

Little Sandcreek Watershed Management Plan

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Definitions

401 Certification: Certification issued by the state of Idaho when a federally issued permit has the potential to impact an individual states water quality. States can require additional BMPs to ensure activities permitted under the federal authorization do not have an adverse effect on water quality.

404 Permit: Joint permit authorization issued by the US Army Corps of Engineers and State Land Authority to regulate the fill and removal of material from below the ordinary high-water elevation of waterways.

BLM: Bureau of Land Management

BMP: Best Management Practices, typically referring to standardized methods which protect water quality from activities which have the potential to create and discharge pollutants.

CGP: Construction General Permit, EPA's construction stormwater permit required for projects which disturb one or more acres of soil.

EMS: Emergency Medical Services

EPA: Environmental Protection Agency

IDEQ: Idaho Department of Environmental Quality.

IDFG: Idaho Department of Fish and Game

IDL: Idaho Department of Lands

IHD: Independent Highway District

IMBA: International Mountain Bicycling Association

ISPWC: Idaho Standards for Public Works Construction

ITD: Idaho Transportation Department

LSC: Little Sand Creek

NPS: National Park Service

NWI: National Wetland Index, national interactive Webmap showing identified wetlands.

SLOPES: Standard Local Operating Procedures, Programmatic Biological Opinion regulating certain common construction activities that affect federally threatened and endangered species.

USACE: US Army Corps of Engineers

USFS: United States Forest Service

USFWS: US Fish and Wildlife Service

WTP: Water Treatment Plant

1. Introduction

The Little Sand Creek (LSC) Watershed ("Watershed") consists of the basin located northwest of Sandpoint and Lake Pend Oreille in Bonner County Idaho and between Bald Mountain (to the south) and Schweitzer Mountain (to the north). The basin drains to LSC, which is a tributary to Sand Creek, which then empties into Lake Pend Oreille, near the Sandpoint City Beach Park. The Watershed for the purposes of this plan includes all the drainage area above the City of Sandpoint's Drinking Water Treatment Plant, which lies 0.83 miles up (west) Schweitzer Mountain road from the intersection with N Boyer Rd. Schweitzer Mountain road is the main access point for the Watershed and travels west to the approximate mid-point, then north before leaving the Watershed near the entrance to the Schweitzer Mountain Resort.

The purpose of this Watershed Management Plan is to:

- A. document existing conditions;
- B. establish and document goals associated with ownership and use of the land;
- C. define actions for implementing the goals; and
- D. provide best management practices for various activities within the Watershed.

This document incorporates by appendices and references multiple other planning documents, standards, guidelines, and practices, and serves as the overarching (umbrella) for all related and applicable strategies associated with managing the Watershed. As further clarified herein, this Plan is only applicable to those portions of land within the Watershed that are owned by the City of Sandpoint.

The Watershed land use and population is composed of timber lands and has no residential uses (above WTP). Land ownership within the Watershed includes City owned property, State lands, Bureau of Land Management (BLM), U.S. Forest Service (USFS), Schweitzer Mountain, and other private entities. Near the base of the Watershed, the reservoir and drinking water treatment plant on Little Sand Creek serves the City of Sandpoint. Other Watershed uses consist of a main transportation corridor for Schweitzer Mountain Resort, a utility corridor connecting power, natural gas, and telecom from the valley to Schweitzer, and recreational mountain biking, hiking, and skiing. The hydrology of the Watershed encompasses Little Sand Creek, its tributaries and associated seeps and wetland conveyed through natural channels and courses down to the drinking water treatment plant reservoir. Waterways cross under Schweitzer Mountain Road and other forest roads through a system of culverts and bridges maintained by the various landowners. Access to most areas of the Watershed is owned by the City of Sandpoint. Timber resources are managed by each property owner. Fire management is primarily overseen by the Idaho Department of Lands (IDL). The Watershed provides many natural resources and is home to a wide array of wildlife. Finally, the Watershed is being used as a recreational area for the public.

The City of Sandpoint is a significant landowner in the Watershed with an ownership encompassing about 53 percent of the area. The Watershed is critical to the well-being of the public as one of the community's primary drinking water sources. The Watershed also provides natural resources (i.e., timber for the City of Sandpoint, State, Federal, and Private Landowners) and potential recreational opportunities for the public including biking, hiking, and more.

This Watershed management plan is the 4th edition of formal Watershed planning efforts by the City of Sandpoint and serves to supplement City Code Title 7, Chapter 16. The overall goal of the management effort continues to be the long-term environmental stewardship focused on water quality as mandated by the City Code chapter 7-16-1 – Watershed Protection and Access, which directs the City’s vision to “promote the health, welfare and safety of the City’s drinking water source, Little Sand Creek, and the water users served by it by maintaining and protecting the City’s Watershed and waterworks from damage, harm or injury, and preventing pollution of the City’s water supply, without creating an undue hardship on authorized activities that provide a public benefit.” Consistent with previous management plans, this document is intended to be dynamic and will require periodic updates as conditions and land uses within the Watershed change.

The various interdisciplinary plans that are attached in the appendices to this management document are meant to inform specific policies and procedures for various Watershed activities that are currently allowed and to provide new procedures for additional activities within the Watershed, on City owned lands. The attached supplementary plans include:

- DEQ Source Water Protection Plan (Appendix B)
- 2019 LSC Timber Management plan (Appendix D)
- Recreation Master Plan (Pending) (Appendix F)
- [Idaho Forestry Best Management Practices Field Guide](#)
- [USFS 2015 Idaho Panhandle Forest Plan](#)
- [BLM Coeur d’Alene Resource Management Plan](#)

1.1. Watershed Management Goals and Objectives

The most important function of the Little Sand Creek Watershed is to serve as a municipal, drinking water source. Consequently, the management plan has been developed with the focus on protecting this use. All other goals, while generally compatible, remain secondary to this overriding goal. The following goals are achieved by the specific objectives and further defined by the correlating actions listed within each section of this management plan.

- 1.1.1. **Primary Goal:** To protect or enhance the quality of water generated by the Little Sand Creek Watershed and to insure an adequate and continuous supply of water, in perpetuity. This goal will be achieved by the following objectives:
 1. Control and manage as much of the Little Sand Creek Watershed, as possible;
 2. Protect soils from erosion, contamination, or other damage so water quality can be maintained or improved;
 3. Prevent pollution;
 4. Reduce the hazard of catastrophic wildfires and increasing fire protection;
 5. Maximize the overall forest health and environmental stewardship;
 6. Regulate activities within the Watershed to minimize human-caused risks.
- 1.1.2. **Secondary Goals:** To provide opportunities for compatible uses of the land that are in the public’s best interest and benefit.
 1. Enhance wildlife, fisheries, and aesthetic values wherever possible;
 2. Engage the community in planning uses and activities within the Watershed in a comprehensive and thoughtful manner;

3. Administer a formal permit process to enable requests for various uses, including but not limited to recreation, education, and special events.

1.2. History

The City of Sandpoint acquired the Watershed property through numerous transactions beginning in 1918. The original land base was purchased in that year from Sandpoint Water & Light Company. Additional property was purchased after that date from many sources, including the Druid Investment Company and Palmer Brothers.

In the early 1980's, a concerted effort was made by Mayor Sally Cupan to acquire Bureau of Land Management (BLM) property in the Watershed from the federal government. This effort was abandoned after many letters and other contacts with agency and congressional officials proved fruitless.

In 1988, a major land exchange was arranged between the City and Pack River Management Company. This exchange involved a trade of approximately 840 acres of City-owned land in the Schweitzer Creek drainage (portions of Sections 28 and 22, T58N, R2W, B.M.) for approximately 1200 acres of Pack River Management Company in the Little Sand Creek drainage (Section 31, T58N, R2W, B.M. and portions of Sections 1 and 6, T57N, R2W, B.M.). Much of the Pack River land had been aggressively logged prior to City acquisition. Through this exchange, the City gained direct control over a sizable land base located in the heart of the Watershed.

In 1991, the City of Sandpoint traded 37,000 cubic yards of gravel from its Watershed gravel pit to Pack River Management Company for an additional 40 acres in the Watershed (NWSW, Section 33, T58N, R2W, B.M.). This 40-acre parcel was heavily logged in the late 1980's. Also, in the early 1990's the City acquired an additional 100 acres in Section 33 from Pack River in exchange for rights-of-way involving a natural gas line and an expanded power transmission line.

Many natural catastrophes have impacted the Watershed over the years. The two most significant events involved a large wildfire in the late 1950's and a "rain-on-snow" event that washed out significant portions of the Schweitzer Mountain Road in 1991.

In the 1960's, a primary road was completed through the Watershed to access the newly created Schweitzer Basin Ski Area. In 1966, the Bonner County Board of Commissioners passed Resolution 107181 declaring the road to be a Public Highway.

An original management plan was developed in 1992 by Inland Forest Management, Inc. (IFM), with subsequent updates in 2007 and 2019. This plan recommended implementing an integrated resource management approach focused primarily on maintaining high water quality and enhancing forest productivity. Specific steps were outlined to achieve this goal including converting stagnant hemlock stands into vigorous forests of more resilient species, thinning overstocked stands, protecting vegetation in stream protection zones, and minimizing cumulative effects and impacts to water quality and other resources.

Through the late 1980's and early 1990's, an effort was made to develop a *Little Sand Creek Municipal Watershed Plan Agreement* that would be accepted by all significant landowners within the Watershed. City Council approved the agreement by resolution (47-91) and until adoption of this plan, it served as

the primary basis for management of the Watershed, along with subsequent timber management plans, as recently adopted as 2019. The agreement initiated protection efforts, providing locked access gates and signage.

In February of 2015, the City provided its first formal support for recreation in the Watershed by resolution (15-16), envisioning a “Watershed Crest Trail” that would wrap around the Watershed, connecting the Schweitzer recreation area, Baldy Mountain, and Mickinnick to the east, totaling approximately 20 miles.

Over many years, various, unauthorized trails have been constructed through the Watershed and remain today with heavy use between June and October. Multiple timber harvesting efforts have occurred over several years, as further described by appendix. In 2017, the City entered into an agreement with the Pend Oreille Peddlers to maintain the existing trails. In 2019, the City authorized the installation of a fiber optic utility through the Watershed to provide connectivity to Schweitzer Mountain Village/Resort.

2. Population, Landform, and Land Use

The City’s intake and water treatment facility is located adjacent to the Schweitzer Mountain Road, about 0.83 miles up (west) Schweitzer Mountain road from the intersection with N Boyer Rd. A 1.3-million-gallon storage dam and an intake reservoir are located about one-half mile upstream from the treatment facility. In addition, the Schweitzer Mountain Fire Station and a horse barn are located on the Watershed perimeter near the ski village. The Watershed has no residential population above the treatment works reservoir (half a dozen residential properties are present at the mouth of the valley below the treatment works). However, the Watershed does serve the area around of Sandpoint (approx. 13,000 connections) as a primary source of quality drinking water.

A significant portion of the Watershed is very steep, but gentle slopes occur in some areas. Elevation on the City property ranges from approximately 2,320 feet at the lowest point on the eastern boundary to 6,193 feet at the top of Bald Mountain on the western boundary. Most of the property lies between 3,500 to 4,500 feet. It is important to note that land within this elevation range is very prone to “rain on snow” events, which can cause significantly increased water turbidity. The lower elevations occur mostly in the eastern portion of the Watershed, with the highest elevations found mainly on the western side and around the perimeter of the Watershed.

2.1. Watershed Ownership

The Little Sand Creek Watershed is approximately 7,400 acres in Townships 57 and 58 North, Ranges 2 and 3 West. Ownership within the Watershed is both public and private with the City being the majority holder. The primary uses of the Watershed include municipal water source, commercial timber, and recreation. The total Watershed acreage (above the treatment works) is currently thought to be 7,413 acres, with 3,921 acres under City Ownership. Other owners within the Watershed include Bureau of Land Management, State of Idaho, Schweitzer Mountain Facilities, US Forest Service, and other private parties. The Table below details property ownership within the Watershed. Legal descriptions of all City parcels and maps of the Little Sand Creek Watershed and City of Sandpoint property boundaries are have been included in a live Watershed Webmap tool linked here:

<https://sandpoint.maps.arcgis.com/apps/webappviewer/index.html?id=a08c67b9e0b4438791bfac770f696697>.

Table 1. Little Sand Creek Ownership

Property Owner	Acres	% of Watershed
<i>City of Sandpoint</i>	3,921	52.5
<i>Bureau of Land Management</i>	1,576	21.0
<i>State of Idaho</i>	670	9.0
<i>Schweitzer Mountain Facilities LLC</i>	657	9.0
<i>US Forest Service</i>	275	4.0
<i>Schweitzer Mountain Real Estate</i>	190	2.8
<i>TT LLC (Bruce Anderson)</i>	80	1.1
<i>Patriot Investments, Inc.</i>	30	0.4
<i>Others (less than 20 acres)</i>	14	0.2
<i>Total</i>	7,413	100

Although the City owns a sizable portion of the Watershed, significant acreage is controlled by entities that operate under ownership goals that may not match the best interests of Sandpoint’s drinking water

source. With this point in mind, it is clearly in the City's best interest to own and control as much land within the Watershed as possible. At a minimum, it is in the City's best interest to negotiate memorandums of understanding with these other entities and continue to look for opportunities to trade or buy land within the basin. This increased-city-ownership objective is also identified in the Drinking Source Water Protection Plan (SWPP) that was prepared for the City by the State of Idaho Department of Environmental Quality. The protection plan supplements this document and further details current conditions and future risks of the Watershed and provides recommendations to minimize hazards, including a specific recommendation to acquire additional land in the Watershed. Another option for Watershed ownership is to have a federal agency acquire (through a land exchange) property owned by the State of Idaho or Schweitzer Mountain, LLCs. Ownership of these parcels by a federal agency, such as the BLM, would allow more focus on overall Watershed protection.

2.2. Property Boundaries and Markers

Established boundary lines and section corner markers have been found for a portion of the City property, but boundaries and corners have not been delineated for many areas. Details for various property boundaries and legal survey corners are provided on the Watershed Webmap.

It is highly desirable to establish City property corners in areas where active forest management is anticipated. It is recommended that this survey work be pursued as funds allow and that cost-sharing agreements with adjacent landowners be considered.

2.3. Aesthetics

Predominantly, timber harvests that occur adjacent to the Schweitzer Mountain Road, or are visible from the road, necessitate remediation to "soften" the visual effect of the treatment. This road is heavily used by a wide range of individuals and plays an important role in the image portrayed by the community and the forest products industry.

In addition, the City owns a 110-acre, multi-use (including a rifle range) parcel on Baldy Mountain Road. Forest management activities within this area need to maintain thick forest buffers near the rifle range (sound and visuals) and aesthetic impacts should be given heavy consideration for the forested area along Baldy Mountain Road.

2.4. Action Items

- Negotiate land management memorandums of understanding with other Watershed landowners (Primary Goal).
- Pursue ongoing acquisition of property within the Watershed (Primary Goal).
- Establish property corners in future management areas (Primary Goal).

3. Soils

According to the Soil Survey of Bonner County Area, Idaho, there are 13 soil types located on City of Sandpoint property within the Little Sand Creek Watershed. All of these soils have a granitic component and the majority formed in glacial till from granite, gneiss, and schist material. All but two are described as having a mantle (top layer) of volcanic ash and loess.

Maps of the soil types and tables listing the soil types (with their corresponding map unit number) and general soil characteristics for each type are included in Appendix A.

Woodland soil productivity and soil erosion hazards are discussed in more detail and illustrated in the 2019 Timber Management Plan included as Appendix D to this document.

4. Fish, Wildlife, and Plants

Although fish, wildlife, and plant habitat management is a byproduct of maintaining buffers and wetland areas. Vice versa, minimizing negative impacts on fish, wildlife, and plant habitats will often result in the protection of water quality. Potential improvements to habitat attributes, particularly with respect to fish habitats and wetlands often assists in achieving the main goal of protecting the Watersheds water quality. It is particularly critical to consider impacts to those species listed as threatened, endangered or sensitive by federal or state agencies.

4.1. Fish

Little Sand Creek and its tributaries provide excellent fish habitat for *West Slope Cutthroat Trout*, *Rainbow Trout*, *Brook Trout*, and *Bull Trout* (among other resident minnow species). The USFWS lists upper reaches of LSC as cold-water natal habitat for Bull Trout (Young, et al., 2020) (Inland Forest Management, Inc., 2007), this is of particular importance as Bull Trout are listed as a threatened species. Little Sand Creek falls within the Columbia Headwater recovery unit for Bull trout and though Little Sand Creek is not yet listed as critical habitat for Bull trout it is in close proximity to critical habitat (USFWS, 2010). The Clark Fork River basin is listed as Critical Habitat unit #31. The Clark Fork River Basin includes Lake Pend Oreille, the receiving body for Sand Creek. If Bull Trout are present within LSC any activities within the Watershed should consider potential impacts to bull trout. Those activities utilizing federal funding or that require federal permitting (EPA Construction Stormwater & USACE S404) will be required comply with the terms and conditions (BMPs) of a programmatic or individual biological opinion in order to carry out the project. This plan recommends determining the presence or absence of Bull Trout and if presence is positive that USFWS Standard Local Operating Procedures (SLOPES) for Bull Trout be followed when working around streams within the Watershed regardless of the federal nexus. Compliance with these BMPs will ensure protection of other trout species as well. The following table describes fish species within the Watershed.

Table 2. Little Sand Creek Salmonid Fish Species

Species	Status	Critical Habitat Present
Bull Trout (<i>Salvelinus confluentus</i>)	Native Resident - Threatened	No
West Slope Cutthroat Trout (<i>Oncorhynchus clarki lewisi</i>)	Native Resident	NA
Rainbow Trout (<i>Oncorhynchus mykiss</i>)	Native Resident	NA
Brook Trout (<i>Salvelinus fontinalis</i>)	Planted Exotic	NA

4.2. Wildlife

Deer, elk, and moose are the most prevalent big game species in the Watershed. Bald eagle, Black bear, coyote, various owls, and woodpeckers (including black-backed woodpeckers) are also known to occur. Four ESA listed species of wildlife could potentially be found within the Watershed: Grizzly bear, Woodland caribou, Canada lynx, and Gray wolf. The following provides a brief description of the sensitive species within the Watershed.

Although the *Bald Eagle (Haliaeetus leucocephalus)* are no longer listed as an endangered species they are still protected by the Bald and Golden Eagle protection act. A bald eagle nest, which was known to be active in the fall of 2006, is located at the second switchback on the Schweitzer Mountain Road. The nest tree and surrounding forest canopy needs to be protected and disturbance must be minimized during the nesting season (April through September) when the birds are present. Minimal timber harvest should occur within one quarter mile of the nest. All harvest activities in the vicinity of the nest should take place during the fall and winter when eagles are not present. For purposes of this plan, "high noise" is defined as sound pressure levels greater than 10 dBA above the ambient as measured by the L_{AFmax} and L_{AFeq} at sensitive habitat as shown: Blasting and high noise producing activities are allowed only between September 1 and October 31.



All delineated *Grizzly bear (Ursus arctos horribilis)* habitat management units in the Selkirk Mountains are located north and west of the Little Sand Creek Watershed. Although no designated habitat occurs within the Watershed, there is potential for grizzly bears to inhabit or travel through the area on occasion. Special habitat components that are important to grizzly bears are present in the Watershed, including mountainsides with huckleberries and other berry producing bushes (summer and fall habitat) and lowland habitat containing sedges and other succulent vegetation (spring habitat). It is very important to minimize bear/human interactions, because bears that become accustomed to humans often end up having to be destroyed. Minimizing human influence (pack it in pack it out) and maintaining the natural vegetation to protect the Watershed should provide sufficient habitat protection for grizzly bears.



Like grizzly bears, all designated *Woodland caribou (Rangifer tarandus caribou)* habitat is located north and west of the Watershed. It is possible, especially in high-elevation areas, for caribou to inhabit or travel through the Watershed; however, it is not considered likely since their range occurs well to the north of Indian Creek in Boundary County. Management activities that protect water quality will be sufficient to address caribou in the Watershed.



Although no evidence of their presence was found during field inspections, *Lynx (Lynx canadensis)* and *Gray wolves (Canis lupus)* may inhabit or pass through the Watershed. Habitat quality for both gray wolf and lynx is determined by the quality of prey habitat. Lynx may be present, especially where pockets of dense, small saplings provide habitat for snowshoe hares, the Lynx's primary prey species. Deer, elk, and moose are the primary prey species for wolves. In general, management activities that protect water quality (particularly erosion control and fire protection) will protect or enhance lynx and gray wolf habitat. Over

time, periodic timber harvests and other activities that bring portions of the forest back to an earlier seral stage will enhance big game and hare habitat, thus enhancing lynx and wolf habitat.



The following species were observed at close proximity during the survey of June 2020. Deer and Elk were observed at the upper ends of road 4000-.1.4. A moose was observed crossing the 4000 mainline at approximately MP 1.0 close to riparian wetlands of LSC. A cougar was observed stocking the surveyor at very close proximity on the 797-1.6A road at the 6th culvert crossing. Many grouse were observed throughout the Watershed.

Table 3. LSC Watershed Wildlife

Species
Deer (<i>Cervidae</i>)
Elk (<i>Cervus canadensis</i>)
Moose (<i>Alces alces</i>)
Black bear (<i>Ursus americanus</i>)
Coyote (<i>Canis latrans</i>)
Owls (<i>Strigiformes</i>)
Woodpeckers (<i>Picidae</i>)
Striped Skunk (<i>Mephitis mephitis</i>)
Gray Squiriall (<i>Sciurus carolinensis</i>)
Chipmunk (<i>Tamias</i>)
Turkey (<i>Meleagris</i>)
Red-tailed hawk (<i>Buteo jamaicensis</i>)
Common Garter Snake (<i>Thamnophis sirtalis</i>)
Coopers Hawk (<i>Accipiter cooperii</i>)
Golden Eagle (<i>Aquila chrysaetos</i>)
Stellar's Jay (<i>Cyanocitta stelleri</i>)
Ruffed Grouse (<i>Bonasa umbellus</i>)
Spruce Grouse (<i>Falcapennis canadensis</i>)
Various Songbirds (<i>Passeri</i>)
Cougar (<i>Puma concolor</i>)
Bobcat (<i>Lynx rufus</i>)
Porcupine (<i>Erethizon dorsatum</i>)
Racoon (<i>Procyon lotor</i>)
Raven (<i>Corvus corax</i>)
Bats (<i>Chiroptera</i>)
Wolverine (<i>Gulo gulo luscus</i>)



Active Bird Nesting



Evidence of Moose Predation

Big game habitat quality is determined by forage quantity and quality, water availability, thermal cover (protection from weather) and hiding cover (protection from predators). The amount and quality of these elements determine the number and diversity of animals the area can support. Big game range

maps can be viewed on the Watershed web map. The best forage is generally found where openings in the forest allow enough sunlight to encourage the growth of brush and grass. Solid canopies of tree branches growing close to the ground provide thermal cover by shading the ground, trapping cool air in the summer, and keeping deep snow from accumulating in winter. A variety of different sized trees and clumps of tall brush provides excellent hiding cover. A wide variety of ages class and landscape diversity is recommended.

Snags (standing, dead trees) are a key habitat component for woodpeckers, which may play an important forest health role by helping to keep bark beetle populations in check. Many other kinds of wildlife also benefit from the insects that inhabit snags. At least 56 vertebrate species are known to inhabit snags in North Idaho. Cavities created by woodpeckers are often used later by so-called secondary cavity-nesters, who cannot excavate cavities for themselves. Two to three snags per acre are the minimum number needed to sustain healthy woodpecker populations. Large snags (greater than 14 inches in diameter) are particularly important, so large snags should be left whenever possible. It is also important to preserve a few “reserve trees” for future replacement of existing snags.



Downed, woody debris is another important habitat component used by a wide variety of wildlife for food, cover, and reproduction. Ruffed grouse, for example, prefer to stand on a downed log or tree when "drumming" (produced by rapidly moving its wings) during its mating ritual in the spring. Several nonmerchantable portions of large logs per acre should be left after timber harvest to help maintain this often-overlooked habitat component.

4.3. Plants

At the higher elevations, subalpine fir dominates the forest landscape. Most of the higher elevation areas show no evidence of previous logging activity. Western hemlock and western redcedar are often the primary tree species at lower elevations, particularly along Little Sand Creek. A portion of the lower elevation forest has been heavily harvested in the past, resulting in major impacts to current forest conditions. For example, most of the western white pine has been removed from the landscape over the last seventy years. In addition to logging, white pine blister rust has played a major role in reducing the prevalence of this species.

Forest *biodiversity* refers to such forest characteristics as tree and plant species, vegetative features (such as forest canopy layers), soil type, terrain features, wildlife, etc. Many factors such as wildfire, insects and diseases, flooding, and past logging practices contribute to forest diversity. In general, the more diverse a forest is in terms of these characteristics, the more resilient it will be. For example, tree species diversity helps to reduce the risk or severity of insect and disease outbreaks since most of these pests only affect certain species, leaving the unaffected tree species to maintain the forested ecosystem. Table 11 at the end of this section summarizes plant species found within the Little Sand Creek Watershed.

Habitat type is a classification system of forest vegetation associations that are delineated by temperature, soil moisture, fertility, macroclimatic and microclimatic conditions. With this system, forest vegetation composition can be predicted at various stages of development (seral stages) under different site conditions. Knowing the habitat type of a site is helpful when trying to determine which management activities, such as logging and planting, are needed to maximize the productivity of the site. Similar habitat types are grouped into series based on dominant tree species. Primarily two series of habitat types occur in the Watershed: the *Tsuga heterophylla* (western hemlock) series and the *Abies lasiocarpa* (subalpine fir) series. The *Tsuga* series covers the vast majority of the property.

The *Tsuga heterophylla* series occurs at lower and middle elevations where soil moisture and temperatures throughout the year are the most moderate of all habitat types. Timber productivity in this series tends to be very high. Western hemlock, western redcedar, and grand fir are the dominant tree species for this series. The warmest and driest habitat types in this series are typically characterized by floristically rich and morphologically diverse undergrowth vegetation (herbs and shrubs) known as the *Pachistima* union. Undergrowth vegetation diversity diminishes in the cooler, wetter areas. In these areas with poorly drained soils, *Oplopanax horridus* (devil's club) or *Athyrium filix-femina* (lady fern) are the dominant undergrowth species.



The *Abies lasiocarpa* series is found at the highest elevations in the Watershed. This series is characterized by discontinuous clumps of dwarfed and misshapen trees and “krummholz” vegetation typical of upper timberline areas in higher mountains. The *Abies* series habitat types are non-commercial or marginally commercial for timber production. Subalpine fir and mountain hemlock are the only climax tree species present. Subalpine fir occurs throughout the series. Mountain hemlock is limited to discontinuous tracts; very little or no mountain hemlock occurs in the Watershed. On the southerly slopes of the *Abies* series, understory vegetation is dominated by *Xerophyllum tenax* (bear grass) and *Vaccinium membranaceum* (big huckleberry). On the northerly slopes, tall (up to 6 feet) *Menziesia ferruginea* (fool's huckleberry), *Rhododendron albiflorum* (white rhododendron), and *Ledum glandulosum* (Labrador tea) shrubs dominate.

4.4. Action Items

- Coordinate with USFWS and IDFG about Critical Habitats, Bull Trout, and Potential Habitat Improvements (Secondary Goal).
- Comply with Gold and Bald Eagle protection act during Watershed projects (Secondary Goal).
- Ensure public understands the potential to encounter bear and mountain lion within the Watershed and minimize human interaction with bears by ensuring users remove all trash from the Watershed (Secondary Goal).
- Leave snags and downed wood according to the Timber Management Plan (Secondary Goal).
- Promote Watershed biodiversity through Timber Management which varies habitats and ages classes (Secondary Goal).

Table 4. Vegetation of Little Sand Creek Watershed

Trees	Shrubs	Forbs	Ferns	Grasses	Noxious Weeds
Black Cottonwood (<i>Populus trichocarpa</i>)	Alder (<i>Alnus</i>)	Beargrass (<i>Xerophyllum tenax</i>)	Bracken Fern (<i>Pteridium</i>)	Brome (<i>Bromus</i>)	Orange Hawkweed (<i>Pilosella aurantiaca</i>)
Douglas-Fir (<i>Pseudotsuga menziesii</i>)	Buffaloberry (<i>Shepherdia</i>)	Bunchberry Dogwood (<i>Cornus canadensis</i>)	Lady Fern (<i>Athyrium filix-femina</i>)	Blue Wildrye (<i>Elymus glaucus</i>)	St. Johns-wort (<i>Hypericum perforatum</i>)
Engelmann Spruce (<i>Picea engelmannii</i>)	Currant (<i>Ribes nigrum</i>)	Fairy-bells (<i>Disporum</i>)	Oak-fern (<i>Gymnocarpium dryopteris</i>)	Idaho Fescue (<i>Festuca idahoensis</i>)	Spotted knapweed (<i>Centaurea stoebe</i>)
Grand Fir (<i>Abies grandis</i>)	Devil's Club (<i>Oplopanax horridus</i>)	Fireweed (<i>Chamaenerion</i>)	Swordfern (<i>Polystichum munitum</i>)	Orchardgrass (<i>Dactylis glomerata</i>)	Tansy (<i>Tanacetum vulgare</i>)
Lodgepole Pine (<i>Pinus contorta</i>)	Fool's Huckleberry (<i>Rhododendron menziesii</i>)	Hawkweed (<i>Hieracium</i>)		Pinegrass (<i>Calamagrostis rubescens</i>)	
Paper birch (<i>Betula papyrifera</i>)	Huckleberry (<i>Vaccinium</i>)	Moonshood (<i>Aconitum ranunculaceae?</i>)		Kentucky Bluegrass (<i>Poa pratensis</i>)	
Ponderosa Pine (<i>Pinus ponderosa</i>)	Kinnikinnick (<i>Arctostaphylos uva-ursi</i>)	Queenscup Beadlily (<i>Clintonia uniflora</i>)		Timothy (<i>Phleum pratense</i>)	
Quaking Aspen (<i>Populus tremuloides</i>)	Mountain Maple (<i>Acer spicatum</i>)	Solomons seal (<i>Polygonatum biflorum</i>)		Western Fescue (<i>Festuca occidentalis</i>)	
Red Alder (<i>Alnus rubra</i>)	Mountain Ash (<i>Sorbus subg. Sorbus</i>)	Stonecrop (<i>Sedum</i>)			
Subalpine Fir (<i>Abies lasiocarpa</i>)	Ninebark (<i>Physocarpus</i>)	Trillium (<i>Trillium grandiflorum</i>)			
Western Hemlock (<i>Tsuga heterophylla</i>)	Oceanspray (<i>Holodiscus discolor</i>)	Violet (<i>Viola</i>)			
Western Larch (<i>Larix occidentalis</i>)	Oregon Grape (<i>Mahonia aquifolium</i>)	Western Goldthread (<i>Coptis occidentalis</i>)			
Western Redcedar (<i>Thuja plicata</i>)	Red-oiser dogwood (<i>Cornus sericea</i>)	Western Meadowrue (<i>Thalictrum occidentale</i>)			
Western White pine (<i>Pinus monticola</i>) ¹	Restem Ceanothus (<i>Restem Ceanothus</i>)	Wild ginger (<i>Asarum</i>)			
	Service Berry (<i>Amelanchier</i>)	Wild Sarsaparilla (<i>Smilax ornata</i>)			
	Shinyleaf Ceanothus (<i>Ceanothus sanguineus</i>)	Wild Strawberry (<i>Fragaria vesca</i>)			
	Spiraea (<i>Spiraea japonica</i>)	Skunk Cabbage (<i>Lysichiton americanus</i>)			
	Syringa (<i>Syringa vulgaris</i>)	Horse tail (<i>Equisetum hyemale</i>)			
	Thimbleberry (<i>Rubus parviflorus</i>)	Green Bog Orchid (<i>Platanther huronesis</i>)			
	Twinflower (<i>Linnaea borealis</i>)	Arrowleaf Ragwort (<i>Senecio triangularis</i>)			
	Utah Honeysuckle (<i>Lonicera utahensis</i>)	False Lily of the Valley (<i>Maiathemum racemosum</i>)			
	Willow (<i>Salix</i>)	Red baneberry (<i>Actaea rubra</i>)			
	Wild rose (<i>Rosa</i>)	Siberian spring beauty (<i>Claytonia sibirica</i>)			



Western red cedar (*Thuja plicata*)



Devils club (*Oplopanax horridus*)



Red baneberry (*Actaea rubra*)



Siberian spring beauty (*Claytonia sibirica*)

¹ USFWS ESA Candidate Species

5. Critical Areas: Hydrology & Water Quality

The Little Sand Creek Watershed contains areas which are critical to water quality and habitat for fish and wildlife. Maintaining water quality is paramount to this Watershed as it is a source of drinking water. It is imperative that these critical areas also be protected to preserve their use by fish and wildlife, which rely on them for spawning, breeding, feeding, and reproduction. The critical areas within the Watershed are highly sensitive to erosion damage, and therefore, the goal of this Watershed plan is to prevent impacts and erosion in these areas. By protecting these critical areas, not only will water quality for the city be maintained or improved but the recreational opportunities to observe fish and wildlife and maintain healthy forests will occur.

The Idaho Department of Environmental Quality (IDEQ) published a Source Water Assessment Report for LSC in October of 2000 which describes the public drinking water system and the potential sources of contamination within the basin. This plan is included in Appendix B to the overall Watershed management plan. IDEQ is currently working on an update to the Source Water Assessment for LSC which will be incorporated in this management plan via this reference when completed.

The City of Sandpoint defines critical areas as, “areas of environmental sensitivity, which include the following areas and ecosystems (Sandpoint 2009 Comprehensive Plan):

- Wetlands
- Areas with a critical recharging effect on aquifers used for potable water
- Fish and wildlife habitat conservation areas
- Frequently flooded areas
- Geologically hazardous areas

Point Environmental worked with the City to analyze existing Watershed data including terrain slopes, aerial imagery, and existing stream information to locate a subset of the suspected critical areas included in the above definition. In all, 12 potential critical areas were selected for probable inspection during the June 2020 field survey. Areas included potential wetlands, seeps, riparian areas, and steep slopes. The entire Watershed was not reviewed using the GIS analysis for critical areas, the survey only looked at potential areas near roads which could be accessed easily during the 2020 road and stream crossing survey. Countless critical areas are surely present throughout the full Watershed however, only a subset of 12 critical areas were surveyed in June. (Not all probable areas originally identified during the analysis were reached due to impassable roads which would have acquired exceedingly long hikes). Table 2 below summarizes the critical areas surveyed. Through this cursory survey we found a methodology which can be utilized for further Watershed analysis in the future.

Table 5. June 2020 LSC Critical Areas

Critical Areas	Observations	Indicators	Road Location	Location
Wetlands	Wildlife present, standing water, Coniferous, deciduous, brush	Standing water hydrology, hydrophytic flora	4000 MP 1.0	-116.6305, 48.328
	Wildlife evidence, inundation, sediment deposits	Hydrophytic vegetation, wetland hydrology	4000-1.4-1.3	-116.631, 48.335
	Facwet Vegetation, depression, open canopy, wildlife evidence	Depressional hydrology, hydrophytic flora	797-4.1	-116.612, 48.3369
	Alpine, lacks tree canopy	Wetland hydrology and hydrophytic flora	797-5.0	-116.5934, 48.3461
Riparian	Hosts perennials, coniferous trees, and brush.	Vegetation, water flow	C4000-31	-116.674, 48.337
	Perennials, fish likely present, channel width 30'	Fish presence, flow, vegetation	C4000-2.1-1	-116.656 48.329
	Ephemeral, fish likely present, coniferous, deciduous, buffer	Intact habitat, channel width, fish presence	C4000-16	-116.638 48.3307
	Perennials, Buffer intact, wildlife evident	Continued wildlife evidence, buffer remains intact	797-4.1A	-116.616, 48.3387
	Perennials, Buffers, Channel width 8' wildlife evident	Continued wildlife evidence, buffer remains intact	C797-4.1-3	116.6105, 48.3399
Geo Hazard	Coniferous Trees, 40% slope, cut bank rd. 15% exposed soils	Slope Gradients, soil structure, vegetation growth form	4000>2.1	-116.661110, 48.334759
	Vertical Cliff, rockslide evidence, 150ft 80% gradient	Slope Gradients, soil structure, vegetation growth form	C4000-18	-116.643650, 48.330568
	Bedrock outcrop, Shrubs present, 80% gradient, wildlife habitat	Slope Gradients, soil structure, vegetation growth form	4000-1.4	-116.637419, 48.346847
Seep	100% canopy cover, slope 53%, Coniferous/deciduous, drains to roadway	Ephemeral, Grass & Forb, Rills, Lack of substrate sorting	4000>2.1	-116.665, 48.3355



Ponded Wetland



Streamside Riparian area



Steep Hazardous Slope

Critical areas can be viewed on the LSC Web Map. Green balloons seen on the map represent wetland areas, Blue balloons represent seeps and riparian areas, and orange balloons represent steep slope areas. The user can click on the balloon to view a description of the critical area and download the latest survey data sheets and site photos.

5.1. Critical Area Descriptions

The following paragraphs describe in general the types of critical areas present and surveyed during the June 2020 field work. The descriptions below can be used to identify and define additional critical areas discovered during future project planning efforts.

5.1.1. Wetlands

The state of Idaho defines a wetland as “a land inclusion that has a predominance of hydric soils; is inundated or saturated by surface or groundwater at a frequency and duration sufficient to support a prevalence of hydrophytic vegetation; and supports a prevalence of such vegetation under normal circumstances (e.g., marsh, vernal pool, riparian zone, wet meadow, peatland).” Three wetland areas within the Watershed are already listed on the National Wetland Index. Many more such areas are sure to be found prior to or during Watershed development projects. The goal of the management plan is to provide procedures for identifying and protecting wetland critical areas during the development planning process. Protection of wetland critical areas should be achieved primarily through avoidance and establishment of buffer areas.

Idaho wetland buffer regulations are not well defined; however, the Idaho’s Wetland Program discusses establishment of 15-75-foot-wide buffers around the perimeter of wetland areas (Murphy, 2014). Washington’s forest practices require a minimum of 25’ – 50’ buffer around the perimeter of non-forested and open water wetlands (WDNR, 2017). Oregon forest practices require a 100-foot buffer around wetlands greater than eight acres in size (Cloughesy & Woodward, 2018). Because this Watershed provides domestic water supply the Watershed plan recommends using the more protective measures. This would require that all wetland areas be protected by at least a 15-foot perimeter buffer, while wetlands from 0.25 acre – 5 acres receive a 75-foot buffer, and wetlands larger than 5 acres be surrounded by a 100-foot buffer.

Point Environmental surveyed four wetland areas during the June 2020 field investigation, this included two of the previously mapped NWI wetlands, which was done for reference. Potential wetlands to survey were selected through GIS analysis of the existing mapped NWI wetlands. The vegetation pattern, color, and lack of tree cover seen in the aerial imagery was compared to other similar areas within the Watershed. Two other areas were selected based on this analysis; these areas were verified in the field using wetland determination methods. The wetlands surveyed were depressional areas with saturated soils or standing water indicating wetland hydrology. Hydrophytic vegetation (Carpenedo & Saul, 2012) was also found to be present within areas surveyed. Point Environmental did not dig test holes to check for hydric soil/redoximorphic formations. The following table gives a detailed report of the areas determined to be wetlands during the June 2020 survey.

Table 6. LSC Surveyed Wetlands

Road Location	Latitude and longitude	Estimated Area	Hydrology	Plant Species	Indicator Status
South of Rd. 4000 MP 1.0	48.328083; -116.630512	0.5 Acre	Pond/standing water	Skunk cabbage <i>Lysichiton americanum</i>	OBL ²
				Horse tail <i>Equisetum hyemale</i>	FACW ³
				Trillium <i>Trillium ovatum</i>	FACU ⁴
				Green bog orchid <i>Platanther huronesis</i>	OBL
				Devils club <i>Oplopanax horridus</i>	FAC ⁵
				Lady fern <i>Athyrium filix-femina</i>	FAC
				Arrow-leaved ragwort <i>Senecio triangularis</i>	FACW
				False lily of the valley <i>Maiathemum racemosum</i>	FAC
End of 4000-1.4-1.3	48.335; -116.631	2.5 acre	High water marks, sediment deposits	Devils club <i>Oplopanax horridus</i>	FAC
				Pink purslane <i>Claytonia sibirica</i>	FAC
Beginning of Rd. 797-4.1	48.336918; -116.612328	1.0 acre	Flooded Depression (NWI Wetland)	Yellow marsh marigold <i>Caltha palustris</i>	OBL
				Green bog orchid <i>Platanther huronesis</i>	OBL
End of Rd. 797-5.0	48.3461; -116.5934	2.0 acre	Depression (NWI Wetland)	Devils club <i>Oplopanax horridus</i>	FAC
				Red Alder <i>Alnus rubra</i>	FAC

All future projects within the Watershed, on City property (other than timber sales that are avoiding wetland impacts), that have the potential to disturb wetland habitats should be surveyed for the presence of wetlands during the planning process. Using the above descriptions of wetland areas and the Web Map Critical Areas overlay, any potential wetlands discovered during planning for future projects should be delineated by a wetland scientist certified through an approved course covering the US Army Corps of Engineers protocol of the Regional Supplements in concert with the mandated 1987

² Obligate Wetland: Almost always occurs in wetlands.

³ Facultative Wetland: Usually occur in wetlands but may occur in non-wetlands.

⁴ Facultative Upland: Usually occur in non-wetlands but may occur in wetlands.

⁵ Facultative: Occur in wetlands and non-wetlands.

Wetland Delineation Manual. Any planned impacts to wetlands must be approved by the City and permitted/mitigated through the US Army Corps of Engineers and Idaho Department of Lands.

5.1.2. Riparian Areas

Riparian areas are generally understood to include water dependent land areas that parallel streams and lakes and consist of land types transitioning between terrestrial and aquatic throughout the Watershed. This is where there is a direct connection between land and water. Riparian corridors interconnect valleys to headwaters and allow the transfer of sediments, organic matter, and other materials (Gregory, Swanson, Mckee, & Cummins, 1991). According to the forest practices for the State of Idaho, the riparian area is marked as the stream bottom, banks, and lands adjacent to the high-water marks. These regions are important to the ecology of the land, flora, and fauna. These protection zones safeguard the wetter riparian areas that are sensitive to disturbance having mixed soils and soft organic matter layers. Keeping these riparian areas intact supports the species of plants and animals that are dependent on these environments throughout Idaho.

The Little Sand Creek Watershed has approximately 14 miles of mapped stream channels including four substantial forks of the mainstem, in all eight unnamed tributaries, and many miles of unmapped tributaries. IDL classifies LSC as a class 1 stream because it is a municipal water supply and is documented as excellent fish habitat. The Idaho Department of Fish and Game has recorded fish use in LSC including native west slope cutthroat trout, resident rainbow trout, and brook trout (IDFG, 1984-1985). The USFS has mapped the upper reaches of LSC as natal cold-water habitat for Bull Trout (Isaak, Young, Nagel, Horan, & Groce, 2014). During the June 2020 survey, five riparian areas were surveyed on the tributaries to Little Sand Creek and on Little Sand Creek itself. All riparian areas surveyed occurred at existing road crossings. The riparian area investigation sites and data can be found on the Watershed Webmap by clicking on the blue balloons under the critical area layer. The table below list several characteristics observed at each riparian area.

Table 7. Summary of Riparian Areas Surveyed

Road Crossing	Perennial	Fish Presence	Reason	GPS Location
C4000-31	Yes	Unlikely	Too steep	-116.673074, 48.337202
C4000-2.1-1	Yes	Likely	Good physical habitat	-116.6535, 48.3306
C4000-16	Yes	Likely	Good physical habitat	-116.6384, 48.3307
797-4.1A	Yes	Possible	Barring downstream barriers, good bull trout/cutthroat habitat	-116.616928, 48.338798
C797-4.1-3	Yes	Possible	Barring downstream barriers, moderate bull trout/cutthroat habitat	116.6105, 48.3399

The riparian areas surrounding Little Sand Creek can be viewed as the primary protection for the municipal water source for the City. To allow the fullest protection for these ecological sites, IDL sets minimum buffer zones for stream protection extending 75 feet (slope distance) out on each side from the high-water mark. If the stream within the riparian area is non fish bearing, then the stream protection zone extends 30-feet (slope distance) on each side of the high-water mark (Barkley, et al.,

2015). The City has elected to extend the buffer zone restrictions within the Watershed to 150 feet slope distance on either side of the ordinary high-water mark on fish bearing stream and 75-foot slope distance from OHW on either side for non-fish bearing streams. The goal of this management plan is to ensure that procedures are followed to ensure the protection of riparian areas during Watershed development projects. Protection of riparian critical areas should be achieved primarily through avoidance, establishment of buffer zones, and implementation of BMPs for interactions with the riparian area. BMPs will be prescribed on a project basis through compliance with Idaho Forest Practices Act, EPA Construction Stormwater General Permit, Army Corps Permits S404 permits, and IDL S401 Certifications applicable to individual projects.

Many BMPs regarding interactions with the riparian area are defined within the Idaho Forest Practices Act. Comply with the Forester Forums found at <https://www.idl.idaho.gov/forestry/forester-forums/>, keeping in mind the extended riparian buffers required by the City (Idaho Department of Lands, 2018).

- [FPA 1 – Idaho Forest Practices Act](#) – updated October 2018
- [FPA 2 – Slash Removal from Streams](#) – updated October 2018
- [FPA 4 – Forest Roads – Compliant and Non-Compliant](#) – updated October 2018
- [FPA 5 – Cross Ditches](#) – updated October 2018
- [FPA 6 – Stream Protection Zones](#) – updated October 2018
- [FPA 7 – Fords – When, When, Why and How](#) – updated October 2018
- [FPA 10 – Potentially Unstable Slopes and Landforms](#) – updated October 2018
- [FPA 11 – Rolling Drain Dip](#) – updated October 2018
- [FPA 12 – Fish Passage Guidelines When Installing Stream Crossings](#) – updated October 2018
- [FPA 13 – Slash Filter Windrows](#) – updated October 2018
- [FPA 14 – Correctly Classifying Streams to Protect Fisheries and Domestic Water Supplies](#) – updated October 2018
- [FPA 15 – Sidehill Roads Abandonment Closure Guidelines](#) – updated October 2018
- [FPA 16 – Dip Ponds](#) – posted October 2018
- [FPA 17 – Class I Streamside Tree Retention Rules](#) – updated October 2018

Construction projects (excluding forestry activities) disturbing more than 1 acre of soils must obtain coverage and comply with the 2017 EPA Construction General Permit for construction stormwater. Projects involving fill and/or removal within waters of the state must be permitted through the USACE section 404 program and IDEQ section 401 certification program.

5.1.3. Seeps

The percolation of water through small porous cracks between soil layers and rock up to the surface or down into subsurface water (Institute, 1980). These terms can also be used to describe infiltration of water into the soil via canals, ditches, laterals, watercourses, reservoirs, storage facilities or any other

body of water (Franke, Reilly, & Bennett, 1985). If the fluid pressures in a soil deposit are increasing with depth, then the conditions will allow the fluid to move through the soil, but where slopes are present, or the water table is perched, seepage may occur. A steady state flow of water can occur when water tables are changing with surface topography. “Bogs, seeps, swamps, wet areas, springs, draws, or other sites where water is present are not considered streams. [IDL FPA] Rule 030.08.c. specifies the requirements for these areas.” “To protect soil and vegetation in areas such as swamps, wet meadows, springs, seeps, bogs, and draws, preventing damage to water quality, quantity, and aquatic or wildlife habitats. Determination of “wet areas” should primarily rest on the presence of “water-loving” vegetation (e.g., skunk cabbage, cattails, and aquatic reeds [rush and sedge grass) and the appearance of water-saturated soils. Leave filter strips of undisturbed soil and vegetation around wet areas.” “Relief culverts, and those used for seeps, springs, wet areas, and draws shall not be less than twelve (12) inches in diameter for permanent installations.” (Lands, 1974).

Seepage face – The seepage face is a boundary between the saturated flow field and the point where groundwater discharges to the surface where it either evaporates or flows down a slope along the surface. An example of seepage face could be a streambank where water is exiting from a seam between soil/rock layers or perennially/seasonally wet place on a mountain side. Seepage faces can also be seen distributed along sloping riparian zones. Several exit points can be present, making seepage faces dynamic. The boundary of seepage faces moves with flow and topography and as the aquifer recharges and drains. All these factors are dependent on the current water table and how it is interacting and intersecting the ground or slope surface (Scudeler, Paniconi, Pasetto, & Putti, 2017).

Countless seeps can be found throughout the LSC Watershed. During the June 2020 survey, one seep was found along the upper stretches of the 4000 road on the upstream side - an ephemeral seep which was draining into the inside ditch. Water appeared to be coming from a minor channel further up the mountain but then became diffuse, flowing through duff until reaching the road. The lack of channel formation and substrate sorting indicates that flow rate does not increase significantly beyond the current level. Vegetation found growing within the seep were Red baneberry and Drops of gold, both facultative upland plants. Vegetation and lack of channelization within the seep area itself indicates seasonal flow and insufficient saturation to support hydrophytic vegetation. Seep information can be found on the Watershed web map by clicking on the blue balloon under the critical area layer.

Seeps may or may not be connected to surface waters, however, they are glimpse of the water table and should be protected accordingly. Identification and protection of seep areas should be determined during the planning phase of a Watershed project. For the purpose of this plan, seeps will be treated as wetlands and protected according to the aforementioned wetlands section.

5.1.4. Steep Slopes

Steep slopes are legally defined as “hillsides having a 15-foot vertical rise over a 100-foot horizontal run (15% slope)” (Institute, 1980). These slopes can still provide habitat and recreational opportunities but can be hazardous. Idaho Forest Practices excerpts regarding unstable slopes and landforms include:

An operation that uses ground-based equipment shall not be conducted if it will cause rutting, deep soil disturbance, or accelerated erosion, on slopes exceeding forty-five percent (45%) gradient and which are immediately adjacent to a Class I or II stream, ground-based equipment shall not be used except with an approved variance. Where slopes in the area to be logged

exceed forty-five percent (45%) gradient the operator, landowner or timber owner shall notify the department of these steep slopes upon filing the notification as provided for in Subsection 020.05. (4-4-13).

Roads constructed on slopes greater than sixty percent (60%) in unstable or erodible soils shall be full benched without fill slope disposal. At stream and draw crossings keep fills to a minimum. A variance is required if a full bench is not used.”. The combination of steep slopes and convergent topography has the highest potential for shallow land sliding (Lands, 1974).

In June 2020, three steep areas were inspected to provide a field verification and cross reference of the slope overlay in the Watershed Web Map. These areas are summarized below in table 8. The surveyed sites are also available to view on the Watershed road map and are shown as orange balloons in the critical area layer. The user can click the orange balloon to download the survey data sheets and view site photos.

Table 8. Steep Slope Sites

Road Location	Estimated Slope%	Active Slide	Vegetation growth form	GPS Location
4000>2.1	40	Yes	Normal	-116.661110, 48.334759
4000>1.4	80	Yes	Slightly curved	-116.643650, 48.330568
4000-1.4	75-80	No	Normal	-116.637419, 48.346847

Many steep slopes are present within the Watershed that were not surveyed. Areas meeting these criteria, or areas that fall within the steep slope overlay in the Watershed web map, should be evaluated by a geotechnical engineer during the planning phase of any potentially ground disturbing Watershed project (other than timber harvest which should continue to comply with Idaho Forest Practices). The geotechnical engineer should make recommendations about avoidance areas, necessary practices, or design stabilization treatments to mitigate risks when constructing in these areas. Otherwise, comply with the IDL Forest Practices Act [FPA 10 – Potentially Unstable Slopes and Landforms](#) – updated October 2018.

5.2. Action Items

- Complete Watershed GIS analysis for critical areas (Primary Goal).
- Survey and delineate any potential wetland areas found within future project areas (Primary & Secondary Goal).
- Flag riparian buffer zones/stream protection zones and comply with project environmental permitting and forest practices BMPs (Primary & Secondary Goal).
- Enlist geotechnical engineering support to survey and design BMPs for projects in steep slopes areas (All Goals).

6. Access and Roads (Watershed Road Map)

The Little Sand Creek (LSC) Watershed has a series of roads that provide access to the timber, water, and recreational resources. These roads are in various states of repair. Some roads are still accessible by vehicle while others have degraded to the point where vehicular access is seasonal at best, or not possible at all. Access to the majority of City Watershed property is provided primarily through road

systems located exclusively on City-owned land. A limited amount of travel is required across State of Idaho Department of Lands (IDL) and Bureau of Land Management (BLM) property to access portions of City parcels. The road system traverses the Watershed starting on Schweitzer Mountain Road near the Burlington Northern Rail Line (east end) and to the west along the #4000 mainline road along the upper reaches of Little Sand Creek. The #4000 road is gated at the third switch back on Schweitzer Mountain Rd. Schweitzer Mountain Road, which is maintained by the Independent Highway District and is the only asphalt surfaced road in the basin, travels west along Little Sand Creek about 1/3 of the way through the Watershed before turning north towards Schweitzer Mountain. At approximately the Schweitzer Mountain roundabout, the road crests the ridge and leaves the Watershed.

Gates limit public access to most of the City property. The purpose of the gates is to protect the soils from road-related erosion, reduce the risk of man-caused fires and otherwise minimize activities that could cause damage to the municipal water supply. The gates are posted with signs explaining the access limitations.

All of the accessible roads in the LSC system are on the north side of the creek except a short section of inactive road which crosses to south side of LSC over a bottomless arch culvert about 5.5 miles upstream from the confluence with Sand Creek. However, this road section only travels about 0.3 miles before dead-ending at the edge of Idaho Department of Lands (IDL) property. Here the road has been converted by IDL to a permanently abandoned road (all culverts pulled). In fact, only about 2 miles of road are active and accessible by vehicle. Approximately 6 miles of road in poor condition are defined as inactive and only accessible by 4x4 vehicle (dependent on seasonality and vegetation growth). While approximately 8.5 miles of road are defined as long-term inactive roads, or permanently abandoned roads, and are only accessible on foot due to temporary or permanent blockages. The City has applied forest road definitions as outlined by the Idaho Department of Lands to the LSC road system, these are defined as follows:

- Active Roads (drivable): Forest roads that are being used for hauling forest products, rock, or other road building materials.
- Incidental Haul Roads (drivable): Multi-use roads having a primary purpose other than forest practices (e.g., residential traffic), but are also used for log hauling during harvest.
- Inactive Roads (drivable seasonally or 4x4 only): Forest roads whose primary purpose is for forest practices but are no longer used for commercial hauling. Inactive roads are commonly maintained for fire control access, general forest management activities, recreational use, and/or occasional or incidental harvest of non-timber forest products.
- Long-Term Inactive Roads (not drivable): Forest roads that are not intended for use in the near future, but likely will be used again. Roads are blocked and may have culverts, bridges, ditches, and unsuitable fills removed. Culverts and bridges left in place must be maintained.
- Permanently Abandoned Roads (not drivable): Roads that are not intended for future use. All drainage structures are removed, and the road is stabilized to minimize erosion without future maintenance. (For more definition see Idaho Forestry Best Management Practices Field Guide Pg. 45).

6.1. Forest Road Survey

During the week of June 15th, 2020, the accessible road system, and a portion of the inaccessible road system (Long Term Inactive Roads on City Property) were surveyed. Due to survey crew time constraints

the majority of the permanently abandoned road systems (mainly on the south side of the creek) were not surveyed. Access to the interior of the permanently abandoned road system on the south side of the creek is difficult on foot and impossible by vehicle. There is value in mapping this network to determine potential ongoing failures and active sediment sources. Stabilization in these failure areas could be performed with relative ease utilizing hand brushing crews, followed by an excavator/spider hoe to remove debris, grade slopes, install local large woody debris, and relocate local rock. The excavator would need to be steam cleaned, in top condition with no fuel/oil leaks, and would need to be outfitted with biodegradable hydraulic oil in order to cross through the creek systems. Crews could follow up by hand seeding and weed free straw mulching. At a minimum, stabilization crews could pack in hand tools and grass seed to aid in stabilization of potential failure areas. Complete and full replacement of failed culverts and repair of road grades in these areas would likely require reconstruction of the road network up to the point of the failure. Point Environmental approached this network from the south and from the west ends and found the creek crossing structures removed, the road grades to be vegetated with 10+ year old trees and thick brush.

Point Environmental deployed two 2-person crews to survey roads and culverts throughout the Watershed. Roads were marked with lath stake signs along the main 4000 Road and Schweitzer Mt. Road and with embossed aluminum tags with orange and pink glow flagging in hike in areas. The crews used the LSC Road Survey Form to document road conditions based on IDL standards, the survey form includes the following data and is included as Appendix C to the Watershed Management Plan.

LSC Road Survey Form Data:

- Survey Date
- Road Number
- Source Road
- Beginning and Ending GPS Point
- Road Photos
- Road Type (Based on current conditions)
- Road Accessibility
- Surface Composition and Condition
- Width
- Topographical Position
- Overall Grade
- Drainage Features and Condition
- Cut & Fill Area Characteristics

From the survey, each road was assigned a IDL designation (as defined above) based on accessibility, seasonal drivability, and drainage condition (are culverts present or have they been pulled). The new road designations are represented on the color-coded Watershed Road Web Map that can be viewed at:

<https://sandpoint.maps.arcgis.com/apps/webappviewer/index.html?id=a08c67b9e0b4438791bfac770f696697>.

- Active and incidental haul roads are represented by a green solid line.
- Inactive roads are shown with a yellow dashed line, these are primarily accessible via 4x4 only and even then, may be inaccessible during wet periods and some areas have vegetation which pushes the limits of even 4x4 vehicles.
- Long term inactive road and permanently abandoned roads are represented by a red double dashed line. These roads are only accessible by foot.

Each line style differs so the map may be printed in grayscale allowing the user to differentiate the road types. From the web map legend, under Watershed Road Inventory, the user can view the various road

types, or the user can simply click the line on the map and road status will display. At the beginning and end of each road segment, there are GPS points represented on the map by blue dots. The user can click the blue dot at the beginning of the road segment to download the road survey data sheet and most recent survey photos. Road photos were taken at each point of interest along the road survey (i.e., insufficient drainage locations or unstable areas) the photos are geotagged and can be used to locate the points of interest along the road, besides knowing that they occur along the road between the beginning and ending GPS points.

Presently, Watershed roads were found in conditions requiring some maintenance, with the exception, generally, of the mainline #4000 road, from Schweitzer Mt. Road to MP 1.4, which is fairly well maintained. The first stretch of the #4000 road segment reaches the first major crossing of the north fork of Little Sand Creek. Most other roads, drivable or not, were plagued with insufficient drainage issues causing saturation, flooding, and/or erosion of the roadbed, making vehicle access challenging and seasonal. Insufficient drainage issues are also creating sources of sediment which contribute to the overall sediment load in the creek and on the LSC water treatment plant. These areas of insufficient drainage and/or instability were tagged with GPS and/or geotagged photographs and can also be viewed on the Watershed web map. A summary of unstable areas is listed in the table below. In years to come, updated road surveys can be uploaded to the web map, each road status updated if necessary, and the table below updated to aid in prioritizing maintenance activities.

Table 9. Summary of LSC Unstable Road Areas

Road Number	Cause	Location
797-1.0	Insufficient drainage	48.332063; -116.595686
797-4.1-1ID	Insufficient drainage	48.338; -116.612
797-4.1-2ID	Insufficient drainage	48.339; -116.610
4000-3-ID	Insufficient drainage	48.331; -116.638
4000-1.4-5ID	Insufficient drainage	48.349927; -116.64044
4000-1.4-4ID	Insufficient drainage	48.34142, -116.636817
4000-1.4 1DD	Ditch downcutting	48.330918; -116.632927
4000-1.4 1DD	Ditch downcutting	48.331024; -116.632773 48.33097; -116.632779
4000-1.4-1ID	Insufficient drainage	48.339; -116.638
4000-1.4-2ID	Insufficient drainage	48.339; -116.637
4000-1.4- ID	Insufficient drainage	48.339; -116.638
4000-1.4-4ID	Insufficient drainage	48.341; -116.637
4000-1.4-6ID	Insufficient drainage	48.351; -116.641

4000>1.4<2.1	Ditch Downcutting	48.331; -116.640
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Another issue that was observed in the field was the dumping of (spoils) excess fill on out slopes of the existing asphalt road and Schweitzer parking area at the roundabout. This activity has, in some places (see Webmap), contributed to sediment input. In at least two locations, this is contributing to direct sediment input into the waterways of Little Sand Creek. It appears that dumping excess fill was meant to widen portions of the road and parking areas. However, there are either ditch lines or headwater stream systems that are cutting into these fills and transporting sediment down through the system. This could be corrected by placing stone embankment on the fill slope to minimize the cutting action of the water. Not placing fill or spoils in these areas would be the best option.

6.1.1. Action Items

- Continue evaluation of permanently abandoned road system south of LSC for unknown failures (Primary Goal).
- Schedule annual road monitoring (Primary Goal).
- Prioritize forest road maintenance Projects (Primary Goal).

6.2. Stream Crossing Survey

During the June 2020 investigation, the crews also surveyed each stream crossing found using the LSC Stream Crossing Survey form. Each crossing was marked with blue and pink colored glow flagging. The LSC Stream Crossing Survey form was adapted from culvert survey protocols from Idaho, Oregon, and Washington to fit the needs of the City and the goals of the Watershed Management Plan. The survey included the following information, and the form is also included for reference in Appendix C to the Watershed Management Plan.

LSC Culvert Survey Form Data:

- Date
- Road Number
- Crossing Type
- Crossing Number
- GPS Location
- Crossing Photos
- Crossing Material Type
- Bankfull Width
- Crossing Diameter/Height
- Bed Slope
- Span
- Crossing Water Depth
- Road Fill Depth
- Crossing Shape
- Surface Grade Details
- Backwatering
- Trash Racks
- Plunge Pools
- Fish Barriers
- Inside and Outside Condition

The data collected at each stream crossing has also been uploaded to the Watershed Web Map. Each crossing has a unique identification number and is shown as blue dot on the map. The user can click a dot and the web application will display basic data about the crossing including the identification number, crossing type, road type, and date surveyed. For more information, the user can download the attached stream crossing data sheet to view the full spectrum of data recorded for the crossing, including crossing photos.

Crossings were generally found to be in fair to good condition, however, survey crews did discover some major failures that are acting as continued sediment sources and impediments to travel along the roads. The table below summarizes these major failures found during the 2020 survey. Future culvert survey data can be uploaded to the web map and this table can be updated to aid in prioritizing maintenance activities.

Table 10. Priority Culverts Summary of Crossing Failures as of 2020 Survey

Road Number	Crossing Number	Crossing Type	Failure Type	Failure Severity
797-1.6A	C797-1.6A-12	Washout	Washout	Total failure
4000>1.4	C4000-17	Culvert	Culvert damaged	Potential failure
4000-1.4-0.9	C4000-1.4-0.9-5	Bridge	Washout log bridge	Total failure
4000-1.4-0.9	C4000-1.4-0.9-2	Culvert	Culvert damaged, washout, scour	Total failure
797-1.0	C797-1.0-1	Culvert	Inadequate structure, recreation bridge interference	Partial failure
797-1.0	C797-1.0-2	Bridge	Wooden biker bridge on surface, pooling around the bridge span	Partial failure
797-1.0	C797-1.0-4	Culvert	Exposed, inadequate size	Potential failure
797-1.0	C797-1.0-5	Bridge	Inadequate bridge: does not span crossing width, reconfigures stream	Partial failure
797.10	C797-1.0-7	Bridge	Damaged, scour, widening and diverting flow due to misuse	Partial failure
797-1.0	C797-1.0-12	Undefined	No crossing structure	Total failure
797-1.0	C797-1.0-13	Undefined	No crossing structure	Total failure
797-1.0	C797-1.0-14	Undefined	No crossing structure	Total failure
797-1.0	C797-1.0-15	Culvert	Corrosion	Partial failure
797-1.6	C797-1.6-1	Culvert	Outfall buried	Potential failure

Road Number	Crossing Number	Crossing Type	Failure Type	Failure Severity
797-1.6A	C797-1.6A-3	Culvert	Outfall damaged, scour, Pipe sticks 6 ft out from shoulder	Partial failure
797-1.6A	C797-1.6A-9	Culvert	Deformed, holes, scour	Partial failure
797-1.6A	C797-1.6A-12	Washout	Stream plugged inlet and washed around the RR bank taking the road out, pipe is undersized	Total failure
4000	C4000-14	Culvert	Damaged, no defined channel	Partial failure
4000	C4000-15	Undefined	Unable to determine if one exists	Potential failure
4000>1.4	C4000-17	Culvert	Damaged	Total failure
4000>1.4	C4000-19	Culvert	Severely damaged, gaping holes	Total failure
797-4.5	2	Undefined	No crossing structure	Partial failure
4000-1.4	C4000-1.4-3	Culvert	Damaged, blocked	Potential failure
4000-1.4-0.9	C4000-1.4-0.9-2	Culvert	Damaged, blocked, Deep deposition on the inlet side Upstream Bankfull is 5 ft, scour at inlet and outlet	Total failure
4000-1.4-0.9	C4000-1.4-0.9-3	Culvert	Damaged, hole, Old wood culvert crossing totally washed out - water cascading through log steps	Total failure
4000-1.4-0.9	4000-1.4-0.9-5	Bridge	Damaged, Washed out old log bridge	Total failure
4000-1.4-0.9	4000-1.4-0.9-6	Culvert	Inlet completely blocked	Total failure
4000-2.1-0.1	C4000-2.1-0.1-1	Culvert	Undersized	Potential failure
4000-2.1-0.1	C4000-2.1-0.1-2	Culvert	Undersized and aggrading, Damage at inlet	Partial failure
4000-2.1-0.1	C4000-2.1-0.1-3	Culvert	Inlet damaged	Partial failure

Road Number	Crossing Number	Crossing Type	Failure Type	Failure Severity
4000-2.1-0.1	C4000-2.1-0.1-5	Culvert	Inlet is undersized, scouring and aggrading	Partial failure
4000-2.1-0.1	4000-2.1-0.1-6	Culvert	Inlet is undersized and misaligned. Outlet is too short and buried by organics	Total failure

6.3. Watershed Road and Stream Crossing Recommendations

During the process of surveying forest roads and stream crossings in the Little Sand Creek Watershed the data sheets were modified in the field to better suit the City’s needs. This Watershed plan recommends that the survey plan and data sheets be continually modified as needed to serve the needs of the City and the Watershed. We do not recommend the use of sub-meter accuracy GPS unit for surveying at this scale as it seems to be of marginal value and takes a lot of extra time. Recreational grade handheld GPS units were found to be sufficient and faster. We further recommend that the Watershed roads be driven each year by the City Forester and/or the First Responder Managers to verify the accessibility of each forest road with respect to each department’s specific equipment and to maintain the accuracy of the Watershed Road Map, this should be done in the late spring following snow melt and winter storms. We also recommend keeping inactive roads brushed and passable for 4x4 vehicles at minimum, to ensure management staff can access places the Watershed road map shows as being accessible. In practice, this will mean performing minimal annual maintenance on drainage systems to ensure roads are not washed out.

6.4. Action Items

- Prioritize annual or semiannual road maintenance (All Goals).
- Perform annual road accessibility inspections and documentation (All Goals).
- Perform annual road brushing (All Goals).
- Prioritize ditch cleaning and culvert clearing activities (All Goals).
- Size culvert installations appropriately to be left in place and maintained (All Goals).
- Train personnel and/or volunteers to assist with regular maintenance, inspection, and documentation, indirectly capitalizing on educational opportunities offered in such efforts (All Goals).

7. Road Monitoring and Maintenance Plan

The Little Sand Creek Watershed road system consist of public and private rights of way leading from North Boyer Rd. to the City’s water treatment works, private City owned forest, hiking/biking trails, public Idaho State forest, Federal lands (USFS & BLM), and Schweitzer Mountain Resort. There are approximately 7.0 miles of roads in the system consisting of paved high traffic roads (Schweitzer Mountain Road aka. 797), gravel logging roads, lightly used dirt roads, and vegetated seasonal roads.

The system has one main intersection at the third switch back up Schweitzer Mountain Road, at this point the main private forest access road (4000 Rd.) branches off to the west while the Schweitzer

Mountain Road continues north. There is a fairly extensive network of permanently abandoned roads on the south side of Little Sand Creek, which in the past was accessible via two bridges, however these bridges have been removed and most accessible roads are north of LSC, except a short segment on the west side of the Watershed. The main biking/hiking trail, beginning near the Schweitzer Resort entrance roundabout, intersects with Schweitzer Mountain Road at approximately mile post one and at the 4th and 5th switch backs. There is also a ridge line trail that starts at Schweitzer Resort and follows the ridge line to the south side of the Watershed but currently does not connect down to the private and City roads below. Below is a table of the accessible roads within the Watershed.

Table 11. Little Sand Creek Road System

Road Name	Accessibility	Services
Schweitzer Mountain Road (797)	Vehicle	WTP, Schweitzer Mt., 4000 Rd.
797-1.0	Foot - 4WD	Lower main Bike path
4000 RD.	Vehicle	City Forest, State Forest
4000-0.9	Foot	City Forest
4000-1.4	Vehicle	City Forest, BLM
4000-1.4-0.5	Foot	City Forest
4000-1.4-0.9	Foot	City Forest, BLM
4000-1.4-1.3	Foot	City Forest, Wetlands
4000-2.1 (South of LSC)	Vehicle/4WD	City Forest, State Forest
4000-2.1-0.1 (South of LSC)	Foot	City Forest
797-3.0	Vehicle/Foot	City Forest
797-4.1	Vehicle	City Forest
797-4.5	Foot	City Forest, Bike Path
797-5.0	Vehicle	City Forest, Bike Path

7.1. Facilities Contacts

The following are contacts for the City and the Independent Highway District..

- City of Sandpoint
 - Name: Amanda Wilson
 - Phone: 208-263-3411
 - Email: awilson@sandpointidaho.gov
 - Address: 1123 Lake Street, Sandpoint, ID 83864

- Independent Highway District
 - Name: Mel Bailey
 - Phone: 208-255-8121
 - Email: ihdmbailey@gmail.com
 - Address: 1630 Baldy Mtn. Rd. Sandpoint, ID 83864

7.2. Purpose

Passing under this system of roads, through a myriad of culverts and bridges is a vast network of creeks, tributaries, ditches, and drainages. Maintenance of this road system is crucial to minimizing the adverse effects on the hydrologic system. Lack of maintenance has an adverse effect on the hydrologic system

when road surfaces, crossings, and/or slope failures become sources of sediment pollution. The goal of this chapter is to facilitate planning and scheduling for inspection and maintenance of the road system, except Schweitzer Mountain Road, to ensure adequate protection of water quality within the Watershed through minimization of soil erosion and sediment production. Although all property owners within and effecting the Watershed are encouraged to follow the best management practices of this plan, all references to inspections, maintenance, and construction described within this Chapter is only applicable those roads located on City-owned property and are not intended to convey, implied or explicitly, any limitations or restrictions on other property owners, including but not limited to the Independent Highway District (IHD).

7.3. Inspection

The system of roads and culverts within the Little Sand Creek Watershed should be inspected annually at a minimum. The focus of these inspections is to locate and remedy problem areas to reduce the frequency of road failures. Culvert inspection records will be integrated into the Watershed road map annually by the City. Forest roads inspections will utilize the inspection forms created for forest road survey in the previous section based on [Idaho Forestry Best Management Practices Field Guide](#), as included in Appendix C. Inspections should compare, photographically, the conditions of road and culvert crossings from the year before. The most appropriate time of year to perform these inspections is most likely between snow melt and the end of June when flowing water is at its highest levels. This will also give the maintenance crews adequate time to perform maintenance work before the fall rains and snow occurs.

7.4. Maintenance

Maintenance is performed on Schweitzer Mtn. Rd. by IHD continuously during all seasons. Major maintenance projects (non-emergency) should occur on roads and water crossing annually during the summer. The prime time for road maintenance construction is after stream flows have subsided to some degree but before the conditions have dried to the point where wildfire is a serious risk. Construction should be performed according to the IDL specifications and/or specifications designed by the engineer of record, and Idaho Forest Practices. Construction must also adhere to any applicable in-water work or erosion and sediment control permitting (USACE 404, IDEQ 401, and EPA CGP). Maintenance activities should include a combination of full culvert removal, culvert replacement, bank stabilization, surface grading and stabilization, water bars, rolling dips, ditching, culvert installations, grass seeding and/or mulching.

7.5. New Construction

See new construction specifications in Section 10.1.1.3.

7.6. Disposal Sites

Many road maintenance activities generate dirt, rock, or combination spoils that are hauled off for disposal. Placement/disposal of these spoils is important. If spoils are dumped in the wrong location, they can have a deleterious effect on nearby water bodies. Proper placement and sediment and erosion control practices will ensure spoils do not generate sediment laden runoff which enters creeks and water conveyances. Several potential safe disposal areas have been indicated on the LSC Watershed Webmap. Future maintenance and construction excavation spoils materials will be disposed of in designated approved locations within the watershed. ESC BMPs will be provided as described in IDL

standards, as designed by the engineer of record, or The Idaho Catalog of Stormwater Best Management Practices, and in Idaho Forest Practices – Forester Forums.

7.7. Chemicals and Deicers

The use of deicing materials is important for maintaining winter access to Schweitzer Mountain Resort a recreational destination with seasonal and full-time residents. However, the use of deicing chemicals can have adverse impacts on water quality, aquatic, and terrestrial life. The Idaho Transportation Department commissioned a literature review which was finalized in June of 2014, “The Impacts of Using Salt and Salt Brine for Roadway Deicing” (Casey, Alwan, Kline, & Linsenmayer, 2014). That review references the pre-eminent authority on the subject of selecting deicing chemicals, “Guidelines for the Selection of Snow and Ice Control Materials to Mitigate Environmental Impacts” (Levelton Consultants Limited, 2007). It is recommended that use of deicers are selected with a low probability for impact to water quality or aquatic life.

7.8. Volunteer Involvement

Volunteer opportunities exist to assist the City in performing road and culvert inspections. This would occur on City, State, BLM, and Federal Lands only, leaving the highway inspection to IHD staff. Using the survey protocol that was developed for the field assessment phase of this project, groups could work in the field under the supervision of City or consultant staff to photo document and assess this important infrastructure. The City to assign one of their engineers, maintenance managers or consultants to review the photos and survey forms and make the recommendations prioritizing maintenance projects.

7.9. Draft Volunteer Training Outline

1. Prior to Surveying
 - a. Identify Survey Coordinator
 - b. Coordinate with volunteer group leader to ensure enough equipment is available.
 - c. Coordinate safety concerns and equipment.
 - d. Determine number of crews, each crew needs a leader. Crews consisting of minors need to have an able adult supervisor.
2. First Day of Survey
 - a. Group meeting to go over survey goals.
 - b. Assign survey areas and go over mapping.
 - c. Go over survey data collection process with entire group and separately with group leaders.
 - d. Survey Coordinator to rotate through each crew to ensure data collection consistency and answer any questions.
3. Last Day of Survey
 - a. Assemble group again at end of day to hand in data collected.
 - b. Survey coordinator to answer any questions and receive feedback.

7.10. Action Items

- Formalize a memorandum of understanding with IHD that addresses Schweitzer Mountain Road inspection, maintenance, and construction. (Primary Goal).

- Coordinate with IHD and Schweitzer Mountain Road to address spoils disposal area erosion and sediment control (i.e., placing stone embankment on the fill slope to minimize the cutting action of the water on spoil dump locations) (Primary Goal).
- Provide training for construction inspectors on construction and maintenance methods (Primary Goal).
- City to assign responsibility for annual ongoing forest road maintenance and prioritization of projects (Primary Goal).
- Provide road signage for all roads (All Goals).

8. Timber Management Plan

Appendix D incorporates the current Timber Management Plan and includes:

- Understory Vegetation, Biodiversity, and Cover Types
- Rare Plants of Concern
- Noxious Weeds
- Forest Health
- Merchantable Timber
- Marginal Forestland
- Forest Carbon Cycling
- Resource Unit Descriptions
- Forest Productivity
- Annual Harvest Level
- Harvest Recommendations
- Action Plan

9. Fire, EMS, and Incident Management Strategy

The Little Sand Creek Watershed encompasses 7,400 acres, 18 miles of roads, and approximately 40 miles of trails, which are subject to public use and risk of wildfire during the summer months. Approximately 53 percentage of the Watershed is owned by the City of Sandpoint; however, the property is located outside of city limits and jurisdiction is with Bonner County and Idaho Department of Lands for emergency response and wildfire suppression within the Watershed. In order to better facilitate emergency response activities, the following strategy outlines communication, policies, and provides a framework for fire and EMS managers to keep communication open and fluid. This plan should be circulated annually prior to the fire season and updated, as necessary.

9.1. Current Fire and EMS Manager Contacts

This list is to be updated annually each spring the by the responsible party in each jurisdiction and circulated within the group. The City of Sandpoint’s Fire Chief’s office shall be responsible for circulating this plan each spring prior to the fire season. The plan is to include a contact tree for all emergency response notifications within the Watershed including fire, police, EMS, search, and rescue, etc. The contact tree, as provided in Appendix, will assist each entity in knowing who should be contacted for various Watershed incidents. City Fire Management Policies

9.2. City Fire Management Policies

Many of the activities associated with fighting wildfires have the potential to affect water quality and critical areas in and along Little Sand Creek, therefore, this plan further defines policies governing certain activities associated with wildland fire fighting on its properties within the Watershed. The following policies can also be used as guidelines during negotiations with other property owners that affect the water quality of Little Sand Creek through their land use activities.

9.2.1. Fire Response Policy

Though the City is the primary landowner within the Watershed, it is not the primary responder to fire emergencies on the property. The primary responsibility for fire response within the boundaries of the Watershed falls upon the Idaho Department of Lands due to its rural, forest status. Selkirk Fire does not have the authority to respond to fires within the Watershed (without invitation from an outside authority) because the Watershed is outside of the City limits.

9.2.2. Use of Fire Retardant

Ammonium based fire retardants are important to wildland fire suppression, however, application to water courses could cause fish mortality depending on concentration within the stream (Norris & Webb, 1989). Fire retardant contamination in Little Sand Creek could also cause problems for the treatment works. Retardant contamination of the stream could cause temporary increases in nitrate/nitrite levels and/or water cloudiness (HealthLink BC, 2018). Therefore, chemical retardants should not be applied unless it absolutely necessary as a last resort, as determined by the incident manager and care should be taken to avoid contamination of LSC.

9.2.3. Pollution Control Procedures During Fires

Wildland fire fighting has the potential to introduce new sources of pollutants into the Watershed. Therefore, the following policies are established regarding pollution control during fire scenarios. This strategy should be used to develop a memorandum of understanding with IDL to ensure the Agency recognizes the pollution control constraints on City property.

9.2.3.1. Fire Fighting Equipment

- All vehicles and equipment shall be regularly inspected prior to entering the Watershed for visible fuel and/or oil leaks.
- All fire trucks and equipment should have a minimum 5-gallon spill kit on board.
- Vehicle and equipment fueling shall take place in upland areas more than 150 feet from surface waters.
- Automatic fuel pumps should never be left unattended during fueling.
- When not in operation vehicles and equipment should be parked more than 150 feet from waters and wetlands when possible. If proximity to waters cannot be avoided, then park as far away from ditches or drainage features as possible.
- Pumps and stationary equipment should operate with secondary containment when within 150 feet of OHW to prevent drips and spills from reaching the ground.

9.2.3.2. Roads, Staging, and Heliports

Wildland fire fighting can require construction of access roads and helicopter landing sites (heliports). These areas concentrate vehicle and equipment operation and pose an increased risk of becoming pollutant sources. Therefore, the following are requirements for construction of roads and heliports

during fire scenarios. Current forest roads and existing heliports are shown on the City of Sandpoint Watershed Web Map.

- Roads, staging areas, and heliports should not be constructed within critical areas (Riparian Areas, Wetlands, Seeps, & Steep Slopes).
- Staging areas should be sited more than 150 feet from waters and wetlands when possible.
- Road construction should follow Idaho Forestry Best Management Practices.
- Staging of fuels and oils should only occur with secondary containment capable of capturing the volume of storage container.
- Portable lavatories should be anchored to prevent tipping.
- Solid waste containers must be provided and secured from animal tampering.
- Secondary containment must be provided for stationary generators to prevent drips and spills from reaching the ground.
- Spill kits must be maintained onsite at staging areas and heliports.
- Disturbed areas must be scarified, seeded, and mulched prior to vacating the area to prevent exposed soils from becoming sources of sediment to the waterways.

9.2.4. Water Sources

This plan does not recommend the use of helicopter dipping out of the reservoir. The option for use of truck filling has a low probability of contamination while the use of helicopter dipping has a higher potential for pollution of the City's water source. Allowable activities should be accompanied by procedures for their use. Those procedures can be added here as an addendum to the overall fire management strategy and Watershed management plan. Among the procedures listed should be protocols to ensure unwanted pollutants do not enter the reservoir during extraction of water, including but not limited to the following:

- Maintain spill kits in proximity to extraction points during fire season (downstream end of reservoir and adjacent fire hydrants).
- Fueling, maintenance, and staging should not occur anywhere near the reservoir.
- If water withdrawal pumps are used, screen pumps to prevent fish suction and entrapment shall be utilized.

9.2.5. Water Treatment Plant Shutdown

During or after active fire conditions, Little Sand Creek may become overwhelmed with pollutants such as ash or sediment. The City shall establish procedures in concert with the facility operations plan for evaluating conditions to determine when shutdowns are warranted. These procedures should be reviewed and updated annually and should be included here as an addendum to the plan. It is important that the City express in their memorandum of understanding with IDL on the procedures for shut down of the water treatment plant during a wildfire situation.

9.3. Other Watershed Information

- The existing Heliports have been illustrated on the LSC Watershed Webmap.
- Existing utility lines have been illustrated on the LSC Watershed Webmap.

9.4. Applicable Partner Agency Fire Management Plans

- [IDL](#)

- [BLM](#)
- [USFS Wildland Fire Management](#)

9.5. Action Items

- Circulate inter-agency EMS management strategy annually to maintain updated contacts and strategies (Primary & Secondary Goals).
- Negotiate inter-agency memorandums of understandings, as necessary, regarding wildland fire fighting and pollution control procedures within the Watershed (Primary & Secondary Goals).
- Coordinate Watershed planning tour to identify interdepartmental access needs and potential reopening of road areas.

10. Recreational Construction, Utilities, New Construction

The primary use of the City's property in the Little Sand Creek Watershed is as a domestic drinking water source for the Sandpoint area. Consequently, all activities within the Watershed fall under the U.S. Environmental Protection Agency and the Safe Drinking Water Act Amendments of 1996. To meet requirements, strict adherence to regulations must be observed regarding many facets of the Watershed, including recreation, new construction and maintenance of utilities, roads, and trails. This Chapter is only applicable to activities located on City-owned property.

10.1. Regulated Activities

The Watershed is currently being used for certain recreational activities, most predominantly downhill mountain biking. This plan contributes to the necessary practices to comply with the U.S. Environmental Protection Agency and the Safe Drinking Water Act Amendments of 1996 and maintain strict water quality regulations. A recreation master plan which is (will be upon adoption) included herein by reference and in Appendix F. City Code, Title 7, Chapter 16 defines regulated Watershed activities. In addition to recreation, other uses regulated uses generally include utility construction, timber management, road construction/maintenance, both of non-forest and forest roads, and short duration special uses (i.e., gatherings and events). Any authorized use within the Watershed will be conditioned to comply with the applicable best management practices contained within this plan. All construction projects must comply with the migratory bird treaty act and the gold and bald eagle protection acts as indicated in Chapter 4.2, as well as a number of other federal, state, and local regulations described herein.

10.1.1. Permit Review

To complete review of the permit application the applicant will need to provide the following information regarding Watershed environmental compliance as it relates to the following:

10.1.1.1. *New Trail Construction/Existing Trail Maintenance*

New construction of trails and maintenance of existing trails should provide the following information for compliance with the Watershed Management Plan:

- Map of proposed alignment⁶ with station increments (feet) starting at 00.
- Locations of and amount of ground disturbance.
- Existing and proposed drainage patterns for all trail segments to illustrate flow pathways for every foot of the alignment.
- Applicants should review the following in preparation for trail design (applicants will list on the application the primary design guidance document):
 - Guidelines for a Quality Trail Experience (Attached in Appendix E)
 - [The USFS Trail Construction and Maintenance Notebook](#)
 - NPS North County Handbook for Trail Design, Construction, and Maintenance (Attached in Appendix E)
 - [The IMBA Trail Creation & Enhancement Website](#) (not a primary design guide)
- Applicants will provide trail design drawings generally according to the attached in Appendix E:

⁶ Schweitzer Mountain Road is under the maintenance jurisdiction of the Independent Highway District. Any new trails or roads that enter or exit the Schweitzer Mountain Road right-of-way will require permission from IHD, prior to construction.

- National Park Service Appendix 1 Construction Specs for Trail Structures
- USFS Standard Specifications for Construction of Trails and Trail Bridges
- USFS Standard Trail Plans and Specifications Step by Step Guide
- USFS Sample Drawings
- Or other engineered drawing approved by the City.
- Not every specification and design detail is applicable to each proposed trail project. The City will use its discretion to determine if plans are sufficiently complete. Structures less than 8 feet in length and 2 foot above the ground may utilize the simple Park Service design details in Appendix E. Larger structures must use utilize the included USFS Standard Drawings, or other custom drawing designed and stamped by a registered professional engineer.
- Erosion and Sediment Control Compliance: All applicants are required to demonstrate how the project will prevent the creation and transport of free sediment. At a minimum, each applicant will be responsible for the stabilization of any exposed soils disturbed during construction using appropriate BMPs listed in the following section. If ground disturbance is under 1 acre the applicant must apply and comply with the Bonner County Grading/Stormwater/Erosion Control Permit (as applicable – see attached application in appendix F). If the project will disturb more than 1 acre it will require a notification of intent for coverage by [the EPA Construction General Permit](#).
 - Construction General Permit requires:
 - ESA Species Review
 - Archaeological and Historic Review
 - Wetland Determination/Delineation
- The following questions will be addressed: How many water crossings are planned? What types of water crossings (Stream or Wetland)?
 - Requires a stream/wetland determination/delineation to be submitted to the City.
 - If the project will impact waters of the state (includes wetlands) the project will require:
 - USACE & IDWR Section 404 Joint Permit Application
 - IDEQ Section 401 Certification

Construction of trails and maintenance of existing trails will comply with the applicable permits from above and shall utilize the following BMP's as applicable:

- Ground Disturbance: The following are minimum BMPs necessary for all projects that disturb ground in the LSC Watershed.
 - Utilize BMPs as outline in the Idaho Catalog of Stormwater Best Management Practices (attached in Appendix F). At a minimum:
 - BMP 1: Minimize Land Disturbance
 - BMP 2: Minimize Disturbance on Steep Slopes
 - BMP 3: Maintain/Provide Natural Buffers
 - BMP 7: Restore/Enhance Soils
 - BMP 8: Vegetation Restoration
 - BMP 36: Construction Timing
 - BMP 37: Staging Areas
 - BMP 38: Preserve Topsoil and Vegetation
 - BMP 39: Clearing Limits

- BMP 40: Vehicle Sediment Control
 - BMP 41: Stabilized Construction Roads and Staging Areas
 - BMP 42: Erosion Prevention on Construction Roads
 - BMP 43: Dust Control
 - BMP 46: Spill Prevention and Control
 - BMP 52: Mulching
- An Erosion and Sediment Control Plan will be required if the project qualifies for either the Bonner County Grading/Stormwater/Erosion Control Permit or the EPA Construction General Permit. The Idaho Catalog of Stormwater Best Management Practices should guide the ESC planning process.
- Waters and Wetlands
 - Establish wetlands and waters buffers as described in Chapter 5.1.1. Wetland and Riparian Areas. If encroachment of the buffer is necessary and approved, implement double BMPs. Comply with permit conditions as listed in the USACE/IDWR in water work authorization and IDEQ Section 401 Certification.
 - In water work timing
 - Streamside erosion and sediment control from above as applicable
 - Pollution control from above as applicable
 - Fish Removal and Relocation
- Threatened and Endangered Species
 - If applicable the project will comply with the terms and conditions of the ESA individual or programmatic opinion for federally listed species.
 - Habitat avoidance
 - In-water work timing
 - Fish Removal and Relocation
 - Tree removal timing
 - Construction noise operating hours
 - Regulated work areas
 - No work areas

10.1.1.2. Utilities

New utility installation and utility maintenance shall provide the following information for compliance with the Watershed Management Plan:

- Map of proposed alignment⁷ with station increments (feet) starting at 00.
- Locations of and amount of ground disturbance.
- Existing and proposed drainage patterns for all utility segments where ground disturbance will occur.
- Erosion and Sediment Control Compliance: All applicants are required to demonstrate how the project will prevent the creation and transport of free sediment. At a minimum, each applicant will be responsible for the stabilization of any exposed soils disturbed during construction using

⁷ Schweitzer Mountain Road is under the maintenance jurisdiction of the Independent Highway District. Any new utilities that enter or exit the Schweitzer Mountain Road right-of-way will require permission from IHD, prior to construction.

appropriate BMPs listed in the following section. If ground disturbance is under 1 acre the applicant must apply and comply with the Bonner County Grading/Stormwater/Erosion Control Permit (as applicable – see attached application in Appendix F). If the project will disturb more than 1 acre it will require a notification of intent for coverage by the EPA Construction General Permit.

- Construction General Permit requires:
 - ESA Species Review
 - Archaeological and Historic Review
 - Wetland Determination/Delineation
- The following questions will be addressed: How many water crossings are planned? What types of water crossings (Stream or Wetland)?
 - Requires a stream/wetland determination/delineation to be submitted to the City.
 - If the project will impact waters of the state (includes wetlands) the project will require:
 - USACE & IDWR Section 404 Joint Permit Application
 - IDEQ Section 401 Certification

Construction of new utility and existing utility maintenance will comply with the applicable permits from above and shall utilize the following BMP's as applicable:

- Ground Disturbance: The following are minimum BMPs necessary for all projects that disturb ground in the LSC Watershed.
 - Utilize BMPs as outline in the Idaho Catalog of Stormwater Best Management Practices (Attached in Appendix F). At a minimum:
 - BMP 1: Minimize Land Disturbance
 - BMP 2: Minimize Disturbance on Steep Slopes
 - BMP 3: Maintain/Provide Natural Buffers
 - BMP 7: Restore/Enhance Soils
 - BMP 8: Vegetation Restoration
 - BMP 36: Construction Timing
 - BMP 37: Staging Areas
 - BMP 38: Preserve Topsoil and Vegetation
 - BMP 39: Clearing Limits
 - BMP 40: Vehicle Sediment Control
 - BMP 41: Stabilized Construction Roads and Staging Areas
 - BMP 42: Erosion Prevention on Construction Roads
 - BMP 43: Dust Control
 - BMP 46: Spill Prevention and Control
 - BMP 52: Mulching
 - An Erosion and Sediment Control Plan will be required if the project qualifies for either the Bonner County Grading/Stormwater/Erosion Control Permit or the EPA Construction General Permit. The Idaho Catalog of Stormwater Best Management Practices should guide the ESC planning process.
- Waters and Wetlands
 - Establish wetlands and waters buffers as described in Chapter 5.1.1. Wetland and Riparian Areas. If encroachment of the buffer is necessary and approved, implement

double BMPs. Comply with permit conditions as listed in the USACE/IDWR in water work authorization and IDEQ Section 401 Certification.

- In water work timing
- Streamside erosion and sediment control from above as applicable
- Pollution control from above as applicable
- Fish Removal and Relocation
- Threatened and Endangered Species
 - If applicable the project will comply with the terms and conditions of the ESA individual or programmatic opinion for federally listed species.
 - Habitat avoidance
 - In-water work timing
 - Fish Removal and Relocation
 - Tree removal timing
 - Construction noise operating hours
 - Regulated work areas
 - No work areas

10.1.1.3. New Road Construction (non-forest)

New, non- forest, road construction projects shall not be developed on City-owned property.

10.1.1.4. New Forest Roads (Forest Practices)

New forest road construction projects on City property shall provide the following information for compliance with the Watershed Management Plan, in addition to all requirements by the Idaho Department of Lands, including applicable permits:

- Map of proposed alignment with station increments (feet) starting at 00.
- Locations of and amount of ground disturbance.
- Existing and proposed drainage patterns for all road segments.
- Erosion and Sediment Control Compliance: All applicants are required to demonstrate how the project will prevent the creation and transport of free sediment. At a minimum, each applicant will be responsible for the stabilization of any exposed soils disturbed during construction using appropriate BMPs listed in the following section. For all ground disturbing activities, the applicant must comply with the Idaho Forest Practices Act including the following (at minimum):
 - [Idaho Forestry Best Management Practices Field Guide](#)
 - [FPA 4 – Forest Roads – Compliant and Non-Compliant – updated October 2018](#)
 - [FPA 5 – Cross Ditches – updated October 2018](#)
 - [FPA 6 – Stream Protection Zones – updated October 2018](#)
 - [FPA 7 – Fords – When, When, Why and How – updated October 2018](#)
 - [FPA 10 – Potentially Unstable Slopes and Landforms – updated October 2018](#)
 - [FPA 11 – Rolling Drain Dip – updated October 2018](#)
 - [FPA 12 – Fish Passage Guidelines When Installing Stream Crossings – updated October 2018](#)
 - [FPA 13 – Slash Filter Windrows – updated October 2018](#)

- [FPA 14 – Correctly Classifying Streams to Protect Fisheries and Domestic Water Supplies – updated October 2018](#)
- How many water crossings are planned? What types of water crossings (Stream or Wetland)?
 - Requires a stream/wetland determination/delineation to be submitted to the City.
 - If the project will impact waters of the state (includes wetlands) the project will require:
 - USACE & IDL Section 404 Joint Permit Application
 - IDEQ Section 401 Certification

Construction of new forest roads will comply with the applicable permits from above and shall utilize the following BMP's as applicable:

- Ground Disturbance: The following are minimum BMPs necessary for all projects that disturb ground in the LSC Watershed.
 - Utilize BMPs as outline in the Idaho Catalog of Stormwater Best Management Practices (Attached in Appendix F). At a minimum:
 - BMP 1: Minimize Land Disturbance
 - BMP 2: Minimize Disturbance on Steep Slopes
 - BMP 3: Maintain/Provide Natural Buffers
 - BMP 7: Restore/Enhance Soils
 - BMP 8: Vegetation Restoration
 - BMP 36: Construction Timing
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 - BMP 38: Preserve Topsoil and Vegetation
 - BMP 39: Clearing Limits
 - BMP 40: Vehicle Sediment Control
 - BMP 41: Stabilized Construction Roads and Staging Areas
 - BMP 42: Erosion Prevention on Construction Roads
 - BMP 43: Dust Control
 - BMP 46: Spill Prevention and Control
 - BMP 52: Mulching
 - An Erosion and Sediment Control Plan is required. The Idaho Forestry Best Management Practices Field Guide and Catalog of Stormwater Best Management Practices should guide the ESC planning process.
- Waters and Wetlands
 - Establish wetlands and waters buffers as described in Chapter 5.1.1. Wetland and Riparian Areas. If encroachment of the buffer is necessary and approved, implement double BMPs. Comply with permit conditions as listed in the USACE/IDL in water work authorization and IDEQ Section 401 Certification.
 - In water work timing
 - Streamside erosion and sediment control from above (as applicable)
 - Pollution control from above (as applicable)
 - Fish Removal and Relocation
- Threatened and Endangered Species

- If applicable the project will comply with the terms and conditions of the ESA individual or programmatic opinion for federally listed species.
 - Habitat avoidance
 - In-water work timing
 - Fish Removal and Relocation
 - Tree removal timing
 - Construction noise operating hours
 - Regulated work areas
 - No work areas

10.1.1.5. Environmental Construction Inspection

Construction projects within the Watershed shall be inspected by the qualified environmental construction inspector for compliance with erosion and sediment control permits and plans, section 404 in-water work authorizations, section 401 water quality certifications, threatened and endangered species biological opinions, or other environmental permits according to the following schedule:

Table 12. Environmental Inspection Frequency and Schedule

Project Status	Minimum Inspection Frequency	Estimated Inspection Time
Pre-construction	One inspection prior to starting work onsite.	2 hours per linear mile of proposed project or 1 hour per 5 acres of active construction.
Active Construction	Once every 7 calendar days or within 24 hours of a 0.25-inch storm event.	2 hours per linear mile of active construction or 1 hour per 5 acres of active construction. Add 1 hour for Bridge Construction Sites. Assume minimum 4 hours of inspection time per day.
Inactive Construction (Unstable Sites)	Once every 7 calendar days or within 24 hours of a 0.25-inch storm event.	
Inactive Construction (Stabilized Sites)	Once per month.	
Post Construction	One punch list inspection prior to completion of the work. One additional inspection following completion of the punch list.	

10.1.2. Unregulated Uses

Public uses of the Watershed that do not require a permit are those activities already covered by permit. For example, a mountain biker using an established and authorized trail. These uses will be subject to general Watershed rules. These rules include but are not limited to the following and shall be signed accordingly:

- Pack out all trash
- No motorized vehicles
- No overnight camping
- No target shooting or hunting
- No equipment or tools
- No campfires
- No smoking
- Clean your gear to prevent the spread of invasive species

Signage illustrating these rules will be posted at Watershed entry points. Boot scrub pads and informational placards describing the importance of protecting the Watershed from invasive species will also be placed at Watershed entry points and other strategic locations. Watershed signage will also clearly define fines for breaking Watershed rules.

10.1.3. Unregulated Public Uses, in designated areas:

- Hiking
- Berry picking
- Mushroom Harvesting
- Cross Country Skiing
- Bicycle Riding (excludes any kind of trail construction)

10.1.4. Action Items (Secondary Goals)

- Develop a signage plan and install signage illustrating Watershed use rules and “designated areas,” as applicable
- Develop, adopt, and maintain a comprehensive recreation master plan for the Watershed to define the long-term vision and locations, based upon a robust public engagement effort and in close consideration of the parameters provided within this Plan.
- Coordinate with Idaho Fish and Game to review any and all harvest (hunting) opportunities and necessary associated restrictions.
- Perform annual spring Watershed environmental inspection and train accordingly.
- Identify a prequalified list of professional resources to assist applicants with permit processes and compliance.
- Identify educational opportunities and outreach efforts to support proactive compliance with rules.

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11. Addendums Requested

- IHD Memorandum of Understanding
- Sandpoint EMS Response and Communication Plan
- LSC Reservoir Fire Management Water Source Use decision and Use Procedures
- LSC WTP Shutdown Procedures

12. Appendices

- Appendix A – USDA Web Soil Survey
- Appendix B – IDEQ Source Water Protection Plan
- Appendix C – Road and Stream Crossing Survey Forms
- Appendix D – 2019 LSC Watershed Timber Management Plan
- Appendix E – New Construction and Maintenance Specifications
- Appendix F – Recreation Management plan (Pending)

Appendix A – USDA Web Soil Survey

Appendix B – IDEQ Source Water Protection Plan

Appendix C – Road and Stream Crossing Survey Forms

Appendix D – 2019 LSC Watershed Timber Management Plan

Appendix E – New Construction and Maintenance Specifications

Appendix F – Recreation Management plan (Pending)