453 gal = 224,368.62 imp gal.

Refresh rate 56.4 imp gal/min

Takes 66 hrs to fill.





Structure Protection with sprinklers in the Ridge neigbourhood should not rely upon the municipal water system.

Ridge Booster Lift pump refresh rate will be exceeded by running structure protection low flow sprinklers on 5 homes. The lift pump does not have backup power. If power to the booster pump is lost, sprinklers could compromise the ability to provide Structure Supression if a home catches on fire.

5 Attridge Pinnacles

Wildfire Protection Area 5 of 6

9 Fire hydrants and the **Attridge Reservoir -** a small open water reservoir located immediately upslope of the Mid-T Water Treatment Plant at 9837 B Pinnacle Rd.

TWL 1,638.46m

Volume gal 4,500 m3 (990,000 Imp Gal.)

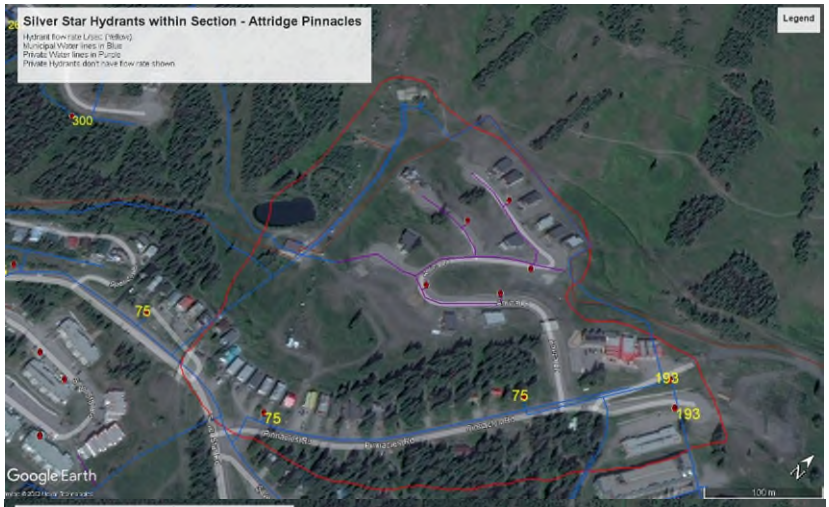
Mid-T Reservoir

9873B Pinnacles Rd.
Gravity from Mid-T Reservoir provides water to hydrants and customers at Attridge, Pinnacles, the Village and the Knoll.

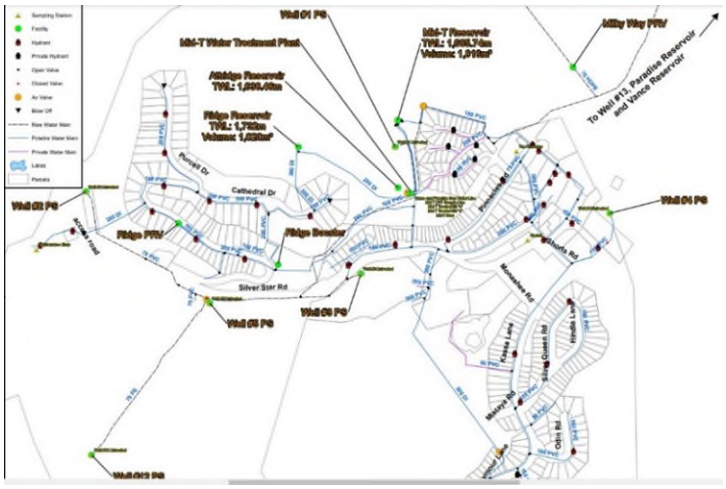
TWL 1,685.74

Volume 479,732 gal= 339,464.1 imp gal, Reservoir refresh rate 264 imp gals/min. Takes 25hrs to fill.

The Mid-T Water Treatment Plant (WTP) has a backup generator to supply power during short-term outages. The generator also provides power to Well #1, but if power is out when demands are greater than the pumping capacity of Well#1 then source water can be supplied by gravity from the Paradise Lake open water reservoir. The Paradise Reservoir gravity flows to the WTP. The surface reservoirs are only used to supply water during the winter. They can be activated year round, but a sudden activation would cause significant turbidity spikes, and lead to water quality degradation.



Attridge reservoir is the original water storage pond for Silver Star Village built circa 1980. Currently not used for community water supply. Suitable for MK3 pump site to supply water for structure sprinklers for Pinnacles neighbourhood.



6 Summit

Wildfire Protection Area 6 of 6
Located outside of the Silver Star Fire Protection area.

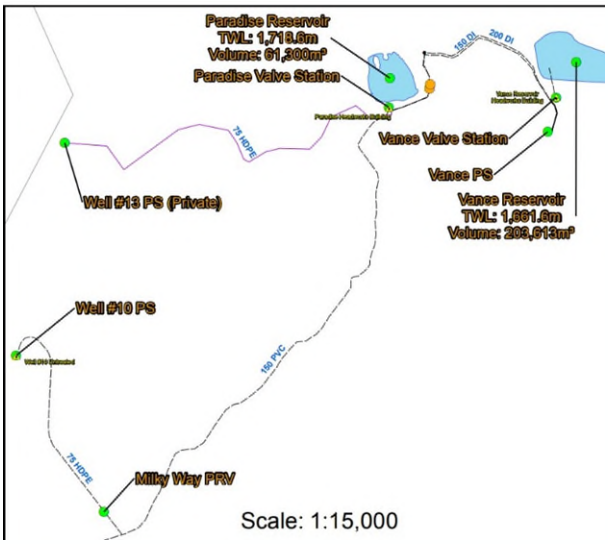
No fire hydrants.
Has Vance and Paradise Reservoirs.

Vance Reservoir

Putnam FSR.
TWL 1,661.6m
Volume 203,613 m^3 (44,788,598 igal) when full.
Requires 3phase power.

Paradise Reservoir

Putnam FSR.
TWL 1,718.6m
Volume 61,300 m^3 (13,484,144 igal) when full.
If power is out when demands are greater than the well capacity the source water can be supplied by gravity from the Paradise Lake open water reservoir.



Outside of Silver Star Fire Protection Area but within the Silver Star Recreation Area and Silver Star Provincial Park are properties that if threatened by wildfire a BC Wildfire Structure Protection Specialist will have them prioritized and triaged for structure protection.

Definitions

Anchor Point: A safe location, such as a river or road, that is a barrier to fire spread and from where crews should start building a fire break or line. Anchor points should prohibit fire from establishing itself on the other side of an unsuspecting crew.

Community: An area or place considered together with its inhabitants, whether the community represents an official jurisdiction.

Drafting: The use of suction to move water from a vessel or body of water below the intake of a suction pump

Drafting Site: An area with water source that is suitable for the access and positioning of firefighting equipment (portable pump, tankers, brush trucks, and/or engines) to engage in drafting.

Escape Routes: Predetermined routes out of the hazard zone that leads back to the safety zone. Crews should always have two escape routes that are marked, walkable, clear of debris, and allow for expedient emergency egress.

Fill Site: A pressurized water source where fire apparatus can fill their tanks without drafting. Examples include hydrants, raised reservoirs, or pumps.

Fire Smart: A national program designed to reduce interface fire risk to communities. In BC, the program is administered by the Ministry of Forests, Lands and Natural Resource Operations Wildfire Management Branch.

Fuel Management: Generally associated with the reduction of surface and ladder fuels through mechanical removal, biological methods, or prescribed burns.

Lookout: Person who has the responsibility of watching fire behaviour and relating the situation to their supervisor. Should be located in an advantageous position for wildfire observation.

Risk Management: The continuous process of identifying, analyzing, and evaluating risks and resources; and weighing these factors against operational objectives. Risk management at WUI events must prioritize the life safety of first responders.

Safety Zone: An area devoid of combustibles and fuels, that provides a separation distance for firefighters and their apparatus that is four times the anticipated flame lengths.

Situational Awareness: The perception of environmental elements with respect to time and/or space, the comprehension of their meaning, and the projection of their status as variables (time, weather, resources, tactics, etc.) change.

Structure Triage: The process of inspecting and classifying structures according to the defensibility or non-defensibility based on numerous factors including the establishment of a safety zone, fire behavior, location, construction, and adjacent fuels.

Threatened Defensible: Structure Triage Category where Safety Zone and TRA are present with adequate water supply with structure defense tactics and conditions supporting firefighters remaining during fire front contact.

Threatened Non-Defensible: Structure Triage Category where Safety Zone or TRA or water supply is inadequate, and structure has challenges that do not allow firefighters to safely commit to stay.

Value: A generalized term used by responding emergency officials to identify structures (private and public) whether commercial, industrial, public infrastructure or residential.

Structure Defense Tactical Actions

Check & Go – Threatened Non-Defensible

Determining factor: Lack of time and inadequate defensible space.

Size up: Structure has significant tactical challenges. (Owners not invested in Fire Smarting the structure).

Tactics: Firefighters not able to commit to stay and protect structure. If time allows, ensure people are not present in the threatened structure (especially children, elderly, and invalid). Set trigger point for safe retreat. Patrol following the passage of the fire front will be needed to protect the structure.

Prep & Go – Threatened Non-Defensible

Determining factor: Time and resources to prepare structure for defense but Safety Zone and TRA are not present for firefighters to remain when fire front arrives.

Size up: Structure has some tactical challenges.

Tactics: Firefighters not able to commit to stay and protect structure. If time allows, rapid mitigation measures may be performed. Set trigger points for safe retreat.

Remember, pre-incident preparation is the responsibility of the homeowner. Patrol following the passage of the fire front will be needed to protect the structure.

Prep & Defend - Threatened Defensible

Determining factor: Adequate time exists to safely prepare structure for defense with Safety Zone and adequate water supply.

Size up: Structure has some tactical challenges.

Tactics: Firefighters needed onsite to implement structure protection tactics during fire front contact.

Standalone – could be Threatened Defensible or Threatened Non-Defensible

Determining factor: Structure and landscaping follow FireSmart guidelines

Size up: Structure has very few tactical challenges. Landscaping has very few tactical challenges.

Tactics: Firefighters may not need to be directly assigned to protect structure as it is not likely to ignite during initial fire front contact. However, no structure in the path of a wildfire is completely without need of protection. Patrol following the passage of the fire front will be needed to protect the structure.

Fire Front Following – used to come in behind the fire front.

Determining factor: A follow-up tactic employed when Check & Go, Prep & Go, or Bump and Run are initially used.

Size up: Come in behind the fire to search for victims, extinguish spot fires around structures, and reduce ember production.

Tactics: Used when insufficient time to safely set up ahead of the fire, or the intensity of the fire could cause injury to personnel located in front of the fire.

Bump & Run – used ahead of the fire to extinguish spot fires and hot spots to defend as many structures as possible.

Determining factor: Early stages of fire when resource commitment is light and structure defense is the priority. With adequate resources it can be used to control or steer the fire to a desired end point.

Size up: Identify and prepare control lines with dozers and fire crews to direct the fire to end point.

Tactics: Resources must remain mobile and must constantly identify Escape Routes to Safety Zones as they move with the fire front.

Anchor & Hold – an attempt to stop fire spread.

Determining factor: Urban neighbourhoods where the proximity of neighbouring homes presents a risk of house-to-house ignition.

Size up: Requires considerable resources, such as engine crews and hand crews.

Tactics: Fixed engines spotted in safe areas where they can safely withstand any fire situation. Mobile engines prepared to re-deploy to other areas if the fire escapes the Anchor & Hold line.

Tactical Patrol - initiated:

During the fire event in neighbourhoods away from the interface where there is predicted ember cast.

After fire front has passed to patrol and extinguish for hot spots and ground fires in proximity to structures.

Determining factor: Quick fire suppression to “Save what you can, and loose what you must”.

Size up: Patrol downwind of potential ember showers. Address safety issues such as power lines, burnt weakened trees, and other hazards.

Tactics: Mobility and continuous monitoring of an assigned area. Extinguish hot spots or secondary structure ignitions.

Structure Defense Plan

When a community or fire protection area is overwhelmed in its ability to defend itself from wildfire, a request for additional firefighting resources may be submitted to the Province via the Office of the Fire Commissioner under an EMBC incident task number or through BCWS under a wildfire incident number. The management of the Provincial resources are detailed in the Inter-Agency Agreement between the Office of the Fire Commissioner, Fire Chiefs Association of BC and BCWS.

The Structure Defense Plan (SDP) that follows was created by a Structure Protection Specialist for this community. The SDP is a foundation of planning for what Fire Defense resources may be required during a wildfire event. During an actual event, the plan will be reviewed with the BCWS Incident Command Team and local authorities to determine what will be requested through the OFC. A general guideline for the number and types of fire apparatus required for an SDP is as follows:

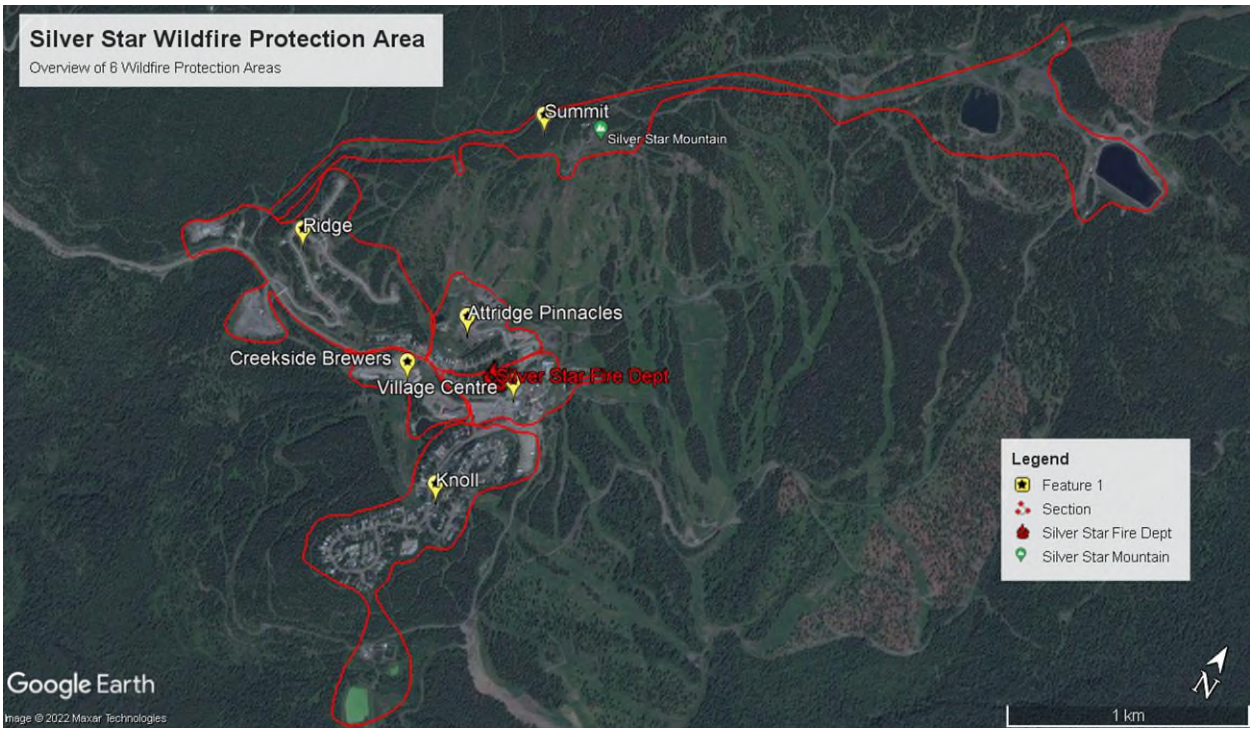
- Type 3 Engine per home within the intermix
- Type 1 Engine per 2-3 homes within the interface when hydrants are present and working
- Type 1 Tender to support 3 water bladders or 2 Engines
- Type 2 Tender to support 2 Engines in areas without hydrants
- Type 4-6 Engines (Bush Truck) as required to support tactical patrols in the Incident Action Plan

With due respect to the general guidelines above, there are several other factors that must be considered when drafting an SDP for an area under threat of wildfire. These factors will vary as much as the communities that require defending. These factors may include but not limited to the following:

- Expected fire behavior and weather forecast.
- Type, volume, distribution, and proximity of natural fuels surrounding the improved areas and local infrastructure.
- Availability of outside resources.
- Access and egress in and around properties in the interface and intermix areas.
- Volume and distribution of properties and improved values in the area.
- Water Sources.
- Availability of Safe Zones.
- Time required to deploy provincial resources.

The Silver Star Structural Defense Plan is divided into 6 Wildfire Protection Areas for purposes of allocating resources to protect structures from a wildfire.

Area Overview



1 Village Centre

2 Knoll

3 Creekside Brewers

4 Ridge

5 Attridge Pinnacles

6 Summit

Forestry cat guard with retardant lines will support the fire dept actions to protect the homes and businesses. With so much forest around homes it is important for residents to clean up dead wood and trim up branches to control ground fires.

If possible, prior to homeowners being evacuated, the structure protection crew should notify residents in person and explain the actions that residents can take prior to evacuating that will help save the home. Distribute Fire Smart material for occupants to focus on Zone 1a. Fuel free the min 1.5m zone around buildings

Please be advised that the structure defense plan below is based on observations and are recommendations only. It is critical for the Structure Protection Specialist to develop his/her own structure protection plan as the fire dynamics might allow for different tactics.

Strategies must reflect a realistic approach taking into consideration the available resources. A strategy will fail if it requires many resources that can not arrive in a timely fashion. Strategy is subject to change due to changes in weather, fire behavior, resources availability, and objectives. Never get locked into a single plan of action.

STRUCTURE DEFENSE PLAN

Date	**June 2022**
Incident name / Number	**Silver Star Fire Protection Area**
EMBC Task #	
Fire Centre	**Kamloops**
GrpS Name, Ph#, email	**Kevin Dalgarno 250-558-8549**
Area / Community	**RDNO Area C, Silver Star, Vernon**

Communications Plan		
Function	**Channel No.**	**Assigned to**
Ground to Ground	**OFC 01**	**Structure Protection**

1SS

Primary Value RES. COM. OTHER	**Location:** **Street / Unit #**	**Intermix/ Interface**	**Triage Category:** **Not Threatened** **Threatened Defensible** **Threatened Non-Defensible**	**Tactical Actions** **Check & Go** **Prep & Go** **Prep & Defend** **Fire Front Following** **Bump & Run** **Anchor & Hold** **Tactical Patrol**	**Resources** **SPC's/ENG** **Ie: 3E = Type 3 Engine** **2T = Type 2 Tender**	**Water Source**	**Comments**
Commercial / Residential Seasonal Recreational	**1 Village Centre** 15 Residential, 19 Commercial, High Voltage-Aerial powerline	Interface/ Intermix	Wildfire risk greatest from embers igniting spot fires. Homes along Silver Lode Ln are Threatened Non-Defensible Commercial hotels and business are Threatened Defensible	Silver Lode Lane (Parking Lot A) has 15 Cabins built amongst the trees. SPC's – Prep & Go followed by Tactical patrol after fire passes ENG – Tactical Patrol prior to fire front arrival. Leave before escape routes compromised ENG – Fire Front Following after the fire passes Commercial properties along Silver Lode Ln, Main St. ENG – Bump & Run during fire front arrival ENG - Anchor & Hold if risk of structure-to-structure ignition ENG/SPC – Tactical patrol after fire front passage	SPC 5 Pack x 1 SPU Type 2 x 1 5E x 2 1E x 4 Aerial Ladder Truck x 2	8 Fire Hydrants Gravity from Mid-T Reservoir Interior sprinklers in businesses. Structural Protection sprinklers run from hydrants	Homes along Silver Lode Ln are set amidst mature forest with access from Parking Lot A. Sprinklers can directly attach to hydrants to conserve pumps and relay tanks for other areas. Businesses in the main village share a common wall. If wildfire catches one on fire the risk of structure-to-structure ignition is high. Aerial Ladder Truck for structures greater than 3 floors will be needed. Maintain escape route to the Parking Lot B in event fire out pace's suppression resources. Water supply and proximity to Safety Zone supports Anchor & Hold.

2SS

Primary Value RES. COM. OTHER	**Location:** **Street / Unit #**	**Intermix/** **Interface**	**Triage Category:** **Not Threatened** **Threatened Defensible** **Threatened Non-Defensible**	**Tactical Actions** **Check & Go** **Prep & Go** **Prep & Defend** **Fire Front Following** **Bump & Run** **Anchor & Hold** **Tactical Patrol**	**Resources** **SPC's/ENG** **Ie: 3E = Type 3 Engine** **2T = Type 2 Tender**	**Water Source**	**Comments**
Residential / Commercial Seasonal Recreational	**2 Knoll** 135 Residential, 5 Commercial	Interface / Intermix	Wildfire risk greatest along the intermix where homes back onto the forest off Monashee Rd. Area is Threatened Non-Defensible	Monashee Rd. neighbourhoods bordering the forest SPC's – Prep & Go followed by Tactical patrol after fire passes ENG – Bump and Run prior to fire front arrival ENG – Fire Front Following after the fire passes ENG - Anchor & Hold if risk of structure-to-structure ignition, withdraw along Escape Route into the Safety Zone.	SPC 5 Pack x 2 SPU Type 1 x 1 2E x 3 5E x 3 2T x 4 2E x 2 1T x 2	13 Fire hydrants. Brewers pond for Structure Protection water source Knoll Hydrants and Tenders to maintain 2,500-gal relay tanks with MK3's running sprinklers Tenders will be required if multiple structure fires on the knoll to support the Hydrant water pressure.	Some homes are surrounded by forest. Sprinklers protect homes along the leading edge. Depending on Rank of fire, Type 2 Engine crew Bump & Run maintaining escape routes to the safety zones. Type 5 Engines patrol dead-end streets with limited turning radius. Brewer's Pond possible BB4 pump site to fill Tenders and or pump site for structure sprinklers. Structural Protection Crew tactic - Prep and Go. Structure Suppression crews support SPC's with labor. When hot fire embers begin to land, the Engines commence tactic - Bump and Run extinguishing spot fires to defend as many structures as possible. Then move into Safety Zone at Parking Lot B. Tactical Patrol after main fire front has passed.

3SS

Primary Value RES. COM. OTHER	**Location: Street / Unit #**	**Intermix/ Interface**	**Triage Category:** **Not Threatened** **Threatened Defensible** **Threatened Non-Defensible**	**Tactical Actions** **Check & Go** **Prep & Go** **Prep & Defend** **Fire Front Following** **Bump & Run** **Anchor & Hold** **Tactical Patrol**	**Resources SPC's/ENG** **Ie: 3E = Type 3 Engine** **2T = Type 2 Tender**	**Water Source**	**Comments**
Commercial / Residential Seasonal Recreational	**3 Creekside Brewers** 0 Residential, 10 Commercial	Interface	Area is Threatened Defensible	Bump & Run to extinguish spot fires Anchor & Hold if structure catches on fire to prevent structure to structure ignition. If fire out paces the ability to control it, withdraw along Escape Route into the Safety Zone. Tactical Patrol after fire front passage for mop up around structures. ENG/SPC – Tactical Patrol after fire front passage.	Creekside 2E x 5 Supported with hydrants Brewers 2E x 2 1T x 2 or pumps from Brewers Pond to porta ponds for Engines to draft from. Inspect roof tops to verify no flammable materials that would require roof top sprinklers	4 Fire hydrants and Brewers Pond.	Coordinate Structure Protection utilizing resources such as cat guard, aerial retardant, and sprinkler wet line between structures and advancing wildfire. Brewers pond with BB4 pumps to support Porta pond for Eng drafting at Fire Light Lodge.

4SS

Primary Value RES. COM. OTHER	**Location: Street / Unit #**	**Intermix/ Interface**	**Triage Category:** **Not Threatened** **Threatened Defensible** **Threatened Non-Defensible**	**Tactical Actions** **Check & Go** **Prep & Go** **Prep & Defend** **Fire Front Following** **Bump & Run** **Anchor & Hold** **Tactical Patrol**	**Resources SPC's/ENG** **Ie: 3E = Type 3 Engine** **2T = Type 2 Tender**	**Water Source**	**Comments**
Residential Seasonal Recreational	**4 Ridge** 56 Residential, 2 Commercial, above ground fuel tanks, shipping containers, mobile equipment, natural gas valve station, high voltage-aerial powerline	Intermix	Area is Threatened Non-Defensible	Purcell and Cathedral Dr. SPC's – Prep & Go followed by Tactical patrol after fire passes ENG – Task Force Bump & Run, leave before escape routes compromised ENG – Fire Front Following after the fire passes ENG - Anchor & Hold if risk of structure-to-structure ignition, withdraw along Escape Route into the Safety Zone. ENG/SPC – Tactical Patrol after fire front passage.	SPC 5 Pack x 2 SPU Type 1 x 1 or SPU Type 2 x 3 1T x 3 2E x 3 with 1T x 2	14 Fire hydrants from gravity reservoir with 56-imp gal/min refresh rate. Tenders will be required to support Str. Protection. Attridge pond for Structure Protection water source for homes closest to Silver Star Rd. Tender support for ENG's and bladders	New neighbouhood with home construction scattered on several streets. Will require more equipment and manpower to protect homes due to separation between homes until the neighbourhood is filled out. The reservoir refresh rate is 56 imp gal/min and requires electricity for booster pump to operate. Use 2,500-gal Relay tanks with MK3's for sprinkler protection. Will need 3 type 1 tenders to shuttle water if the power line is impacted by the wildfire. If a hydrant is installed on the Paradise waterline just before the Water Treatment Plant – it might be the fastest source of water for Tenders to haul water for the Relay tanks. Coordinate Structure Protection utilizing resources such as cat guard, and aerial retardant.

5SS

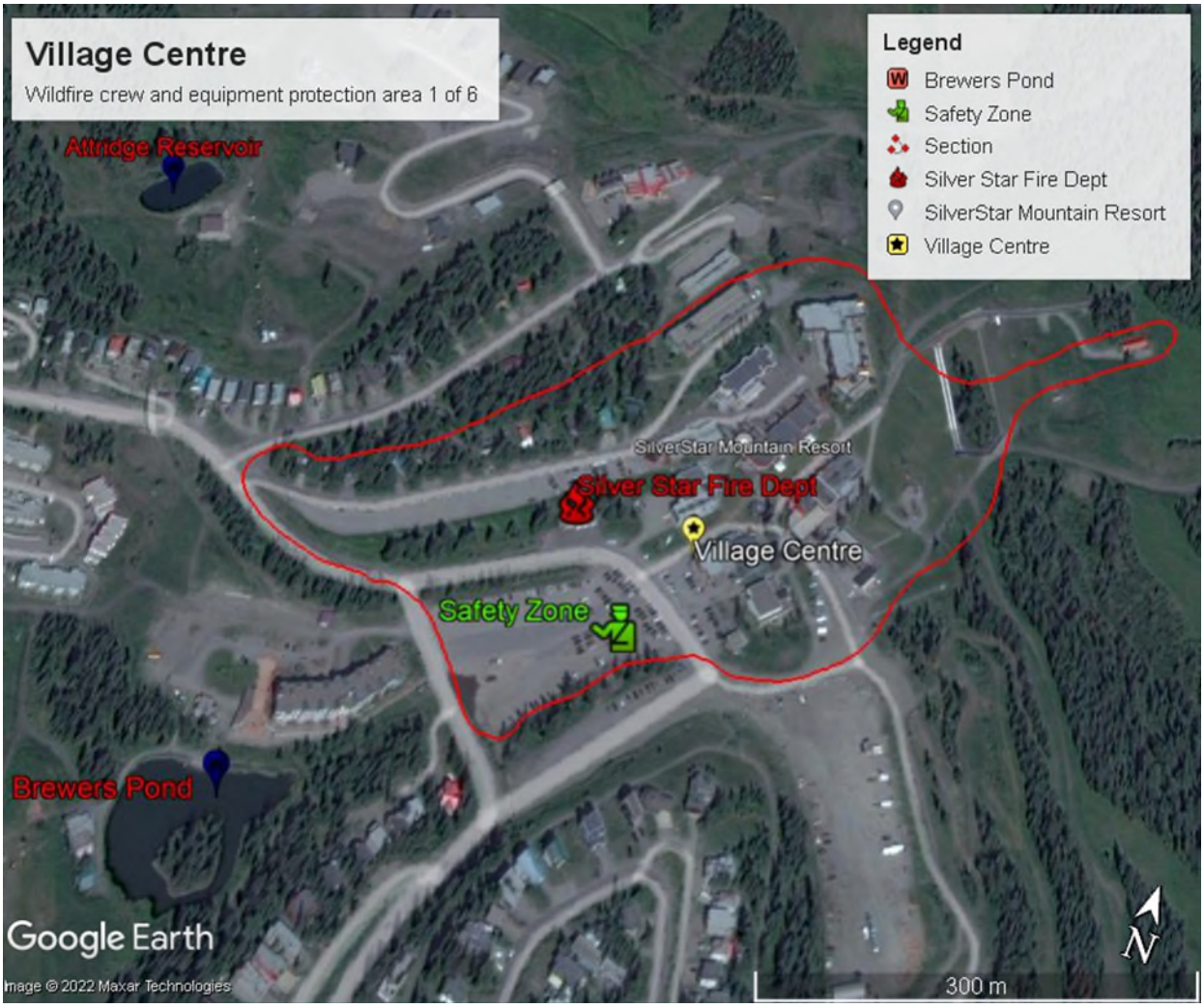
Primary Value RES. COM. OTHER	Location: Street / Unit #	Intermix/ Interface	Triage Category: Not Threatened Threatened Defensible Threatened Non-Defensible	Tactical Actions Check & Go Prep & Go Prep & Defend Fire Front Following Bump & Run Anchor & Hold Tactical Patrol	Resources SPC's/ENG Ie: 3E = Type 3 Engine 2T = Type 2 Tender	Water Source	Comments
Residential / Commercial Seasonal Recreational	**5 Attridge Pinnacles** 62 Residential, 3 Commercial Approx 40 homes are set amidst mature forest along Pinnacles Rd. Approx 20 homes on medium sized residential lots backing onto open ski runs.	Interface / Intermix	Pinnacles Rd area is Threatened Non-Defensible with homes built within the forest Arnica and Monkshood LN area is Threatened Defensible with homes built on a previous open ski run with minimal forest within 30m of structures.	SPC's – Prep & Go followed by Tactical patrol after fire passes ENG – Task Force Bump & Run, leave before escape routes compromised ENG – Fire Front Following after the fire passes ENG - Anchor & Hold if risk of structure-to-structure ignition, withdraw along Escape Route into the Safety Zone. ENG-Tactical Patrol during and after fire event.	SPC 5 Pack x 1 SPU Type 2 x 2 2E x 2 5E x 1	9 Fire hydrants. Attridge pond could support Structure Protection. Alpine Meadows neighbourhood has well-supplied private fire hydrants. The Strata is responsible for maintaining the hydrants. The Water Treatment Plant has backup power via an 81 KW Diesel Generator. 815 L fuel tank. Estimated run time of 32 hours on a full tank. Consumes 25 L/hour at full load.	Coordinate Structure Protection utilizing resources such as cat guard, and aerial retardant. FireSmart Structures with no forest close by could potentially be Standalone and not require the deployment of roof top sprinklers.

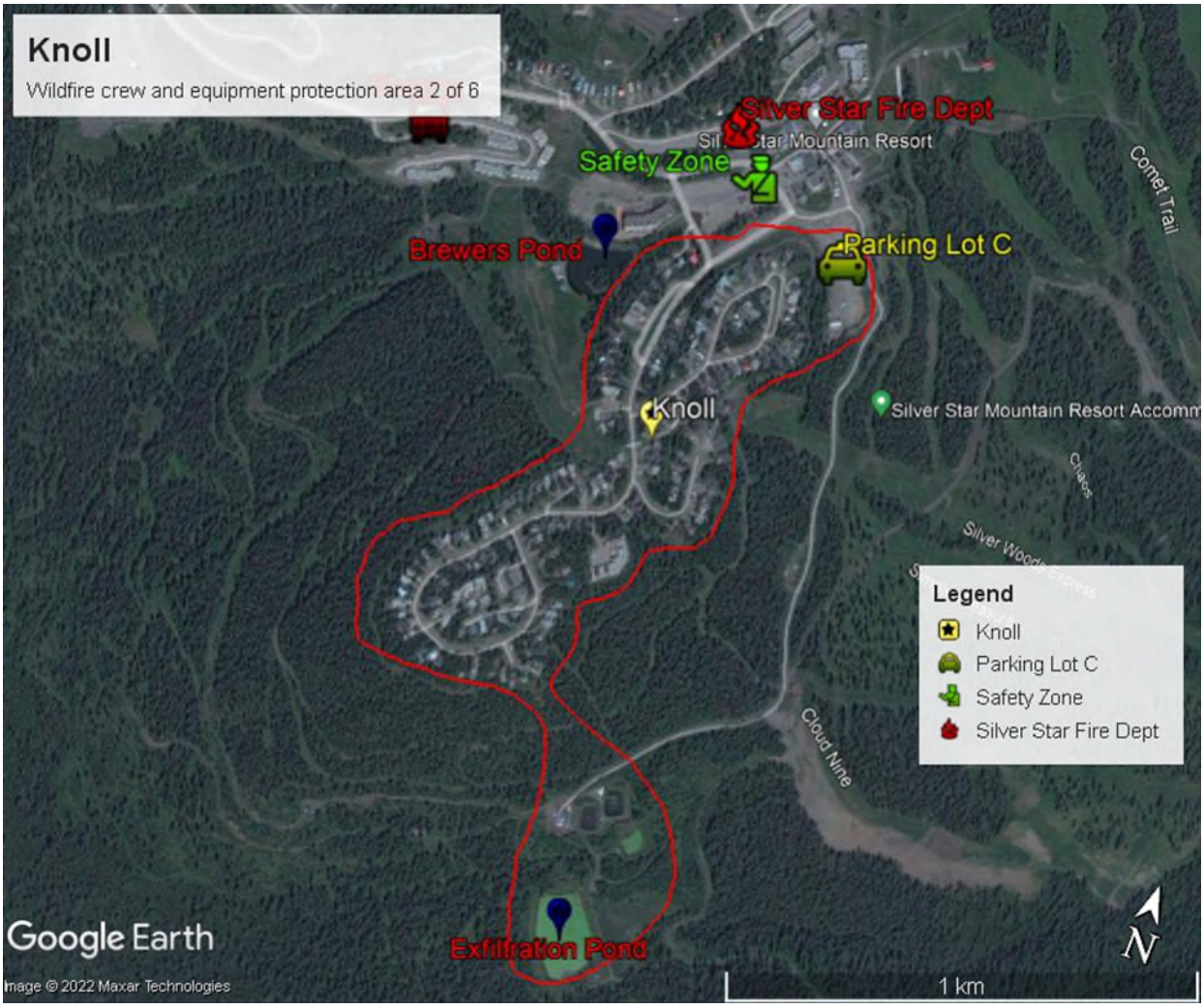
6SS

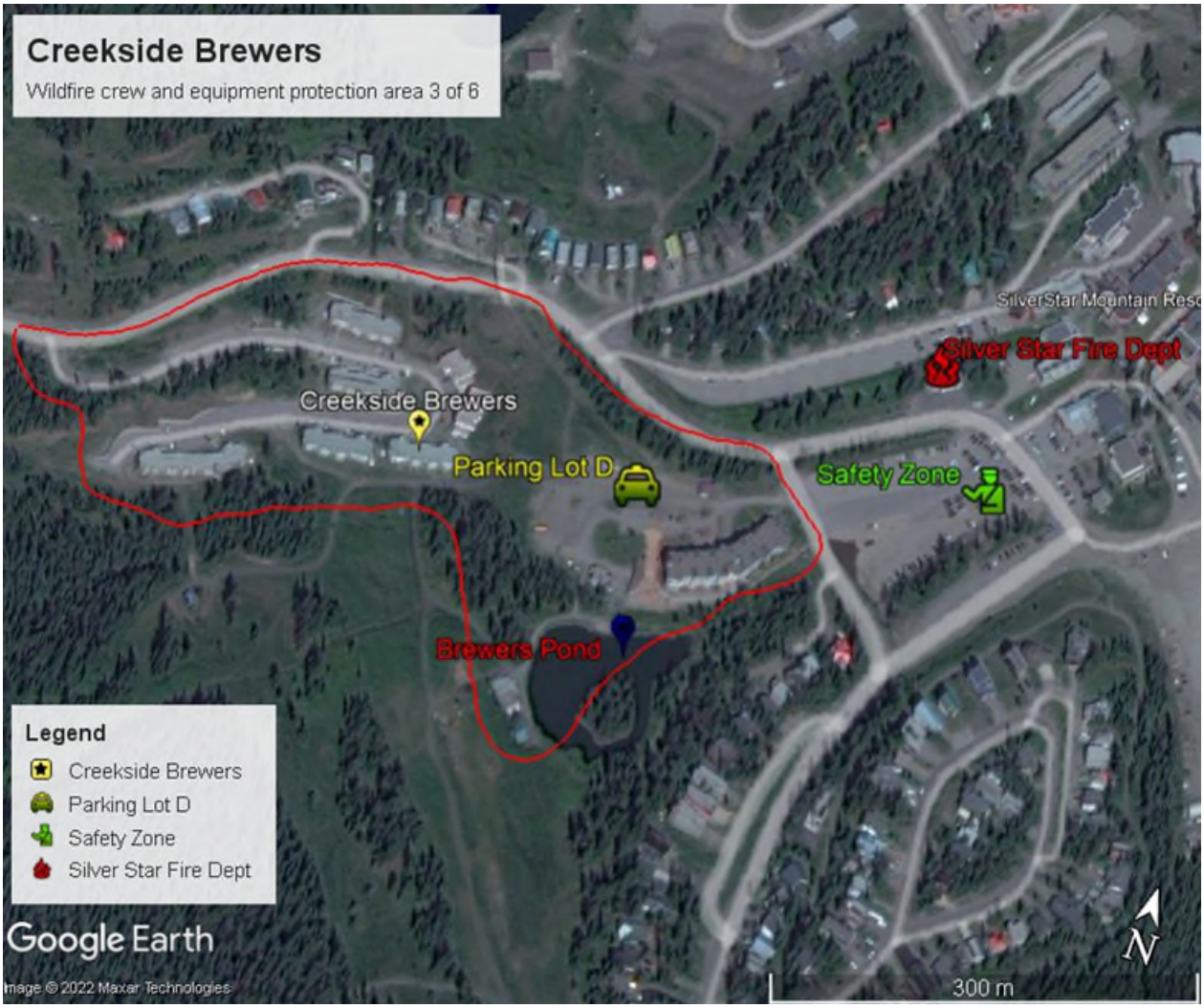
Primary Value RES. COM. OTHER	Location: Street / Unit #	Intermix/ Interface	Triage Category: Not Threatened Threatened Defensible Threatened Non-Defensible	Tactical Actions Check & Go Prep & Go Prep & Defend Fire Front Following Bump & Run Anchor & Hold Tactical Patrol	Resources SPC's/ENG Ie: 3E = Type 3 Engine 2T = Type 2 Tender	Water Source	Comments
Industrial	**6 Summit** 19 Structures not lived in, high voltage-aerial powerline Structures set amidst mature forest. Doplar Radar and communication towers critical infrastructure with limited water source 3km away. Private 3ph Powerline to Vance Reservoir pump house.	Intermix	Area is Threatened Non-Defensible	SPC's – Prep & Go ENG/SPC – Tactical Patrol after fire front passage for mop up around structures	SPC 5 Pack x 1 SPU Type 2 x 2 2T x 2 SPC 5 pack x 1 5E x 2 with 2T x 1 DTA/DTF, Powerline Rep	Paradise and Vance Reservoirs Possibly Well # 13	Coordinate Structure Protection utilizing resources such as cat guard, and aerial retardant. 3ph Powerline should be assessed. Consider grubbing around poles and applying fire retardant from ground up to 4m. Communication towers and associated buildings don't have an adequate supply of water to run sprinklers due to the time to get to the Safety Zone. If sufficient time, might be able to set up tank farm near Summit and haul water. Need to leave before escape routes compromised Return after fire will require Powerline Rep to verify safe to work in proximity to fire damaged private powerline, DTA, and DTF.

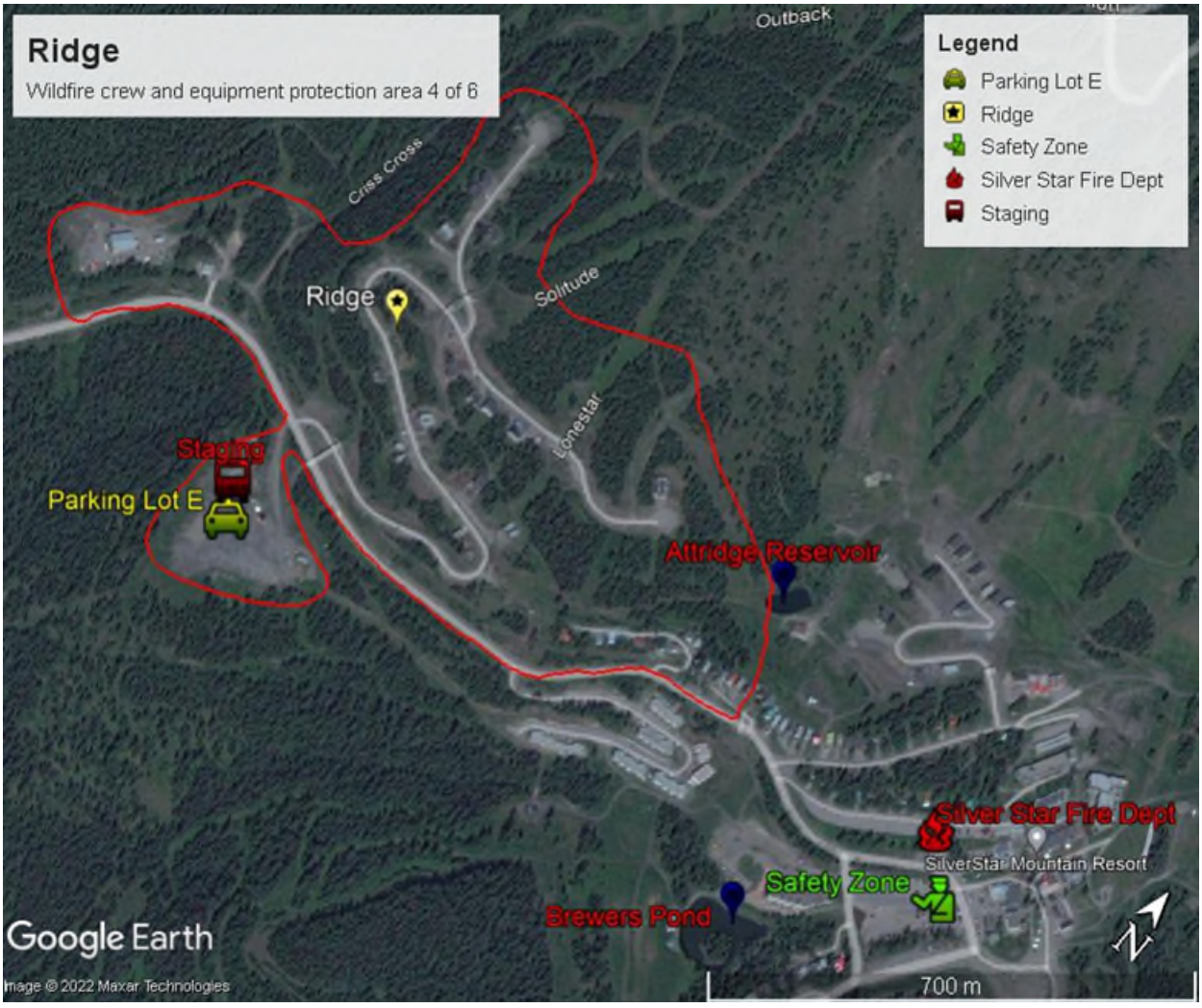
Date: June, 2022 Evaluator(s): Dalgarno

Maps of Each Wildfire Protection Area for Silver Star Mountain

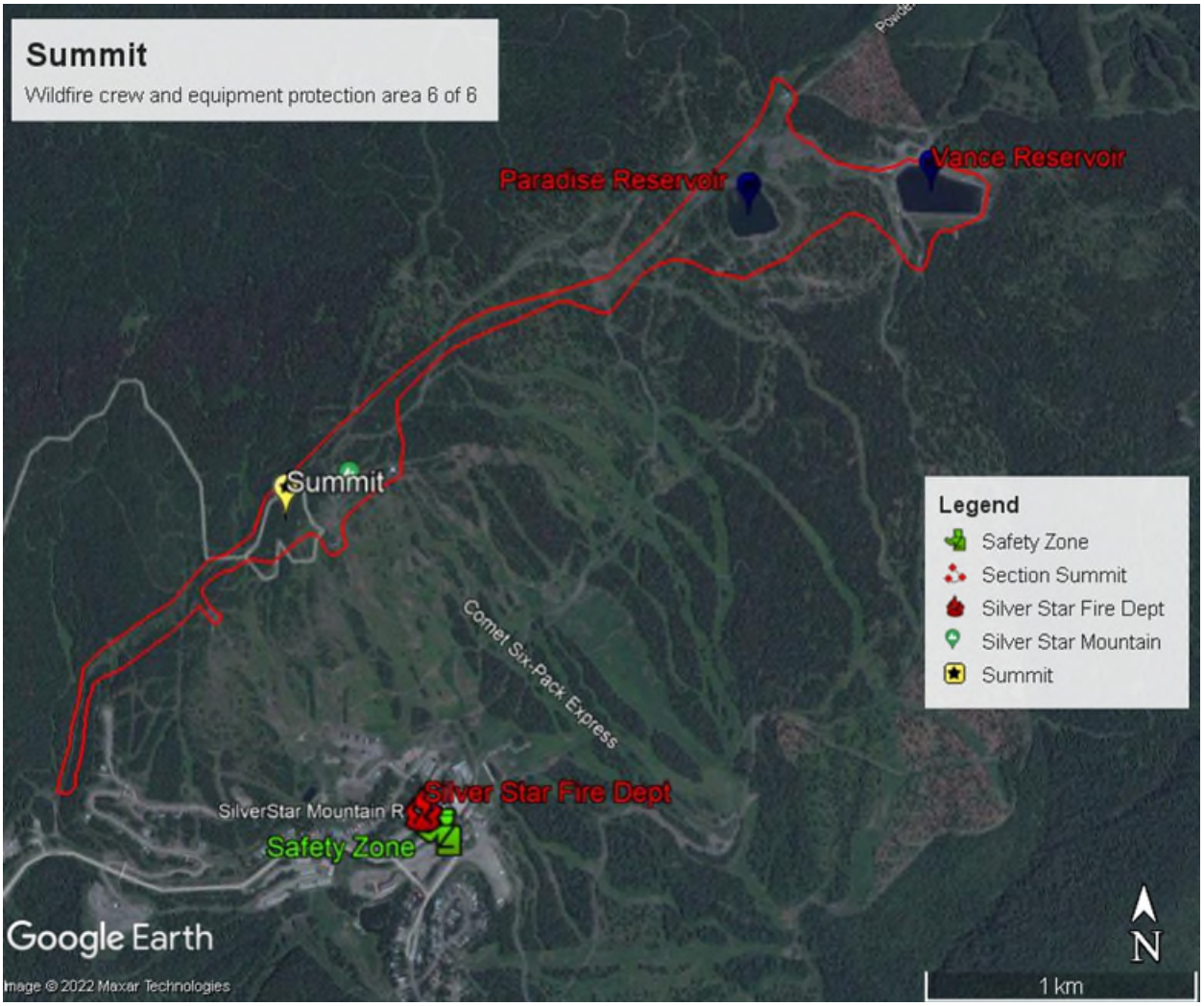



Knoll
Wildfire crew and equipment protection area 2 of 6
Silver Star Fire Dept
Safety Zone
Brewers Pond
Parking Lot C
Comet Trail
Knoll
Silver Star Mountain Resort Accomm
Legend
Knoll
Parking Lot C
Safety Zone
Silver Star Fire Dept
Cloud Nine
Exfiltration Pond
Google Earth
Image © 2022 Maxar Technologies
1 km
N


Creekside Brewers
Wildfire crew and equipment protection area 3 of 6
SilverStar Mountain Resc
Silver Star Fire Dept
Creekside Brewers
Parking Lot D
Safety Zone
Brewers Pond
Legend
Creekside Brewers
Parking Lot D
Safety Zone
Silver Star Fire Dept
Google Earth
Image © 2022 Maxar Technologies
300 m
N


Ridge
Wildfire crew and equipment protection area 4 of 6
Legend
Parking Lot E
Ridge
Safety Zone
Silver Star Fire Dept
Staging
Outback
Criss Cross
Ridge
Solitude
Lonestar
Staging
Parking Lot E
Attridge Reservoir
Silver Star Fire Dept
SilverStar Mountain Resort
Safety Zone
Brewers Pond
Google Earth
Image © 2022 Maxar Technologies
700 m


Attridge Pinnacles
Wildfire crew and equipment protection area 5 of 6
Legend
Attridge Pinnacles
Parking Lot A
Safety Zone
Section Attridge Pinnacles
Silver Star Fire Dept
Attridge Reservoir
Attridge Pinnacles
Parking Lot A
Silver Star Fire Dept
SilverStar Mountain Resort
Safety Zone
Google Earth
Image © 2022 Maxar Technologies
300 m


Summit
Wildfire crew and equipment protection area 6 of 6
Paradise Reservoir
Vance Reservoir
Summit
Comet Six-Pack Express
Silver Star Fire Dept
SilverStar Mountain R
Safety Zone
Legend
Safety Zone
Section Summit
Silver Star Fire Dept
Silver Star Mountain
Summit
Google Earth
Image © 2022 Maxar Technologies
N
1 km