



DEPARTMENT OF  
**ECOLOGY**  
State of Washington

## **SWIFT CREEK ACTION PLAN**

### **Whatcom County, Washington**

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WASHINGTON STATE DEPARTMENT OF ECOLOGY

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## LIST OF ACRONYMS AND ABBREVIATIONS

ARAR	applicable or relevant and appropriate requirements
Ca	calcium
CAP	cleanup action plan
SCAP	Swift Creek action plan
CERCLA	comprehensive environmental response compensation and liability act
CY	cubic yards
Ecology	department of ecology
EE/CA	engineering evaluation/cost analysis
EIS	environmental impact statement
EPA	United States environmental protection agency
J	estimated value
MFL	million fibers per liter
Mg	magnesium
mg/L	milligrams per liter
MTCA	Model Toxics Control Act (Chapter 70.105D RCW)
NTU	nephelometric turbidity units
PCME	phase contrast microscopy equivalent asbestos concentration
ppm	parts per million
RCW	revised code of Washington
RI/FS	remedial investigation/feasibility analysis
s/cc	asbestos structures per cubic centimeter
SPLP	synthetic precipitation leaching procedure
TCLP	toxic characteristic leaching procedure
TEE	terrestrial ecological evaluation
U	value not detected at reported concentration
ug/L	micrograms per liter
um	micrometers
WAC	Washington Administrative Code
WCH	Whatcom County health department

# EXECUTIVE SUMMARY

This document presents the Swift Creek Action Plan (SCAP) for the Swift Creek/Sumas Mountain Site near Everson Washington. This SCAP was prepared by the Washington State Department of Ecology (Ecology) in collaboration with Whatcom County and the United States Environmental Protection Agency (EPA). This SCAP has been prepared to meet the requirements of the Model Toxics Control Act (MTCA) administered by Ecology under Chapter 173-340 of the Washington Administrative Code (WAC). This SCAP describes Ecology's proposed action for this site and sets forth the requirements the action must meet.

## Background

Swift Creek is a small creek in the northeastern lowlands of Whatcom County. An ongoing landslide on Sumas Mountain that is believed to have started in the late 1930's or early 1940's has resulted in a large volume of sediment containing naturally occurring asbestos and metals continuously filling up the creek bed. For several decades Swift Creek has been dredged and the sediment managed to limit downstream flooding. This dredging and management of the sediment has created liability under the Model Toxics Control Act.

This Swift Creek Action Plan is intended to address those aspects of this site related to this historic liability and prospective liability for managing these sediments in the future. For context, it also describes broader actions needed beyond those required under MTCA to reduce environmental and human health risks resulting from this ongoing landslide and downstream flooding. It supports Ecology's commitment in a Joint Agency Agreement with EPA and Whatcom County to work together to manage the impacts of this landslide.

The landslide on Sumas Mountain where the sediment in Swift Creek originates is massive. The active part of the slide is approximately one mile long by one-quarter mile wide and encompasses approximately 225 acres, with an estimated volume of 68 million cubic yards. This landslide is slowly moving down Sumas Mountain within a layer of slippery serpentinite bedrock. Precipitation that falls within the watershed encompassing this landslide gravitates to the toe of the slide, where the south fork of Swift Creek emerges.

As the water flows along the surface of the landslide and emerges from the toe of the landslide, it picks up large amounts of sediment and debris (e.g. boulders, trees) and carries it downstream<sup>1</sup>. Then as Swift Creek flows down slope onto its alluvial fan, the terrain and stream gradient flattens out, and the water velocity slows, resulting in the Creek dropping much of the sediment and debris it is carrying. Suspended fine particles of sediment then continue downstream to the Sumas River and can eventually

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<sup>1</sup> Estimates vary from 30,000 cubic yards to up to 150,000 cubic yards per year, with the amount varying considerably during the year.

be carried by natural forces to the Canadian Border, some 10 river miles to the north. As further described in Section 4.1, for the purposes of this Swift Creek Action Plan, the site definition under MTCA is limited to the areas within and proximate to the Swift Creek alluvial fan where the sediment will be managed through actions described herein

Sediments from the landslide are naturally enriched in chrysotile asbestos, chromium, cobalt, magnesium, nickel, and exhibit an elevated pH. It is thought that the primary source of these contaminants is the serpentinite bedrock within the slide, with these contaminants released through natural physical and chemical weathering processes.

Studies by EPA confirm that activities common in a rural community can result in the asbestos in the sediment becoming airborne when dry and posing a significant health risk to individuals exposed to the dust. The primary concern with the metals in the sediment is the impact to terrestrial plants and aquatic life. The part of Swift Creek impacted by the sediment is essentially devoid of aquatic life. Areas where the sediment has been piled due to dredging activity are barren of plant life. And agricultural fields where the sediment has been deposited by flooding have stunted vegetation for many years after a flood event. The impact on plants is thought to be due to the sediment being enriched in magnesium, resulting in an imbalance in the calcium to magnesium ratio.

## Action Overview

Over the years, numerous studies have been conducted to evaluate options for stabilizing the landslide and managing the sediment that accumulates in Swift Creek. To date, the only practical alternative that has emerged is to capture the sediment in the upper reach of Swift Creek and manage it in a nearby repository that is covered with clean soil to prevent the sediment from re-entering the environment.

In addition, there are large piles of sediment along the creek between Goodwin and Oat Coles Roads that have accumulated as a result of historic dredging activity. This plan calls for stabilizing these sediments in place to create permanent levees to keep Swift Creek within its channel. Excess sediment not needed for levee construction would be hauled to the repository for long term management. These levees would be armored and encapsulated with clean soil to prevent erosion of the sediment back into Swift Creek and surrounding properties. In addition to stabilizing sediment in place, the elevated Swift Creek bed may also be stabilized in place and all or a portion of Swift Creek re-routed to establish lower bed elevations.

These actions, coupled with access restrictions, will permanently seal off the sediments, preventing the release of asbestos to the air.

These elements – levee construction and sediment capture and storage, along with other actions described in more detail this plan – constitute the proposed remedy under the Model Toxics Control Act. This remedy is intended to address hazardous substances that pose actual or potential threats to human health or the environment resulting from past releases and threatened releases caused by historical human activities to manage this naturally occurring sediment. The remedy is also intended to minimize

and address threats or potential threats with respect to any release or threatened release of hazardous substances caused by certain future human activities during management of this naturally occurring sediment.

## 1.0 INTRODUCTION

### 1.1 Purpose

This document is the Swift Creek Action Plan (SCAP) for the Swift Creek/Sumas Mountain site (Site) located near Everson, Washington. The general location of the Site is shown in Figures 1 and 2. An action plan is required as part of the site cleanup process under Chapter 173-340 WAC, the Model Toxics Control Act (MTCA). The purpose of the action plan is to identify the proposed action for the Site and to provide an explanatory document for public review. More specifically, this plan:

- Describes the Site;
- Summarizes current site conditions;
- Summarizes the action alternatives considered in the remedy selection process;
- Describes the selected action for the Site and the rationale for selecting this alternative;
- Identifies contaminants, points of compliance, and media of concern for the proposed action;
- Identifies applicable state and federal laws for the proposed action;
- Identifies environmental covenants and site use restrictions that are part of the proposed action;
- Discusses compliance monitoring requirements; and
- Presents the schedule for implementing the SCAP.

### 1.2 Previous Studies

This SCAP presents a brief description and history of the Swift Creek/Sumas Mountain Site. Over the years, numerous studies have been conducted to document current site conditions and to evaluate options for stabilizing the landslide and managing the sediment<sup>2</sup> that accumulates in Swift Creek (see Section 3.0). However, while much work has been done, none of the studies follow the format required under MTCA for a Remedial Investigation/Feasibility Study (RI/FS). Thus, this document provides more detail than a typical MTCA CAP, and pursuant to WAC 173-340-350(6), incorporates RI/FS requirements by reference by drawing relevant information from several of these documents.

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<sup>2</sup> Except where noted, the term “sediment”, as used throughout this CAP is a general term intended to include both the material in the bed of Swift Creek and the soil-like material in the dredge piles along Swift Creek.

## 1.3 Regulatory Framework

The asbestos and metals that are present in the Swift Creek sediment are hazardous substances under MTCA and several studies have shown that they pose a threat to human health and the environment. Since they are naturally occurring and are transported and deposited in Swift Creek through water flowing down the creek, a natural phenomenon, there would normally not be any requirement to conduct a remedial action under MTCA. However, because these sediments have been actively dredged to manage flooding over the years, a “release” or “threatened release” of “hazardous substances”, as those terms are defined or used in MTCA, has occurred at the Site. When compared with unabated natural processes and unmanaged human response, this SCAP will lead to more effective abatement of hazardous substances at the Site. In addition, this SCAP anticipates that active sediment dredging and management will be required into the future to reduce flood hazards. As such, this SCAP provides a plan for continuing that work in a manner that will abate threatened releases in compliance with MTCA.

EPA has been actively involved in this site and has conducted removal actions under the federal superfund law (CERCLA). However, the Swift Creek/Sumas Mountain site is not on the Federal National Priorities List as a federal superfund site. While there are many similarities between MTCA and CERCLA, this action plan is not intended to satisfy EPA’s requirements for a federal record of decision under CERCLA.

In addition to the actions under MTCA proposed in this SCAP, there are several other actions that could be taken to reduce the long term operation and maintenance costs and risks posed by the landslide and flooding caused by sediment deposition. These actions are described in the 2013 Swift Creek Sediment Management Action Plan (SCSMAP) and associated Environmental Impact Statement. While all of these actions are not necessary to address the MTCA releases or threatened releases at this site and thus are not part of the action specified in this plan, for completeness a description of these actions has been included in this SCAP.

## 2.0 Site Description and History

This section summarizes existing site conditions as described in the reports listed in Section 3.0 of this Swift Creek Action Plan. This description, and the associated reports, fulfills the remedial investigation requirements under WAC 173-340-350(7).

Swift Creek is a small creek in the northeastern lowlands of Whatcom County. The general location of the Site is shown in Figures 1 and 2. An ongoing landslide on Sumas Mountain that is believed to have started in the late 1930’s or early 1940’s has resulted in a large load of naturally occurring asbestos and metal-contaminated sediment continuously filling up the creek bed. For several decades Swift Creek has been dredged and the sediment managed to limit downstream flooding (Figures 3 – 5).

The landslide on Sumas Mountain where the sediment in Swift Creek originates is massive. The active part of the slide is approximately one mile long by one-quarter mile wide and encompasses approximately 225 acres, with an estimated volume of 68 million cubic yards. This landslide is slowly moving down Sumas Mountain within a layer of slippery serpentinite bedrock. Precipitation that falls within the watershed encompassing this landslide gravitates to the toe of the slide, where the south fork of Swift Creek emerges.

As the water flows along the surface of the landslide and emerges from the toe of the landslide, it picks up large amounts of sediment and debris (e.g. boulders, trees) and carries it downstream<sup>3</sup>. Then as Swift Creek flows down slope onto its alluvial fan, the terrain and stream gradient flattens out, and the water velocity slows, resulting in the Creek dropping much of the sediment and debris it is carrying. Suspended fine particles of sediment then continue downstream to the Sumas River and can eventually be carried by natural forces to the Canadian Border, some 10 river miles to the north. As further described in Section 4.1, for the purposes of this Swift Creek Action Plan, the site definition under MTCA is limited to the areas where the sediment has been actively managed within the Swift Creek alluvial fan.

Sediments from the landslide are naturally enriched in chrysotile asbestos, chromium, cobalt, magnesium, nickel, and exhibit an elevated pH. It is thought that the primary source of these contaminants is the serpentinite bedrock within the slide, with these contaminants released through natural physical and chemical weathering processes.

Table 1 provides a summary of asbestos and metals concentrations measured in the sediment relative to natural background and several regulatory values. While little sampling has been done outside of the sediment piles and areas with recent flood deposits, based on the limited sampling to date outside of these areas, it is likely that most soils within the Swift Creek alluvial fan and floodplains of Swift Creek and the Sumas River contain elevated asbestos and metals concentrations from historic flood events and natural changes in the location of the stream channel.

Studies by EPA confirm that activities common in a rural community can result in the asbestos in the sediment becoming airborne and posing a significant health risk to individuals exposed to the dust. Tables 2 and 3 summarize the results of these studies. All of these studies indicate that the asbestos typically found in the sediments from Swift Creek can cause potential cancer risks in individuals well in excess of the MTCA acceptable cancer risk ( $1 \times 10^{-6}$  residential;  $1 \times 10^{-5}$  industrial worker)

The primary concerns with the metals in the sediment are the impacts to terrestrial plants and aquatic life (not human health). The part of Swift Creek impacted by the sediment is essentially devoid of aquatic life. Areas where the sediment has been piled due to dredging activity are barren of plant life. And agricultural fields where the sediment has been deposited by flooding have stunted vegetation for many years after a flood event.

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<sup>3</sup> Estimates vary from 30,000 cubic yards to up to 150,000 cubic yards per year.





Figure 1: General Location of Swift Creek Site (Source: Whatcom County EIS)



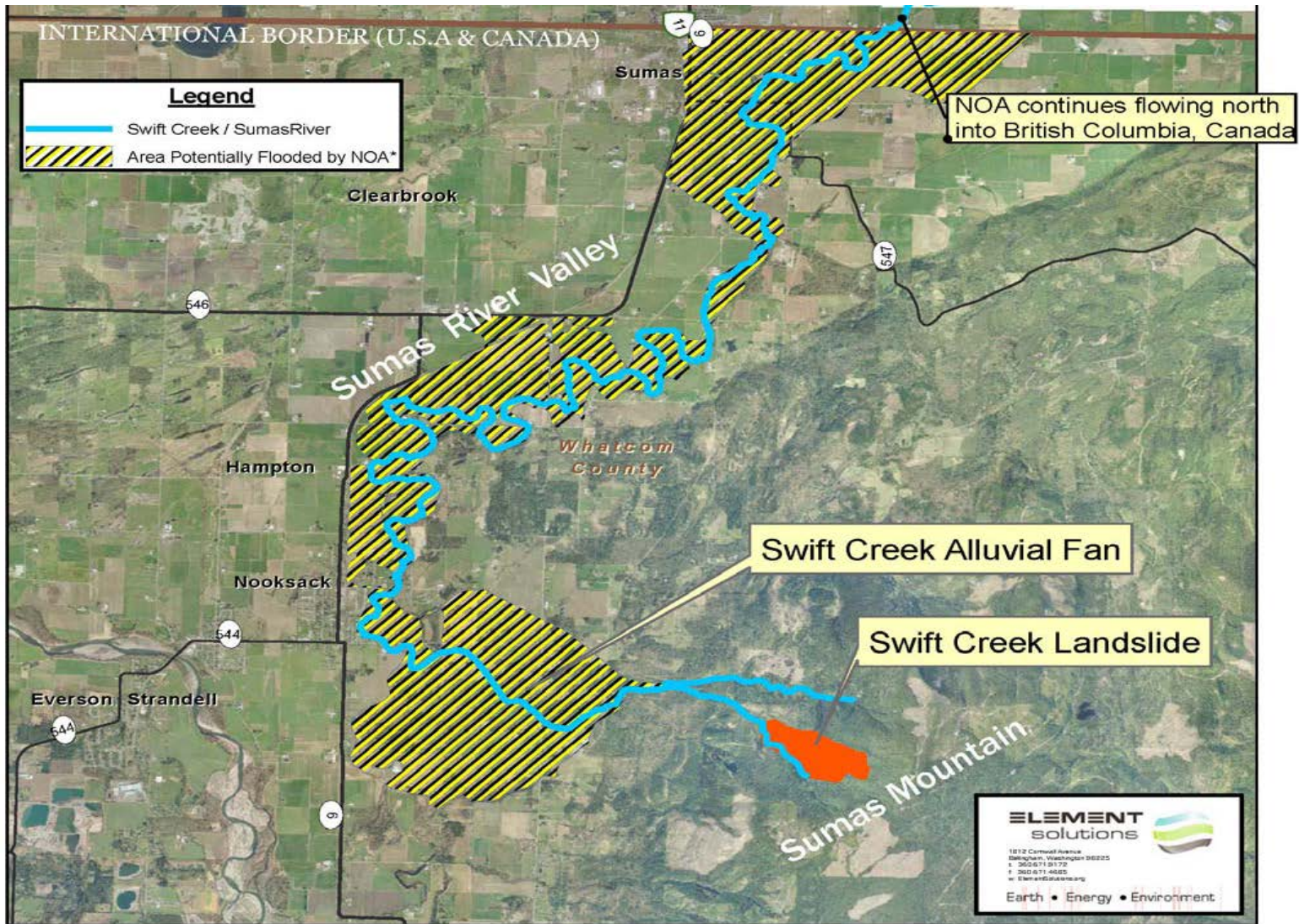


Figure 2: Swift Creek general vicinity map and areas at risk due to flooding and sediment deposition (Source: Whatcom County EIS)





**Figure 3: Great Western Lumber gravel removal operation along upper Swift Creek, 2009  
(Source: Whatcom County)**



***Figure 4: Swift Creek between Goodwin Road and Oat Coles Road, 2004 before dredging  
(Source: Whatcom County)***



***Figure 5: Swift Creek between Goodwin Road and Oat Coles Road, after dredging, 2006***



As noted in Table 1, the concentrations of chromium, cobalt and especially nickel in the sediment are well in excess of potentially toxic screening level concentrations for upland plants. While it is possible bioassays could be used to more precisely determine non toxic concentrations of these metals in the sediment, for upland soils, the effect of these metals is secondary to the magnesium levels in the sediment. As discussed in several studies, the magnesium levels are so high that the calcium to magnesium ratio of the sediment is 1 to 2 orders of magnitude below that needed for plants to thrive (3:1), resulting in the sediment piles being essentially devoid of plant life. This effect is also evident in agricultural fields where the sediment has been deposited by flooding, stunting vegetation for many years after a flood event.

As the sediment moves down Swift Creek, the fine components of the sediment become suspended within the water, resulting in very high turbidity levels, severely impacting water quality. High turbidity levels can cause fish to stop feeding and seek cover, migrate to other areas, secrete excessive mucus, and suffocate. In addition, the turbidity and the substantial and constantly shifting bed load smothers aquatic life within the creek channel, adversely impacting food supply, cover, and spawning habitat. Furthermore, the concentrations of chromium and nickel in the sediment are well in excess of fresh water sediment screening level concentrations for aquatic life, indicating the sediment is likely toxic to aquatic life. The result is a creek that is essentially devoid of aquatic life throughout much of its length. Only the north fork of Swift Creek, which is unaffected by the slide, has been found to have a viable fish population. (2013 EIS)

During precipitation events the suspended sediment is flushed downstream, resulting in violations of chronic water quality criteria for nickel in both Swift Creek and the Sumas River. During dryer times of the year when flow in Swift Creek soaks into the ground and no longer reaches the Sumas River, the nickel concentrations in the river reduce to within acceptable levels. See Tables 4 through Table 7 for a summary of available surface water quality data and Appendix D of the Swift Creek Sediment Management Action Plan EIS for additional discussion of surface water quality within Swift Creek and the Sumas River.

Because the sediment contains asbestos and elevated concentrations of several metals, tests were conducted by the Whatcom County Health District and the USEPA to examine potential impacts to groundwater due to leaching of these substances. For metals, this included sediment analysis for a suite of targeted metals, and the use of two leaching tests - the Synthetic Precipitation Leaching Procedure (SPLP) and Toxicity Characteristic Leaching Procedure (TCLP) to examine the mobility of these metals. For both metals and asbestos, this included characterization of local groundwater through the installation and testing of three monitoring wells and testing of several private wells in the vicinity of the Creek.

The metals analyses found four metals (chromium, cobalt, nickel, and magnesium) to be elevated in the sediment at concentrations significantly greater than natural background levels found in other parts of Washington State. However, leach testing found these metals to be low in solubility, decreasing concern for effects to groundwater. And groundwater monitoring and water well test data did not find significant levels of either asbestos or these metals.

These data were also compared with primary and secondary drinking water MCLs and no exceedances were found, with most metals falling ten to one hundred times less than these standards. Based on data from both the Whatcom County Health tests and the USEPA testing, the USEPA concluded that leaching of metals from sediment and dredge material would not be expected to have significant impact on groundwater quality.<sup>4</sup>

The Washington State Department of Health in a more recent Draft Health Consultation,<sup>5</sup> agreed with EPA's analysis for asbestos, cobalt and nickel. In contrast, they noted that the reporting limit for arsenic used in the EPA leaching studies and water well tests, while at the drinking water standard, was above concentrations of potential health concern. However, arsenic within the sediment is at or below concentrations typically found in background, uncontaminated soils throughout Washington State and if found, would not be attributable to the Swift Creek sediment. In addition, groundwater tests within the Abbotsford-Sumas Aquifer in the late 1990's did not find elevated arsenic levels (USGS, 10997). Therefore, Ecology has concluded this is not a contaminant of concern at the site.

Furthermore, in this same Health Consultation, the Washington State Department of Health also noted that the chromium analyses were for total chromium but if the chromium is in the form of hexavalent chromium, there could be a health concern. However, there is no reason to expect the chromium at this site to be in the form of hexavalent chromium, as if it were, it would likely have been found in the water wells that were tested. So Ecology concludes it is unlikely this is a contaminant of concern at the site. Future monitoring will include speciation of the chromium in selected samples to confirm this.

Therefore, Ecology concludes it is unlikely that potential leaching of the contaminants of concern at this site (asbestos, chromium, cobalt, nickel, and magnesium) would affect groundwater quality to the degree that there would be adverse impacts human health or ecological receptors.

However, the studies do show that there could be a modest increase in the mineralization of groundwater, primarily due to leaching of magnesium. While not at levels that would be of human health or ecological concern, this could potentially increase the hardness of the groundwater, and thus affect the aesthetic qualities of the groundwater, if the sediment is deposited in an area outside the Swift Creek alluvial fan. Therefore, should this occur, additional work will be needed to address this potential concern.

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<sup>4</sup> Engineering / Cost Analysis Sumas Mountain Asbestos Site, Appendix A; USEPA, July 2013

<sup>5</sup> DRAFT Health Consultation, Asbestos and Metals in Groundwater and Leachate, Swift Creek Site, Whatcom County, Washington, WA State Department of Health, March, 2015.

**Table 1: Soil/Sediment Sample Results for Selected Substances (all values mg/kg except asbestos)**

	Asbestos (%)	Calcium	Chromium	Cobalt	Magnesium	Nickel	Ca:Mg Ratio
<b>EPA 2006<sup>a</sup></b> (6 samples)							
Average	1.9	4,340	245	71	167,667	1,593	0.026
Median	1.6	4,250	233	70	169,000	1,585	0.027
<b>EPA 2009<sup>b</sup></b> (29 samples)							
Average	12.3	2,547	291	74	203,862	1,614	0.026
Median	11.0	2,230	305	75	195,000	1,660	0.012
<b>WCH 2009<sup>c</sup></b> (6 samples)							
Average			209	67	138,110		
Median			204	68	136,462		
<b>EPA 2010<sup>d</sup></b> (14 samples)							
Average	11.1	3,338	230	68	143,667	1,302	0.061
Median	12.5	3,315	272	78	169,500	1,530	0.019
<b>EPA 2013<sup>e</sup></b> (5 samples)							
Average	3.2	4,852	224	58	113,550	1,139	0.132
Median	2.7	4,615	263	73	143,000	1,415	0.032
<b>EE/CA 2013<sup>f</sup></b> (4 samples)							
Average		1,803	302	81	104,150	1,808	0.027
Median		1,875	298	81	97,600	1,825	0.016
<b>Reference Values</b>							
Statewide Background <sup>g</sup>		5,493	42	11	298	38	18.4
Method B Direct Contact <sup>h</sup>			120,000			1,600	
TEE Table 749-3 <sup>i</sup>			42	20		2	
Freshwater Sediment <sup>j</sup>			72 88			26 110	

a. Swift Creek Asbestos Integrated Assessment Final Report; TDD Number 06-03-0020; Region 10 START;

November 2006. A total of 48 samples were analyzed; this is just the 6 samples with both asbestos and metals data. The average asbestos content for all 12 grab samples was 1.9% and the 36 composite samples was 1.6%.

b. Soil, Sediment and Surface Water Sampling; Sumas Mountain Naturally Occurring Asbestos Site, Whatcom County Washington, EPA Region 10, October 13, 2009.

c. Whatcom County Health Department sediment samples, 2009.

d. Environmental Monitoring for Asbestos: Sumas Mountain Asbestos Site Selected Residential Properties, August 23-26, 2010, Julie Wroble, EPA Region 10.

e. Soil Sampling Sumas Mountain Asbestos Site, Whatcom County, Washington, USEPA Region 10, November 19, 2013.

f. Draft Engineering Evaluation/Cost Analysis Sumas Mountain Asbestos (aka Swift Creek) Site, Whatcom County, Washington; TDD: 12-02-0006, 2013.

g. 90<sup>th</sup> Percentile values from: Natural Background Soil Metals Concentrations in Washington State, Ecology Publication 94-115, 1994. NOTE: Background values for calcium, cobalt and magnesium are from soils in the Spokane area since limited statewide data were available. No background data for asbestos in soil is available.

h. Calculated using Equation 740-2 in WAC 173-340-740. Value for chromium is trivalent chrome.

i. From Table 749-3 in WAC 173-340-900 - terrestrial ecological evaluation indicator values for plants in sensitive ecological locations.

j. From Table VI in WAC 173-204-563 – freshwater sediment cleanup objective values (top) and cleanup screening levels (bottom value) for protection of aquatic life.

**Table 2: Estimated excess lifetime cancer risks for various exposure scenarios using asbestos dust concentrations generated in August 2006 EPA activity based sampling study. (EPA, 2007)**

Activity				
<b>Loading/Hauling</b>	<b>Asbestos PCME (s/cc)</b>	<b>Dredge/Haul for 25 years</b>	<b>Dredge/Haul for 1 year</b>	<b>Farm/Soil Work</b>
Max Value	0.2076	5x10 <sup>-4</sup>	2x10 <sup>-5</sup>	3x10 <sup>-4</sup>
Mean Value	0.078	2x10 <sup>-4</sup>	7x10 <sup>-6</sup>	1x10 <sup>-4</sup>
<b>Shoveling/Raking</b>		<b>Gardening</b>	<b>Child Play</b>	
Max Value	0.0403	2x10 <sup>-4</sup>	1x10 <sup>-4</sup>	
Mean Value	0.018	1x10 <sup>-4</sup>	5x10 <sup>-5</sup>	
<b>Walking/Biking</b>		<b>Walking</b>	<b>Cross Country Biking</b>	
Max Value	0.09342	2x10 <sup>-4</sup>	4x10 <sup>-6</sup>	
Mean Value	0.029	5x10 <sup>-5</sup>	1x10 <sup>-6</sup>	

PCME = Phase contrast microscopy equivalent asbestos concentration; s/cc = structures per cubic centimeter

**Table 3: Estimated excess lifetime cancer risks for various exposure scenarios using asbestos dust concentrations generated in August 2010 EPA activity based sampling study. (EPA, 2011)**

Location & Activity	Asbestos PCME (s/cc)	Gardening	Walking	Farming	Child Play
1, walking in field with dry sediment	Max Mean 0.10296 0.09		1.1X10 <sup>-4</sup> to 9.6X10 <sup>-5</sup>		8.0X10 <sup>-5</sup> to 6.4X10 <sup>-4</sup>
1, Loading, raking, spreading dry sediment	Max Mean 2.2876 1.22	8.4X10 <sup>-4</sup> to 7.8X10 <sup>-3</sup>		1.5X10 <sup>-3</sup> to 1.2X10 <sup>-2</sup>	1.1X10 <sup>-3</sup> to 1.4X10 <sup>-2</sup>
2, Raking & mowing dry sediment near house	Max Mean 0.00728 0.004	2.7X10 <sup>-6</sup> to 2.5X10 <sup>-5</sup>			3.6X10 <sup>-6</sup> to 4.5X10 <sup>-5</sup>
2, Raking & mowing dry sediment near shed	Max Mean 0.02448 0.009	6.2X10 <sup>-5</sup> to 8.4X10 <sup>-5</sup>			8.0X10 <sup>-6</sup> to 1.5X10 <sup>-4</sup>
2, walking in corn field with dry sediment	Max Mean 0.0432 0.028		3.0X10 <sup>-5</sup> to 4.6X10 <sup>-5</sup>	3.5X10 <sup>-6</sup> to 2.2C10 <sup>-4</sup>	
3, raking along river – (Rained-wet sediment)	Max Mean 0.01672 0.0079	1.1X10 <sup>-5</sup> to 5.7X10 <sup>-5</sup>	1.8X10 <sup>-5</sup> to 8.4X10 <sup>-6</sup>	9.7X10 <sup>-6</sup> to 2.1X10 <sup>-5</sup>	7.0X10 <sup>-6</sup> to 1.0X10 <sup>-4</sup>

PCME = Phase contrast microscopy equivalent asbestos concentration; s/cc = structures per cubic centimeter



**Table 4: Surface Water Asbestos & Metals Analyses from Swift Creek and Sumas River**

Location	Asbestos MFL > 10 um		Chromium ug/L		Nickel ug/L	
	EPA 2009 (a)	EPA 2010 (b)	EPA 2009 (a)	EPA 2010 (b)	EPA 2009 (a)	EPA 2010 (b)
<b>Swift Creek</b>						
• 2 Goodwin Bridge	<b>1241</b>		<b>113</b>		<b>673</b>	
• 3/4 Oat Coles Bridge	<b>923</b>		<b>180/197</b>		<b>1070/1160</b>	
<b>Sumas River</b>						
• 1 Massey Road (bkgd)	0.19 U	1.0 U	0.34 J	10 U	3.9 J	3.4 J
• 5 South Pass Bridge	<b>63</b>	3.1	62.1	1.3 J	<b>369</b>	11.6 J
• 6 Nooksack City Park	<b>293</b>		65.3		<b>385</b>	
• 7 Telegraph Road	<b>879</b>	<b>8.5</b>	76.8	2 J	<b>467</b>	19.3 J
• Gillies Road Farm Bridge		6.1		1.4 J		18.6 J
• 9 Gillies Road Bridge	<b>300</b>	2.4	76.8/79.9	0.92 J / 1.1 J	<b>466/465</b>	15.5 J / 15.1 J
• 10 Alm Road	<b>544</b>		75.3		<b>454</b>	
• 11 Lindsay Road	<b>530</b>		<b>122</b>		<b>736</b>	
• 12 N. Telegraph Road	<b>321</b>	4.4	<b>150</b>	1.8 J	<b>880</b>	22.4 J
• 13 N. Telegraph Road 2	<b>265</b>	4.1	86.1	1.2 J	<b>488</b>	24.7 J
• 14 Front St./Rock Road	<b>213</b>		31.9		<b>193</b>	
• Jones Road/Canadian Border	<b>168</b>	1.7	19.9	10 U	<b>117</b>	14.8 J
<b>Surface Water Quality Standards (c)</b>						
Based on Swift Creek Hardness of 501 mg/L in 2009	Acute Chronic		2,054 666		5,533 615	
Based on Sumas River Hardness of 299 in 2009 and 168 in 2010	Acute Chronic		1,346 437	839 272	3,575 397	2195 244
Human Health (d)	7 MFL > 10 um		100 ug/L		100 ug/L	

a. Soil, Sediment and Surface Water Sampling; Sumas Mountain Naturally Occurring Asbestos Site, Whatcom County Washington, USEPA Region 10, October 13, 2009. Highly turbid water in both Swift Creek & Sumas River.

b. Environmental Monitoring for Asbestos: Sumas Mountain Asbestos Site Selected Residential Properties, August 23-26, 2010, Julie Wroble, USEPA Region 10. Very little turbidity in Sumas River, Swift Creek dry at sampling locations.

c. Trivalent chromium acute WQ Standard =  $\leq (0.316)(e^{(0.8190[\ln(\text{hardness})] + 3.688)})$  With a 1-hour average concentration not to be exceeded more than once every three years on the average.

c. Trivalent chromium chronic WQ Standard =  $\leq (0.860)(e^{(0.8190[\ln(\text{hardness})] + 1.561)})$  With a 4-day average concentration not to be exceeded more than once every three years on the average.

c. Nickel acute WQ Standard =  $\leq (0.998)(e^{(0.8460[\ln(\text{hardness})] + 3.3612)})$  With a 1-hour average concentration not to be exceeded more than once every three years on the average.

c. Nickel chronic WQ Standard =  $\leq (0.997)(e^{(0.8460[\ln(\text{hardness})] + 1.1645)})$  With a 4-day average concentration not to be exceeded more than once every three years on the average.

d. Human Health based on Department of Health drinking water standards (WAC 246-290-310).

Values exceeding either surface water quality or drinking water standards are **bolded**.

**Table 5: Calcium and Magnesium Analyses from Swift Creek and Sumas River and hardness calculation**

Location	Calcium (ug/L)		Magnesium (ug/L)	
	EPA 2009 (a)	EPA 2010 (b)	EPA 2009 (a)	EPA 2010 (b)
<b>Swift Creek</b>				
• 2 Goodwin Bridge	5,280		81,400	
• 3/4 Oat Coles Bridge	5,410/5,410		132,000/143,000	
<b>Average</b>	<b>5,367</b>		<b>118,800</b>	
<b>Hardness Equivalent (c)</b>	<b>13.5</b>		<b>488</b>	
<b>Total Hardness Equivalent</b>	<b>13.5 + 488 = 501 mg/L CaCO<sub>3</sub> (2009 samples)</b>			
<b>Sumas River</b>				
• 1 Massey Road (bkgd)	15,900	18,900	15,900	17,400
• 5 South Pass Bridge	11,200	16,500	60,000	30,900
• 6 Nooksack City Park	11,000		61,700	
• 7 Telegraph Road	8,900	16,200	67,900	31,500
• Gillies Road Farm Bridge		17,100		32,600
• 9 Gillies Road Bridge	9,310/9,040	17,600/17,400	68,100/70,100	33,000/33,200
• 10 Alm Road	9,190		68,000	
• 11 Lindsay Road	9,730		101,000	
• 12 N. Telegraph Road	10,400	19,300	122,000	32,800
• 13 N. Telegraph Road 2	11,200	20,200	79,000	31,900
• 14 Front St./Rock Road	11,900		43,300	
• 15 Jones Road / Canadian Border	17,600	27,200	35,500	20,900
<b>Average</b>	<b>11,281</b>	<b>18,933</b>	<b>66,042</b>	<b>29,356</b>
<b>Hardness Equivalent (c)</b>	<b>28.3</b>	<b>47.3</b>	<b>271</b>	<b>119</b>
<b>Total Hardness Equivalent</b>	<b>28.3 + 271 = 299 mg/L CaCO<sub>3</sub> (2009 samples)</b> <b>47.3 + 119 = 168 mg/L CaCO<sub>3</sub> (2010 samples)</b>			

- a. Soil, Sediment and Surface Water Sampling; Sumas Mountain Naturally Occurring Asbestos Site, Whatcom County Washington, EPA Region 10, October 13, 2009. Highly turbid water in both Swift Creek & Sumas River.
- b. Environmental Monitoring for Asbestos: Sumas Mountain Asbestos Site Selected Residential Properties, August 23-26, 2010, Julie Wroble, EPA Region 10. Very little turbidity in Sumas River, Swift Creek dry at sampling locations.
- c. Hardness equivalent in ppm CaCO<sub>3</sub>. Hardness is needed to calculate surface water standards for chromium and nickel. The following criteria have been used to classify water hardness for domestic water use. For reference, based on these criteria, Swift Creek water would be considered very hard and the Sumas River hard to very hard:

USEPA, 1976 (a)	Briggs, J.C., and Ficke, J.F., 1977 (b)
0-75 mg/L CaCO <sub>3</sub> = soft	0-60 mg/L CaCO <sub>3</sub> = soft
75-150 mg/L CaCO <sub>3</sub> = moderately hard	61-120 mg/L CaCO <sub>3</sub> = moderately hard
150-300 mg/L CaCO <sub>3</sub> = hard	121-180 mg/L CaCO <sub>3</sub> = hard
≥300 mg/L CaCO <sub>3</sub> = very hard	≥181 mg/L CaCO <sub>3</sub> = very hard

CaCO<sub>3</sub> = calcium carbonate

(a) Quality Criteria for Water, USEPA, 1976;

(b) Quality of Rivers of the United States, 1975 Water Year, [U.S. Geological Survey Open-File Report 78-200](http://pubs.er.usgs.gov/usgspubs/ofr/ofr78200).<sup>6</sup>

<sup>6</sup> <http://pubs.er.usgs.gov/usgspubs/ofr/ofr78200>

**Table 6: Swift Creek water quality data collected 2003-2006, and 2011-2013 (various locations) (from EIS, Appendix D).**

Parameter	# Samples	WQ Criteria (a)	Average	Maximum	Minimum
pH	21	6.5-8.5	8.1	8.8	7.5
Temperature (°C)	22	<18	8.4 (b)	20.1	0.1
Dissolved Oxygen (mg/L)	11	>8	10.2	14.3	4.5
Turbidity (NTU)	>18,000 (c)	(d)	243	>3,000 (e)	0

a. WAC 173-201A.

b. Sampling occurred more frequently during the winter so the average temperature value is likely underestimated.

c. Includes data recorded continuously every 15 minutes from October 2011 to April 2012 (PSE 2012).

d. 5 NTU over background when the background is 50 NTU or less; 10% above background when background is greater than 50 NTU.

e. Sensor limit for turbidity was 3,000 NTU but values in excess of this occurred on at least 14 different occasions.

mg/L = milligrams per liter

NTU = nephelometric turbidity units

**Table 7: Sumas River water quality data collected 2003-2006, and 2011-2013 (various locations) (from EIS Appendix D).**

Parameter	# Samples	WQ Criteria (a)	Average	Maximum	Minimum
pH	41	6.5 – 8.5	7.3	8.1	6.6
Temperature (°C)	41	<18	8.9	15.7	3.9
Dissolved Oxygen (mg/L)	33	>8.0	7.2	12.3	2.7
Turbidity (NTU)	>50,000 (b)	(c)	68.7	1,910	1.1

a. WAC 173-201A.

b. Includes data recorded continuously every 15 minutes from October 2011 to April 2012 (PSE 2012).

c. 5 NTU NTU over background when the background is 50 NTU or less; 10% above background when background is greater than 50 NTU.

## 3.0 Action Alternatives and Analysis

Over the years several engineering studies have been completed to evaluate alternatives for controlling the sediment transported down Swift Creek. This document incorporates those studies by reference to fulfill RI/FS requirements under WAC 173-340-350(6). These studies include:

1976, Final Geotechnical Report, Swift Creek Tributaries, Swift Creek Watershed, Whatcom County, Washington. Prepared for Soil Conservations Service by Converse Davis Dixon Associates, Inc., Contract AG53-scs-00041, January 15, 1976.

2005, Swift Creek Management Plan Final Report. Prepared by Kerr Wood Leidal for Whatcom County Flood Control Zone District, March, 2005.

2007, Swift Creek Repository Basic Design and Cost Estimate, Prepared for USEPA Region 10 by Ecology and Environment, March, 2007

2008, Swift Creek Background and Management Alternatives Final Report. Prepared by Kerr Wood Leidal for Whatcom County Flood Control Zone District, January, 2008.

2008, Planning Level Cost Estimate for Swift Creek Asbestos Site. Prepared by Hart Crowser for Department of Ecology, May, 2008.

2008 Swift Creek Short to Mid-Term Sediment Management Alternatives Assessment. Prepared jointly by Whatcom County Public Works, Ecology, and EPA, October, 2008.

2010, Sumas Mountain Naturally Occurring Asbestos Interim Alternatives Analysis. Prepared by Pacific Surveying and Engineering for Whatcom County Public Works, April 27, 2010.

2011, Swift Creek Sediment Management Plan Proposed Design. Prepared by Pacific Surveying and Engineering for Whatcom County Public Works, March 30, 2011.

2012 Swift Creek Sediment Management Action Plan, Phase 1 Project Plan, Phase 1 Implementation Plan, Prepared by Whatcom County Public Works for Whatcom County Flood Control Zone District, December, 2012.

2013, Swift Creek Sediment Management Action Plan and Phase 1 Project Plan Draft EIS. Prepared by Whatcom County Public Works for Whatcom County Flood Control Zone District, February, 2013.

2013, Swift Creek Sediment Management Action Plan and Phase 1 Project Plan Final EIS. Prepared by Whatcom County Public Works for Whatcom County Flood Control Zone District, February, 2013.

2013, Region 10 Start 3, Draft Engineering Evaluation / Cost Analysis, Sumas Mountain Asbestos (aka Swift Creek) Site, Whatcom County, Washington. TDD 12-02-0006. Prepared for USEPA Region 10 by Ecology and Environment, July 2013.

This SCAP incorporates several of the alternatives from these reports to fulfill FS requirements under WAC 173-340-350(8). In general, the range of alternatives evaluated in these reports encompasses the following categories of actions:

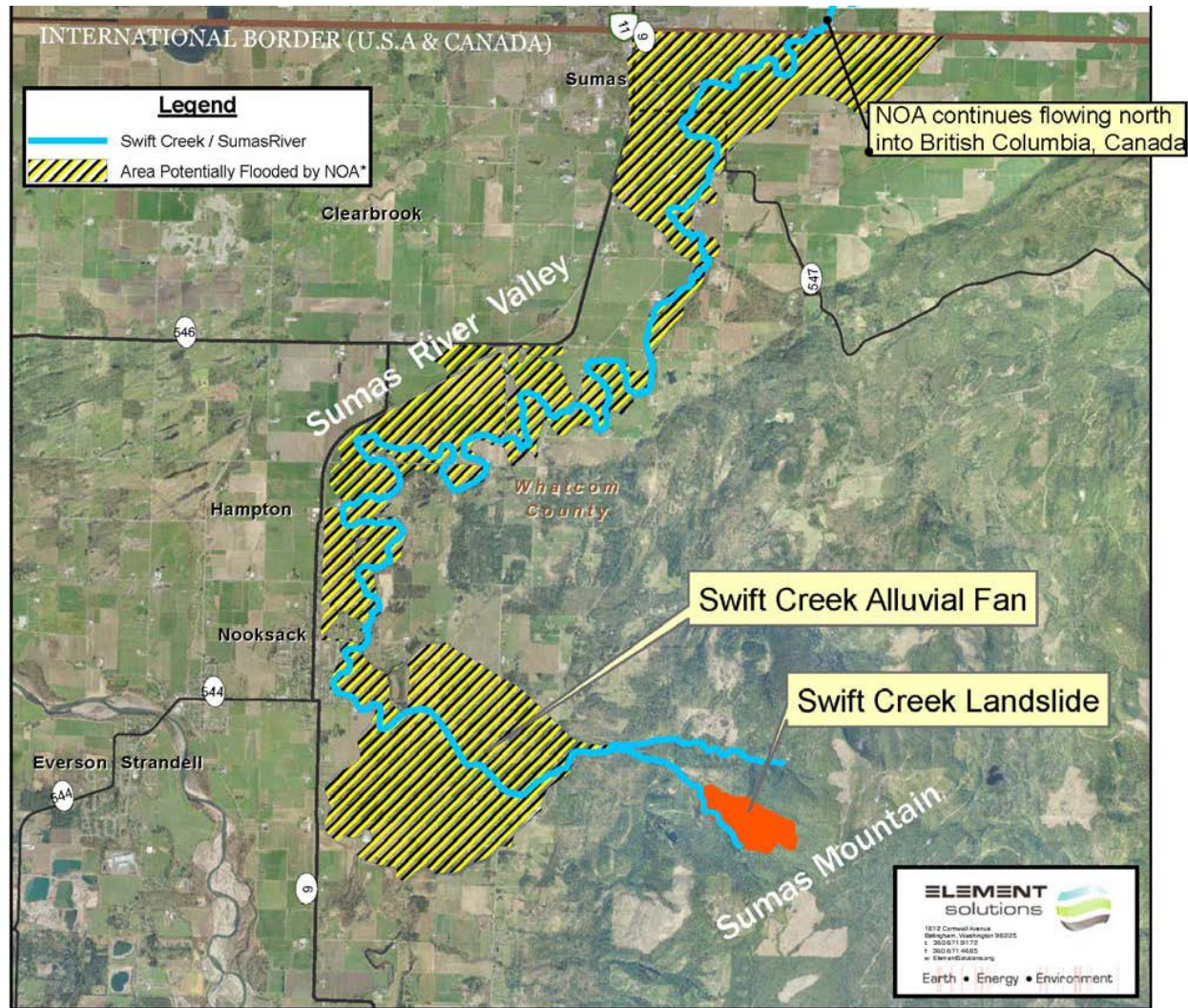
- Stabilizing the slide by controlling infiltration or constructing a toe buttress.
- Annual dredging of Swift Creek and managing the sediment.
- Capturing the sediment using a series of check dams and sedimentation ponds and managing the captured sediment either in the ponds or in a nearby repository.
- Constructing levees at strategic locations to keep Swift Creek within its channel.
- Rerouting the clean water in the north branch of Swift Creek to separate it from the south branch to reduce flow and downstream sediment movement.
- Infrastructure revisions such as removing or widening bridges and raising the elevation of roads within the Swift Creek alluvial fan.
- Letting Swift Creek flow naturally and limiting exposure through restrictions/limitations on access and development within vulnerable areas along Swift Creek and the Sumas River.

Sediment management options evaluated include:

- Depositing dredged/captured sediment in a repository within the Swift Creek alluvial fan.
- Hauling the dredged/captured sediment to a repository outside the Swift Creek alluvial fan, generally to a nearby gravel pit.
- Using the sediment, or the gravel component of the sediment, for controlled fill in construction projects in the area.
- Treating the sediment to render the asbestos innocuous.

Of these alternatives, the following have been eliminated in various reports as infeasible:

- **Construction of a toe buttress.** Converse et. al. (1976) estimated 13 million cubic yards of fill would be necessary to create a toe buttress with enough mass to counteract the slide force. At a modest \$5 per cubic yard, the cost of this enormous structure would be \$65 million just for the fill. This does not include access, drainage, or foundation preparation work which would likely be millions more. There is also some concern that if water built up behind this structure, it could lubricate and destabilize the slide. The total cost to stabilize a similar sized slide in Utah was \$200 million in 1983. (Kerr, Wood Leidal Associates, 2005)
- **Annual dredging of Swift Creek and depositing the sediment in a nearby repository.** \$1.9 million/year; \$15.7 million over 10 years, assuming repository haul distance is 5 miles. (July 2013 EE/CA)



**Figure 6: Area potentially impacted by flooding by Swift Creek and Sumas River that could be subject to acquisition of development rights under natural flow alternative.**

- **Letting Swift Creek flow naturally and acquiring development rights/land within the Swift Creek alluvial fan and Sumas River floodplain (Figure 6).** It would cost an estimated \$190 million just to acquire all properties within the 100 year floodplain of Swift Creek and the Sumas River. (Whatcom County personal communication) If just the Swift Creek alluvial fan was acquired, the cost is estimated at up to \$44 million. (2008 multiagency report) These cost estimates do not include the costs of demolition of structures on the acquired properties and infrastructure revisions to either remove or raise key roads and bridges in the affected area to prevent them from being buried by accumulated sediment.
- **Using the sediment, or the gravel component of the sediment, for controlled fill in construction projects in the area.** While a cost estimate for this hasn't been prepared, the Port of Bellingham evaluated and ultimately rejected this option in 1990. While potentially feasible with the right partners, the challenge with the use of Swift Creek material is that it has higher handling costs to limit asbestos exposure during placement. Also, any location where it is used needs to be: capped with clean soils; have groundwater monitoring; permanent land use restrictions on the property deed to prevent disturbance of the material; and, regular inspections conducted to confirm the material remains undisturbed. This results in the material having a "stigma" that would likely make its use infeasible for most projects. Also, given the abundance of cheap fill material available in Whatcom County, it is unlikely this would be competitive with other sources of clean fill material without a substantial subsidy.
- **Treating the sediment to render the asbestos innocuous.** In 2009, ABCOV, a private company working with EPA, evaluated a proprietary process where the sediment was pulverized and treated with acid to breakdown the asbestos fibers. This was found to be unsuccessful in part because much of the aggregate within the sediment could not be sufficiently pulverized to enable treatment.

In all likelihood, it will take a combination of the remaining alternatives to manage sediment in Swift Creek in the future. The Swift Creek Sediment Management Action Plan and Phase 1 Project Plan Final EIS (2013) provide a comprehensive discussion of recommended actions and an analysis of those actions. Rather than repeat that analysis here, the reader should refer to that document. A list of those actions is provided in Table 8.



**Table 8: Comprehensive List of Recommended Actions from the Swift Creek Sediment Management Action Plan and Phase 1 Project Plan Final EIS (2013)**

Landslide Stabilization <ul style="list-style-type: none"><li>• Landslide Monitoring</li><li>• Landslide Toe Stabilization <sup>7</sup></li><li>• Surface Drainage</li></ul>
North Fork Reroute
Levee Construction and Protection <ul style="list-style-type: none"><li>• Upper Goodwin Reach Deflection Levee</li><li>• Goodwin to Sumas Levees</li></ul>
Sediment Capture and Management <ul style="list-style-type: none"><li>• Canyon Reach Sediment Traps</li><li>• Sediment Basins</li><li>• South Pass Setback Levee and Sediment Trap</li><li>• Sediment Management in a Nearby Repository</li></ul>
Annual Maintenance and Repair <ul style="list-style-type: none"><li>• Annual Inspections and Small Scale Repairs</li><li>• Large Scale Maintenance and Repairs</li><li>• Swift Creek Channel Conveyance Dredging and Maintenance</li></ul>
Infrastructure Revisions <ul style="list-style-type: none"><li>• Remove Oat Coles Road Bridge</li><li>• Raise South Pass Road Elevation</li></ul>
Flood Hazard Management Planning <ul style="list-style-type: none"><li>• Watershed-Wide Flood Hazard Management Plan</li><li>• Technical Flood Hazard Identification</li><li>• Flood Education and Outreach</li><li>• Flood Warning and Emergency Response</li></ul>
Development Controls <ul style="list-style-type: none"><li>• Comprehensive Plan and Zoning Revisions</li><li>• Purchase of Development Rights/Land Acquisition</li><li>• Limitations on Logging within the Swift Creek Watershed</li></ul>
Compliance Monitoring
Institutional Controls
Education and Outreach

<sup>7</sup> While deemed infeasible by Converse, et. al. (1976), it is possible landslide toe stabilization could be cost effective over the very long term. Therefore, it has been kept on the list as an action that may be further evaluated in the future.





## 4.0 Proposed Selected Action and Analysis of Compliance with MTCA

As noted earlier, the dredging and management of the sediment has created liability under the Model Toxics Control Act. This Swift Creek Action Plan is intended to address those aspects of this site related to this historic liability and prospective liability for managing these sediments in the future.

### 4.1 Definition of "Site"

For the purposes of this Swift Creek Action Plan, the MTCA "site" is defined as the locations within and proximate to the Swift Creek alluvial fan where sediment from Swift Creek will be managed through actions described in this SCAP. For the most part, this consists of construction and operation of deflection levees, in-stream sediment traps, sediment piles, channel conveyance improvements, berms, levees, and similar structures. Sediments deposited beyond these locations, either naturally during flood events, or through transport outside these areas by individuals for use as fill (or for other uses), are not included as part of the "Site" addressed in this SCAP. "Site" also includes the location of any approved repositories that will be used in the future to manage the sediment.

### 4.2 Description of Selected Action (Remedy)

While, as identified in Table 8, there is a longer list of actions needed for flood management purposes, only a subset of these elements serves as a remedy that addresses MTCA liability for historic and future management of naturally occurring sediment. The remedy is intended to address the hazardous substances that pose actual or potential threats to human health or the environment resulting from past releases and threatened releases caused by human activities to manage sediment. The remedy is also intended to minimize and address threats or potential threats with respect to any release or threatened release of hazardous substances caused by certain future human activities during management of the sediment. In general, the selected MTCA remedy consists of:

Actions to address historical dredging:

- Removal of part of the sediment that has accumulated in the sediment piles so they can be stabilized
- Stabilization and capping of the existing levees with riprap and clean soil
- Controlling future use and access to the levees to prevent disturbance of, and exposure to, the sediment and airborne asbestos. This will require fencing off these areas to control access, imposing legal restrictions on future use of the properties (institutional controls), and frequent inspections to ensure compliance. It may also require acquisition of additional property or easements.
- Monitoring of air and surface water during construction and groundwater after stabilization

Actions to abate threatened future releases, including those associated with future sediment management:

- Dredging and levee repairs as necessary before remedy is implemented
- Use of existing sediment piles and deposits in construction of a repository and new levees
- Deposition of current excess sediment (sediment beyond that needed for levee and repository construction) in a dedicated repository where it will be covered with clean soil
- Capturing new sediment in a series of traps and sedimentation ponds
- Management of future accumulated sediment in the traps and ponds by periodic removal and deposition in the repository or, if needed, additional repository(s)
- Regular inspections and repairs of facilities as needed
- Periodic dredging of Swift Creek as necessary and depositing this sediment in the repository(s)
- Controlling future use and access to the levees, sediment capture facilities and repository(s) to prevent disturbance of, and exposure to, the sediment and airborne asbestos. This will require fencing off all of these areas to control access, imposing legal restrictions on future use of the properties (institutional controls), and frequent inspections to ensure compliance. It may also require acquisition of additional property or easements.
- Monitoring of air and surface water during active management of the sediments and long term groundwater and sediment quality

The construction and operation elements of these actions are described in detail in the 2012 Swift Creek Sediment Management Action Plan (SCSMAP), 2012 Phase 1 Project Plan, and Phase I Implementation Plan and EIS. Figure 7 conceptually illustrates the facilities that would be constructed to implement this remedy. This figure does not show a repository outside of the area of the sedimentation ponds. There will be a need for one or more additional repositories; these repositories will be reviewed in a future supplemental EIS. The SCSMAP will be amended to include an implementation plan for repository development prior to initiation of the supplemental EIS process. If additional strategies are identified to implement the SCSMAP, specific strategy implementation plans will be prepared and incorporated into the SCSMAP, in conjunction with appropriate environmental review processes.

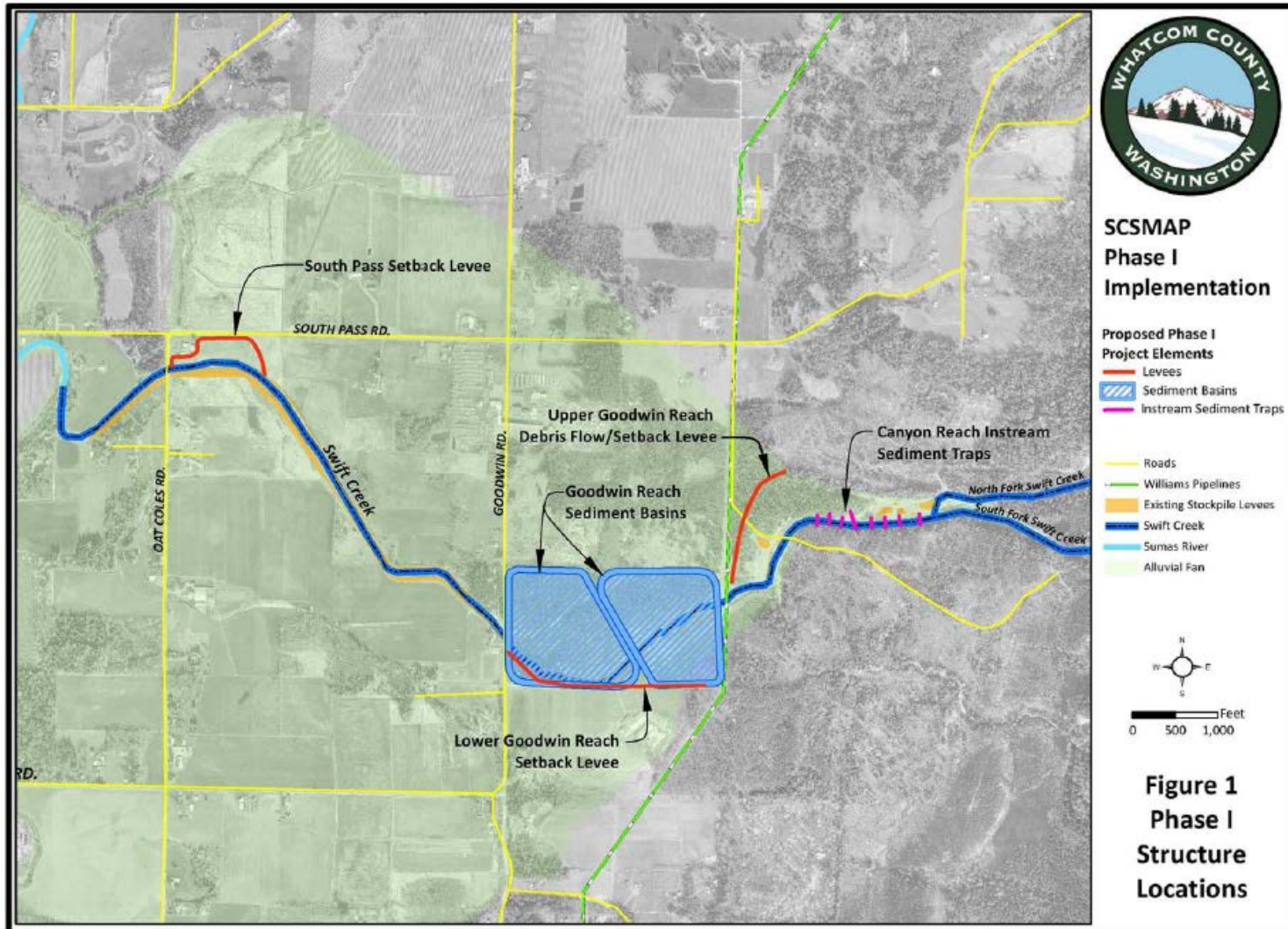


Figure 7: Conceptual Layout of MTCA Selected Action (supplemental repository not shown)

## 4.3 Analysis of Selected Remedy for Compliance with MTCA

Remedies selected under MTCA must meet the requirements for cleanup actions in WAC 173-340-360.

A discussion of how this selected remedy meets those requirements follows:

### **360(2)(a)(i) Protect Human Health and the Environment**

The selected remedy involves stabilization and capping of the existing levees, consolidation of existing sediment piles and excess sediment, and future capture and removal of sediment and subsequent deposition in a dedicated repository. Handling of sediment will be done in a manner to minimize dust generation, and all structures will have access restricted and final covers consisting of asbestos-free materials. The water quality in Swift Creek and the Sumas River downstream of the sediment management structures is expected to improve except perhaps during extreme flood events. And based on current groundwater monitoring data, significant groundwater impacts are not anticipated. As such, this remedy will be protective of human health and the environment.

### **360(2)(a)(ii) Comply with Cleanup Standards**

The selected remedy will comply with the performance goals summarized in Table 9. Groundwater monitoring has similarly shown that the above activities will not cause exceedances of groundwater cleanup levels. Previous construction experience and observations and monitoring data show that suspended sediment quickly settles out. Thus, the water quality in Swift Creek and the Sumas River downstream of the sediment management structures is expected to improve except perhaps during extreme flood events. Sediment contaminated with levels of asbestos and metals reported in Table 1 will remain on site but will be capped, protected with institutional controls, and monitored. The biggest challenge will be compliance with air standards for asbestos. Monitoring during past construction has shown that using standard dust control measures (minimizing areas of disturbance, wet handling of material) results in very low asbestos air concentrations during construction. Limiting access to the site should provide further protection for the general public. Ultimately, areas of permanent sediment deposition will be covered with clean soil and revegetated, eliminating airborne asbestos.

### **360(2)(a)(iii) Compliance with applicable state and federal laws**

Levee and repository construction and operation and maintenance will require compliance with several local, state and federal laws. The most significant current known laws are summarized in Section 6. It is anticipated this list will be updated through consultation with permitting agencies during the design process.

### **360(2)(a)(iv) Provide for compliance monitoring**

The proposed remedy includes monitoring of the air, surface water and groundwater for compliance. The locations and monitoring schedule will be determined in final design.

### **360(2)(b)(i) Use permanent solutions to the maximum extent practicable**

The selected remedy is permanent to the maximum extent practicable, as demonstrated by the discussion of the criteria in WAC 173-340-360(3)(f) as follows:

**Protectiveness.** As discussed above, the selected remedy will be protective of human health and the environment. It will significantly reduce human health risks by reducing exposures and will improve water quality downstream of the sediment capture facilities. Covering the levees and repository with clean soil will enable restoration of vegetation and wildlife habitat.

**Permanence.** The selected remedy will not reduce the toxicity or volume of contaminants in the sediment. As was noted earlier, an experimental process for treatment of the sediment to destroy the asbestos was tried in 2009 and found to be unsuccessful. However, the levees and sediment capture facilities will be designed with a significant factor of safety to withstand flood events. While it is possible that an extreme flood or debris flow event could overwhelm these facilities, it is unlikely this will happen. If so, the inspection and maintenance elements of the selected remedy should result in quick repairs. The option of stabilizing the slide through construction of a toe buttress would be a more permanent solution but the enormous cost of this makes it disproportionate to the added benefit.

**Cost.** The cost of the selected remedy of \$16.5 million in capital cost and \$1.3 million average annual operating cost, while substantial, is significantly less than alternatives such as construction of a toe buttress to stabilize the slide or letting the sediment accumulate unimpeded and purchasing the impacted lands and facilities.

**Effectiveness over the long term.** The selected remedy will be effective over the long term. The primary limitations are the lack of availability of suitable land for future sediment repository capacity and funding to construct and operate future facilities.

**Management of short term risks.** Short term risks associated with implementation of the remedy include risk to the workers and nearby public during grading, excavation and hauling of sediment, primarily due to potential for exposure to asbestos dust. These risks can be controlled through proper construction and maintenance techniques to minimize dust generation.

**Technical and administrative implementability.** There are no technical constraints to implementation of the selected remedy. From an administrative perspective the biggest challenges will be acquisition of land for construction of the repository and controlling unauthorized public access to these facilities.

**Public concerns.** All of the elements of the selected remedy, with the exception of the repositories, have been subject to public review and comment through Whatcom County's EIS process on the Swift Creek Sediment Management Plan. A supplemental EIS for the repositories will be prepared by Whatcom County prior to implementation. If additional strategies are identified to implement the SCSMAP, specific strategy implementation plans will be prepared and incorporated into the SCSMAP, in conjunction with appropriate environmental review

processes. An additional opportunity for public review and comment will be provided before this plan is finalized.

### **360(2)(b)(ii) Provide for a reasonable restoration timeframe**

The selected remedy provides for a reasonable restoration timeframe.

During 2014, Whatcom County conducted emergency levee stabilization work and dredging in response to flooding in March, 2014 that caused a Swift Creek avulsion at Goodwin Road and nearly breaching of the levee between Goodwin and Oat Coles Road. The selected remedy anticipates additional similar work may need to be conducted in response to future flood events until the sediment ponds are constructed.

Construction of the sediment traps and upper Goodwin reach deflection levee is anticipated to occur in the 2019-21 biennium, provided Ecology's budget request is passed by the legislature.

Construction of the sediment basin(s) and development of repositories is anticipated to occur in the 2021-23 biennium, again subject to approval of legislative appropriation.

Permanent stabilization and covering of the levees between Goodwin and Oat Coles Road, removal of excess sediment and construction of the sediment pond(s) is anticipated to occur in the 2023-25 biennium, again subject to approval of legislative appropriation.

### **360(2)(b)(iii) Consider public concerns**

All of the elements of the proposed remedy, with the exception of the repositories, have been subject to public review and comment through Whatcom County's EIS process on the Swift Creek Sediment Management Action Plan. The development of repositories will be made subject to public review and comment through a future supplement to the existing EIS. If additional strategies are identified to implement the SCSMAP, specific strategy implementation plans will be prepared and incorporated into the SCSMAP, in conjunction with appropriate environmental review processes. Additionally, in compliance with MTCA, a public notice of the availability of this SCAP will be issued and an opportunity provided for additional comment. Comments received will be responded to in a responsiveness summary and adjustments made to the action plan, if deemed appropriate.

### **360(2)(c) Groundwater cleanup actions**

Groundwater cleanup actions that do not achieve cleanup levels throughout the site must take some minimal steps to treat or remove the source and contain the residual contamination. Since groundwater is not contaminated at this site, or anticipated in the future, this provision is not applicable.

### **360(2)(d) Soils in residential areas and at schools and child care centers**

The site as defined in this SCAP (active sediment management area) currently contains no residential structures, schools or child care facilities. Land use restrictions will prevent the location of such facilities within these areas in the future. Thus, this provision is complied with.

### **360(2)(e) Institutional controls**

Sites that use institutional controls are required to meet certain minimum requirements under this provision. This includes compliance with WAC 173-340-440, that they must demonstrably reduce risk, and that they cannot be used where it is technically possible to implement a more permanent cleanup action for all or a portion of the site. All of these requirements will be complied with in the selected remedy.

### **360(2)(f) Releases and migration**

This provision requires the selected remedy to minimize present and future releases and migration of hazardous substances. By containing the sediment in controlled, facilities covered with clean soil ("capped") or otherwise stabilized, the selected remedy complies with this provision.

### **360(2)(g) Dilution and dispersion**

Remedies that rely primarily on dilution and dispersion have an additional level of demonstration that must be met. The proposed remedy does not rely primarily on dilution and dispersion and thus this requirement is met.

### **360(2)(h) Remediation levels**

Remedies that use remediation levels have an additional level of demonstration that must be met. The proposed remedy does not rely on remediation levels and thus this requirement is met.



## 5.0 Environmental Standards

The goal of this SCAP is to improve the existing water quality and to reduce environmental and human health risks. A pilot study will be conducted to determine the feasible contaminant removal efficiencies. Metrics for performance are listed in Table 9. For these metrics, the point of measurement is throughout the site except for ambient asbestos, this will be taken at the fence line where public access is controlled.

**Table 9: Performance Goals**

Media	Parameter	Improvement Goal	Notes	Point of Measurement
Ambient Air	Asbestos	0.0001 f/cc	Based on PQL. Equals 1 X 10 <sup>-5</sup> risk for a 30 year residential exposure.	During construction, at fence line; after construction, throughout the site.
Groundwater	Asbestos Chromium Nickel	7 MFL > 10 um 100 ug/L 100 ug/L	All based on drinking water standards WAC 246-290-310	Throughout the site.
Surface Water	pH	6.5 – 8.5	WAC 173-201A	A discharge permit with numeric limits should not be needed for the project as described in this SCAP. These criteria have been included as performance goals for design purposes or should the remedy change during the design process.
	Turbidity	(a)	constituents known to be elevated in water exposed to Swift Creek sediment.	
	Asbestos	(a)	Based on improvements to pre-action water quality (see table 4)	
	Chromium Nickel	Hardness dependent goal based on (a)	See Table 4 concentrations using current hardness data	
Soil <sup>1</sup>	Even though two activity-based sampling events have been conducted by EPA at this site, it isn't possible to correlate soil asbestos concentrations with corresponding air concentrations, which is the primary exposure pathway of concern. However, it is likely that any areas where Swift Creek sediment is located contain significant levels of asbestos and heavy metals. Rather than set a specific numeric limit, this plan requires any areas within the footprint of the levees, former Swift Creek sediment piles and repository(s) not protected by rip rap to be covered by a sufficient thickness of clean soil to establish and maintain vegetative growth that will prevent erosion of the cover. Final specifications for cover thickness, quality and vegetative cover will be developed in the final design and permitting process.			Areas to be determined from historic photos and documentation and physical observations.
Sediment	No sediment cleanup level has been established. While sediment metal concentrations are elevated above trivalent chromium and nickel freshwater sediment screening levels, these are naturally occurring concentrations, and not considered part of a "release" under MTCA. As such, no cleanup of sediment within the creek bed is required by the selected action and thus no sediment cleanup standard has been established for the selected remedy.			Not applicable.

As used in this Table, the term "soil" is intended to include the sediment that has been dredged from the creek and deposited upland

A pilot study will be conducted to determine feasible sediment removal efficiencies

## 6.0 Applicable Local, State and Federal Laws

There are multiple federal, state and local laws that will need to be complied with during implementation of this remedy. Some laws require a permit or compliance with specific requirements. Under MTCA, these are called “legally applicable requirements”. Other laws may have technical provisions that make sense to apply to the remedy but may not be a legal requirement. Under MTCA, these are called “relevant and appropriate requirements”. Both of these together are typically referred to as “applicable, relevant and appropriate requirements” or “ARARs” that must be complied with, in addition to the other requirements in MTCA.

In addition, under RCW 70.105D.090, cleanup actions conducted by Ecology, or by a potentially liable person under a MTCA order or consent decree, and requiring a state or local permit under RCW 70.94 (air), RCW 70.95 (solid waste), 70.105 (hazardous waste), RCW 77.55 (hydraulic permit), RCW 90.48 (water quality), RCW 90.58 (shoreline management act) are exempt from having to obtain these permits and comply with procedural requirements under these statutes. Under this same statute (70.105D.090), such cleanups are also exempt from all local permits and procedural requirements. However, this statute does not exempt cleanups from federal permits, or state or local permits that implement federal laws. And any substantive requirements in these laws, whether or not exempt, must still be complied with. Ecology will work closely with permitting agencies to identify any substantive requirements that this remedy needs to comply with.

Comprehensive lists of potential ARARs were identified in the Draft EIS (2013) and Draft Engineering Evaluation / Cost Analysis (2013). This list may be supplemented by additional ARARs during the design and permitting process. The most significant ARARs relating to proposed remedy are:

### **Federal Clean Water Act, Sections 404 & 401**

As with past dredging of Swift Creek, remedial actions requiring dredging, filling, diversion and/or construction within Swift Creek will require a 404 Permit from the Corps of Engineers and Ecology to certify the work complies with state water quality law under Section 401. It is presumed this will include construction, operation and maintenance of the check dams, sedimentation ponds and levees. Repository construction should not require a 404 permit unless the repository requires diverting Swift Creek or filling in wetlands. This is a federal law and is not exempt under MTCA.

### **Federal Clean Water Act, Section 402 (NPDES), implemented under RCW 90.48**

A National Pollution Discharge Elimination System NPDES permit is unlikely to be required for the discharge from the sedimentation ponds. However, a stormwater permit will be required for stormwater runoff from any other areas where the ground has been disturbed. The need for a discharge permit, if any, and a stormwater permit is required under federal law and is not exempt under MTCA, even though Ecology implements this federal law under RCW 90.48.

### **State Dam Safety Permit under RCW 90.03.350**

Any impoundment capable of storing more than ten acre-feet of water must obtain a Dam Safety Permit from Ecology. It is presumed the sedimentation ponds will exceed this threshold and require a permit under this law. This is a state law but not exempt under MTCA.

### **State Shoreline Management Act under RCW 90.58, Implemented under WCC Title 23**

This act requires any substantial development within 200 feet of the high water mark of certain specified shorelines must obtain a shoreline permit. While Swift Creek does not fall within the jurisdiction of this law, the Sumas River does. As such, any work in Swift Creek that could impact the Sumas River will need to consider shoreline impacts on the Sumas River. Whatcom County implements this law under Whatcom County Code Title 23. The proposed remedy is expected to fall within the permit exemption for RCW 90.58 and local laws under MTCA. As such, this work would be exempt from having to obtain a shoreline permit and the associated procedural requirements will not need to be complied with. However, Ecology will work with the permitting agency (Whatcom County) to identify and require compliance with any substantive requirements under this law.

### **Washington State Hydraulic Code, RCW 77.55**

Any construction or performance of work that will use, divert, obstruct, or change the natural flow or bed of any of the salt or freshwaters of the state requires a hydraulic permit. It is presumed the construction of the check dams, sedimentation ponds and levees will fall within the jurisdiction of this law. The proposed remedy is expected to fall within the permit exemption for RCW 77.55 under MTCA. As such, this work would be exempt from having to obtain a hydraulic permit and the associated procedural requirements will not need to be complied with. However, Ecology will work with the permitting agency (WA State Fish and Wildlife) to identify and require compliance with any substantive requirements under this law.

### **Federal Clean Air Act (implemented under RCW 70.94, RCW 49.26, and NWCAA rules)**

Construction of the proposed remedy has the potential to generate dust. Furthermore, Swift Creek sediment has been found to be above the 1% threshold for asbestos containing material. Thus, the proposed remedy will fall within the jurisdiction of the Northwest Clean Air Agency (NWCAA). With proper handling techniques, it is expected dust generation will be minimal and not trigger a federal permit requirement. However, there are specific worker protection requirements for handling asbestos contaminated material enforced by the Washington Department of Labor and Industries that will need to be complied with during construction.

### **Federal Safe Drinking Water Act (implemented under RCW 43.20)**

Based on information in the EIS, it is not expected any public water systems regulated under the Federal and State Safe Drinking Water Acts will be impacted by the proposed remedy. However, public water

system drinking water standards are identified as an applicable requirement under MTCA for groundwater impacted by a cleanup site.

### **State Solid Waste Handling Standards (WAC 173-350)**

Dredge material that is the subject of a Corps 404 permit is exempt from the solid waste regulations. Furthermore, asbestos containing material is not a hazardous waste and TCLP leaching tests on the sediment pass the metals screening criteria. As such, the facilities for managing the sediment under this remedy, including the sediment repository, do not need to obtain a hazardous waste or solid waste permit. However, there are several relevant and appropriate design and operating criteria in WAC 173-350-400 for limited purpose landfills that will be applied to this remedy. The specific criteria will be identified during the design and permitting process. Note that the cost estimate provided in this plan assumes sediment berms and repositories will be capped with 6 inches of clean topsoil. While this should be sufficient to establish a grass cover and prevent the airborne asbestos if the cap is not disturbed, it would not be adequate for deep rooted vegetation like trees or for farming crops that require plowing. If a thicker cover or use of lower permeable capping materials is necessary, costs will need to be adjusted upward accordingly.

## 7.0 Institutional Controls and Site Use Restrictions

The selected remedy will permanently leave contaminated sediment in check dams, sedimentation basins, several levees, and one or more repositories. Historically, sediment piles have been an attraction for horse riders and all terrain vehicles. The selected remedy includes restricting access to these facilities through the installation of fencing and locked gates to minimize disturbance of sediments. An environmental covenant will be recorded on the impacted parcels providing a permanent record of the location of these deposits and limiting future land uses that would result in disturbance of exposed sediments and capped areas. Regular inspections will be required to ensure these restrictions are complied with.

## 8.0 Compliance Monitoring Requirements

The selected remedy includes monitoring of the air, surface water, groundwater and sediment quality. The exact monitoring locations and frequency will be determined during the final design and permitting process.

## 9.0 Schedule for Implementing the Swift Creek Action Plan

The project implementation rate for the implementation of the SCAP depends on several factors, some of which include extent and severity of flood events, rate of sediment deposition, available funding, and property acquisition or cooperation from private landowners.

The following is the anticipated schedule for implementing the selected remedy:

Construction of the sediment traps and upper Goodwin reach deflection levee is anticipated to occur in the 2019-21 biennium, provided Ecology's budget request is passed by the legislature.

Construction of the sediment basin(s) and development of repositories is anticipated to occur in the 2021-23 biennium, again subject to approval of legislative appropriation.

Stabilization and covering of the levees between Goodwin and Oat Coles Road, removal of excess sediment and construction of the sediment pond(s) is anticipated to occur in the 2023-25 biennium, again subject to approval of legislative appropriation.

Channel maintenance and dredging is expected to be ongoing until the SCAP is fully implemented. Emergency work as a response to flood or debris flow events will be necessary into the future.

## 10.0 State Environmental Policy Act Compliance

In 2010 the Department of Ecology and Whatcom County determined the SEPA lead agency for this action to be Whatcom County, in accordance with WAC 197-11-253 and WAC 197-11-926. In 2013, Whatcom County prepared an environmental impact statement (EIS) on the Swift Creek Sediment Management Action Plan (SCSMAP). The draft EIS was released for public comment on February 15, 2013 and the final EIS was issued on June 23, 2013. The SCSMAP was approved by the Whatcom County Council on July 23, 2013.

The remedial actions and associated impacts, with the exception of the repositories, described in this Swift Creek Action Plan were analyzed in the EIS published by Whatcom County. For any future environmental review processes, including the planned supplemental EIS for repositories, the County will send Ecology a preliminary document prior to issuing it to the public in accordance with WAC 197-11-253(5).

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Appendix A  
PUBLIC COMMENT AND RESPONSES





DEPARTMENT OF  
**ECOLOGY**  
State of Washington



## **Response to Comments**

### **Swift Creek Action Plan, Consent Decree, and Public Participation Plan**

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#### **Swift Creek Project Everson, WA**

December 2019

# Publication and Contact Information

This document is available on the Department of Ecology's Swift Creek website at:

- [www.ecology.wa.gov/SwiftCreek](http://www.ecology.wa.gov/SwiftCreek)

For more information on the Swift Creek project, visit these websites:

- Department of Ecology website: [www.ecology.wa.gov/SwiftCreek](http://www.ecology.wa.gov/SwiftCreek)
- Whatcom County website: [www.whatcomcounty.us/513/Swift-Creek](http://www.whatcomcounty.us/513/Swift-Creek)

## En español

Si le gustaría recibir documentos en español, por favor llame a Tamara Cardona-Marek al 425-649-7058 o envíe un correo electrónico a [preguntas@ecy.wa.gov](mailto:preguntas@ecy.wa.gov)

## For more information contact:

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Washington State Department of Ecology – [www.ecology.wa.gov](http://www.ecology.wa.gov)

- Bellingham Field Office, Bellingham 360-255-4400
- Northwest Regional Office, Bellevue 425-649-7000
- Headquarters, Olympia 360-407-6000

Whatcom County – [www.whatcomcounty.us](http://www.whatcomcounty.us)

- Whatcom County Public Works 360-778-6200

*To request ADA accommodation including materials in a format for the visually impaired, call Ecology at 360-255-4400 or visit <https://ecology.wa.gov/accessibility>. People with impaired hearing may call Washington Relay Service at 711. People with speech disability may call TTY at 877-833-6341.*

**Response to Comments**

**Swift Creek Action Plan,  
Consent Decree,  
and Public Participation Plan**

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**Swift Creek Project  
Everson, WA**

Washington State Department of Ecology

Bellingham Field Office

Bellingham, Washington

Whatcom County

Public Works Department

Bellingham, Washington

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## Public Outreach

From October 7 – November 5, 2019, the Department of Ecology (Ecology) and Whatcom County Public Works Department (Whatcom County) invited public review and comments the Swift Creek flood control and sediment management project located east of Everson near Sumas Mountain.

Ecology and Whatcom County accepted comments on the following documents for the Swift Creek Project:

- **Swift Creek Action Plan:** this plan describes flood control and sediment management actions to take place in the Swift Creek watershed.
- **Consent Decree:** this is a legal agreement between the State of Washington, Ecology, Whatcom County, and other parties that requires Whatcom County to:
  - Develop detailed design documents.
  - Construct and operate the project.
  - Manage deposited sediment.
  - Perform regular maintenance and monitoring.
  - Control future use and access.
  - Purchase additional property or easements, as may be required.
- **Public Participation Plan:** this document explains how people can become involved in the project.

Our public involvement activities related to this 30-day comment period included:

- **Fact Sheet:**
  - US mail distribution of a fact sheet providing information about the Swift Creek Project documents and the public comment period to approximately 4,050 people including neighboring businesses and other interested parties. Fact sheets were scheduled to arrive in mailboxes by Friday, October 4, 2019.
  - Email distribution of the fact sheet to approximately 150 people, including interested individuals, local/county/state/federal agencies, and interested community groups. An email notice was sent on Wednesday, September 25, 2019.
- **Legal Notices:**
  - Publication of two paid display ads in *The Bellingham Herald*, dated Friday, September 27, 2019 and Friday, October 4, 2019.
  - Publication of one paid display ad in *The Lynden Tribune*, dated Wednesday, October 2, 2019.
- **Newspaper Coverage:**
  - *The Lynden Tribune* ran a front page article on Wednesday, October 2, 2019 based on information from our Ecology fact sheet and blog post.
- **Social Media:**
  - **Blog:** Ecology's Northwest Regional Office posted a Swift Creek story on [Ecology's blog](http://ecologywa.blogspot.com/2019/09/cleaning-up-slow-slide-into-swift-creek.html)<sup>1</sup>.

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<sup>1</sup> <http://ecologywa.blogspot.com/2019/09/cleaning-up-slow-slide-into-swift-creek.html>

- **Twitter:** On Friday, September 27, 2019 Ecology – Northwest Region @ecyseattle posted a [tweet](#)<sup>2</sup> connecting readers to the blog post for information on the Swift Creek project, the public meeting and how to submit comments.
- **Websites:**
  - Announcement of the public comment period and posting of the fact sheet, and associated documents for review on:
    - [Ecology's Swift Creek website](#)<sup>3</sup>
    - [Whatcom County's Swift Creek website](#)<sup>4</sup>
  - The Swift Creek comment period was featured on [Ecology's home webpage](#)<sup>5</sup> beginning on Wednesday, October 23, 2019 in the “Public Input & Events” section.
- **Document Repositories:**
  - Provided copies of the documents for public review through two information repositories:
    - Whatcom County Library – Everson, WA
    - Ecology's Bellingham Field Office in Bellingham, WA
- **Public Meeting:**
  - Ecology held a public meeting on Wednesday, October 9, 2019 from 6 – 8 p.m. at the Nooksack Valley Middle School in Everson, WA. Approximately 60 attended.
  - Ecology and Whatcom County staff presented about the draft Swift Creek Action Plan and answered questions throughout the presentation. An open house followed the presentation.
  - A copy of the presentation was emailed on Tuesday, October 15, 2019 to all meeting attendees providing email addresses.

## Comment Summary

Ecology received nine comments total during the 30-day comment period (October 7 – November 5, 2019). One comment was submitted anonymously to test attaching a PDF. Ecology responded to the other eight comments.

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<sup>2</sup> <https://twitter.com/ecyseattle/status/1177631334799273984>

<sup>3</sup> <https://ecology.wa.gov/SwiftCreek>

<sup>4</sup> <http://www.whatcomcounty.us/513/Swift-Creek>

<sup>5</sup> <https://ecology.wa.gov/>



**Table 1: List of commenters**

	First Name	Last Name	Agency/Organization/Business	Submitted By
1	Scott	Smith		Individual
2	Dennis	Tjoelker		Individual
3	Test	Anonymous		Individual
4	Kirsten	McDade	RE Sources for Sustainable Communities	Organization
5	Larry	Lonegan		Individual
6	Larry	Lonegan		Individual
7	Larry	Lonegan		Individual
8	Larry	Lonegan		Individual
9	Larry	Lonegan		Individual

## Next Steps

Whatcom County will hold a public comment period (estimated Summer of 2020) on a Supplemental Environmental Impact Statement (EIS) for sediment storage repositories. Ecology and Whatcom County will seek additional funding from Washington State Legislature during 2021-2023 budget planning for project completion.

Informed by these public comments, Whatcom County will continue designing and implementing the Swift Creek Project.

## Comments and Responses

Ecology has reviewed and considered all comments received on the draft Swift Creek Action Plan and associated documents. Based on Ecology's evaluation of the comments, no changes were made to the documents, and they are considered final.

In consideration of public comments, Ecology will do these public participation actions:

### **Mailing Lists**

- ➔ Ecology Action: Ecology will mail future Swift Creek Project outreach materials to any additional requested mailing addresses and re-confirm selected mailing routes and post office boxes with Whatcom County. (See pages 9-11 for response details)

### **Notification Timing**

- ➔ Ecology Action: Ecology will work with the Washington State Department of Enterprise Services printing services to secure earlier delivery and confirmation of delivery for future Swift Creek Project mailings. (See page 11 for response details)

**Spanish Translation**

- Ecology Action: Ecology will make a fully-translated Spanish fact sheet available online and at all document repository locations. A Spanish insert will be mailed along with the English fact sheet providing translated information on how to obtain the fully-translated Spanish fact sheet. (See pages 11-14 for response details)

**Public Meeting Recording**

- Ecology Action: Ecology will explore methods to improve recording future Swift Creek public meetings. (See page 14 for response details)

The comments are presented below, along with Ecology's responses. Appendix A, on page 28, contains the comments in their original format.

**Comment from: Scott Smith**

With the greatest respect for the efforts of everyone, let me offer the honest reality of this problem (that you know but can't acknowledge). This is an exercise in futility: the classic, rolling a rock uphill only for it roll back down. (Humor is not intended) You are struggling to get funding to construct a system that separates solids from the suspending water at the bottom of the mountain. A bit myopic...That system requires significant maintenance through time thus its greatest flaw. Or seen another way, it's a job that can never be finished. Who would ever buy into such a ludicrous proposition? No matter the lofty, meaningful goals, no one will sign on forever or they're a fool. If this is the underlying reality of this project, then you should be searching for another answer...that does not include eternity in its solution. Futility...

If you continue your present path (and I expect you will), you must also plan for its eventual demise. THE FUNDS WILL NOT BE THERE FOREVER! So then what? What will be built into your system plans when that eventuality happens? It's imperative that this is included in your plans. IT MUST BE! Or the plans are incomplete. The project can not be open-ended, forever.

**Response**

The Swift Creek Sediment Management Action Plan (SCSMAP) was adopted by the Whatcom County Council on July 23, 2013. The SCSMAP includes several active and passive management strategies including: Flood Hazard Management, Sediment Management, Maintenance and Repair, Landslide Stabilization, Watershed Land Acquisition, Monitoring, and Education, Warning, and Emergency Response. Additional information is available from the Draft and Final Environmental Impact Statements for the SCSMAP. These background documents are located on the Whatcom County Public Works Swift Creek website:

<http://www.co.whatcom.wa.us/3067/Swift-Creek-Background-Documents>

## Comment from: Dennis Tjoelker

Greetings

As I look at the plans that you all have worked so hard at and look great I can not help but say this will not fix the problem at its source. As Scott mentioned in his comment you will need to be prepared to continue to spend more of our hard earned moneys to maintain this plan in the future. The problem is not a major flow of mud but a gradual flow of mud and rock with the seasonal rains with the differing volumes of material which I'm sure you have figured out. I suggest stopping the solid material flow at the source and keep it on the mountain. Build a dam east of the mouth of the canyon with drainage behind and through it, there is enough material that has already come through that you can screen out rock for a natural filter behind the dam to let clean water flow through. I'm guessing there is enough clay to seal it up so at some point you will have to get the dam high enough to create a lake with a spillway that will still allow the release of water. I know I have not addressed all of the potential issues but I'm sure you have enough sharp engineers at your disposal to figure it out. As far as looks go maybe it can be a rock/earthen dam that can have trees and shrubs planted on it, then in 30 years no one will know the difference. I figure if a river can be dammed up and hold back the water it does this should be a walk in the park.  
Thank You for your consideration DT

## Response

Several studies were completed looking into alternative methods to address the landslide. As stated in the 1976 Converse Davis Dixon *Final Geotechnical Report*:

*9.3 Past Studies – Conclusions and Recommendations Summary: The Swift Creek landslide and the subsequent sedimentation of the Swift Creek and Sumas River flood plain have been the subject of several previous studies and reports.*

*9.31 Soil Conservation Studies: The initial study was completed in June of 1964 and consisted of a reconnaissance of the area by personnel of the Soil conservation Service. It included a study of aerial photographs, grain-size analyses and settling velocities of finer sediment from the landslide. The conclusion of the study were that control of the landslide proper was not practical, a training dike to keep Swift Creek within its present channel should be given an early priority and recommendation of depositional areas and possibly settling ponds for controlling debris. Additional studies were recommended.*

*A second study was completed in August of 1965 by the Soil Conservation Service and consisted of a reconnaissance of the Swift Creek and Sumas Rive flood plains to examine effects of sedimentation. Cross-sections were completed at three locations along Swift Creek and Sumas River and compared with previous cross-sections to determine rate of sedimentation. It was estimated about 230,000 cubic yards of sediment had been deposited in the Sumas River alone from Swift Creek in 30 years. It was also estimated the total deposits from the Swift Creek landslide may vary from 300 to 400 acre-feet. A location for a debris basin was proposed.*

*9.32 Corps of Engineers Study: The Corps of Engineers in 1971 reported on the results of a geologic reconnaissance of the landslide, possible remedial action and an economic analysis of these actions. The possible remedial actions consisted of (a) allowing the slide to continue and construct a debris dam at the toe of the slide in the vicinity of the “narrows” or the*

*construction of a large debris basin downstream, or (b) attempt to stabilize the slide by improving and detouring surface drainage and installation of subsurface drains. The debris basin action was selected based on the assumptions the ground water or rainfall could not be feasibly intercepted; the cost of slide stabilization was expected to be far greater than either the debris dam or debris basin and; backwater behind a debris dam would lubricate the slide and a stable upstream slope may be impossible to achieve. It was determined that a debris basin should have the capacity for a maximum of one million cubic yards of debris. Cost analysis which included construction, annual operation and maintenance costs for the debris basin versus the estimated average flood damage cost concluded the construction of the debris basin was not economically justified.*

Converse Davis Dixon additionally looked at landslide control structures and sediment basins. As noted in section 11.14:

*It should be recognized that the problems discussed in Section 11.13 cannot be resolved until final design is undertaken, and even then solution may not be apparent. In any event, the final design of the buttress would reflect much higher costs because of these problems than the costs of normal embankment design. Because of much greater quantities involved about (14,000,000 cubic yards of excavation and 13,000,000 cubic yards of fill) it is obvious that the landslide control structure alternative cost will be on the order of several times more than the cost of sedimentation basins. Therefore, no further consideration was given to refining the buttress analysis.*

The recommendations for maintenance of the stream bed with the addition of sediment basins and long term repository storage was further reviewed and studied by GeoEngineers in 1998; Kerr Wood Leidal in 2008 and Pacific Surveying and Engineering in 2010.

In addition please see response to Scott Smith above.

## **Comment from: Anonymous**

[Test to attach a PDF.]

### **Response**

Ecology's online comment form successfully received the "test" PDF attachment.

## **Comment from: RE Sources for Sustainable Communities, Kirsten McDade**

To: Cris Matthews  
Project Manager  
Department of Ecology  
913 Squalicum Way, Unit 101  
Bellingham, WA 98225

Transmitted Via Online Comment Form: <http://cs.ecology.commentinput.com/?id=ic9NJ>

November 5, 2019

### **RE: Swift Creek Project**

Dear Cris Matthews,

Thank you for taking the time to consider our comment on the Swift Creek Project. I found the presentations at the public meeting to be very informative and appreciate the work that went into delivering those. Our biggest concern with the current plan is that it is an expensive, short term fix to a long-term problem that has potential adverse health effects.

RE Sources for Sustainable Communities is a local organization in northwest Washington, founded in 1982. RE Sources works to build sustainable communities and protect the health of northwest Washington's people and ecosystems through the application of science, education, advocacy, and action. Our North Sound Baykeeper program is dedicated to protecting and enhancing the marine and nearshore habitats of northern Puget Sound and the Georgia Strait. Our chief focus is on preventing pollution from entering the North Sound and Strait, while helping our local citizenry better understand the complex connections between prosperity, society, environmental health, and individual wellbeing. Our North Sound Baykeeper is the 43rd member of the Waterkeeper Alliance, with over 300 organizations in 34 countries around the world that promote fishable, swimmable, drinkable water. RE Sources has over 20,000 members in Whatcom, Skagit, and San Juan counties, and we submit these comments on their behalf.

It is well known that breathing in asbestos can lead to lung cancer, mesothelioma, or asbestosis and that exposures to heavy metals can lead to a myriad of health effects including kidney damage, neurological damage, and cancer. During the presentation it was mentioned by the Department of Health that there is no evidence of asbestos related diseases in people living in the Swift Creek drainage. Could you please provide the source of this information and explain how this will be monitored over time? Have there been any studies related to heavy metal related illnesses? Because both asbestos-related and heavy metal-related illnesses can take decades to manifest, it is important to maintain a long-term health study. The people that live in this drainage should be kept up to date on the risks.

At the public meeting it was mentioned by Whatcom County staff that this project was only expected to “manage” swift creek for about 20-25 years. This seems short sighted. Are there measures that could

be done now that work toward long-term, long-lasting solutions? Are there incentives for people to leave the area or not move into the area? Could money be spent on relocation of people rather than trying to manage thousands of cubic yards of sediment every year in perpetuity? What other long-term solutions have been considered?

Thank you for your time in addressing our concerns and comments on this complex and difficult issue.

Sincerely,

Kirsten McDade

Pollution Prevention Specialist

RE Sources for Sustainable Communities

## **Response**

Public health and exposure risks are addressed in numerous studies over time. The Draft Environmental Impact Statement (EIS), Appendix B, has a comprehensive assessment. Since 2008, Washington State Department of Health has conducted formal health consultations and related disease cluster investigations in response to public health concerns. Please see, for example, documents 55B, 36, 48a, 48b and 62 in the Whatcom County Public Works Swift Creek website: <http://www.co.whatcom.wa.us/3067/Swift-Creek-Background-Documents>

The current proposed plan includes a repository site that should contain 20-25 years of sediment. Additional potential sites for long term repositories are identified in the 2016 Sediment Repository Conceptual Site Screening by Wheeler Consulting Group. This report can be found as item 66 and 66A: <http://www.co.whatcom.wa.us/3067/Swift-Creek-Background-Documents>

## **Comment from: Larry Lonagan**

Swift Creek - Public Meeting

See attached

November 5, 2019

Swift Creek Public Meeting Oct.9, 2019

Comments regarding such include, but are not necessarily limited to:

1. As an owner of property within the alluvial fan area and in close proximity to the watershed area, I am dismayed that **I did not receive any indication of the meeting, etc..** While mail is not delivered and I do not have a PO Box in Everson, my address is readily available in

Whatcom assessor records. If the assessor can send me a tax bill, certainly I, and anyone in a similar situation, should receive a meeting notification.

2. As conveyed to Ian Fawley via phone conversation on Oct.25, 2019, it came to my attention that at least one member of the public did not receive notification until after the meeting. Ian indicated that he was aware that **some members of the public did not receive notification until after the meeting.**
3. In the copies of meeting notice that I received from Ian, there were two fact sheet attachments. One in English and one in Spanish. **The English fact sheet was six (6) pages long, and the Spanish fact sheet was only two (2) pages long.** At the 2010 census per Wikipedia, the Hispanic or Latino makeup of Everson was 28.9%, Nooksak was 17.9%, and Sumas was 15.8%. Why the Spanish fact sheet was only two (2) pages is beyond my comprehension, and obviously **those who speak Spanish as a primary language were not fully informed via the attached fact sheet.**
4. The public meeting was hosted "to provide information, answer questions, and collect comments". In response to my inquiry, I was informed that **neither a transcript nor a recorded video was available. I was also informed that the meeting was not broadcast.** Many people can not physically attend public meetings for various reasons, including but not necessarily limited to: attending to their children, on vacation, out of town, physically unable to attend due to personal or family health issues, employment obligations, etc. **Those people that could not attend should have been accommodated** via a live broadcast, a video recording, live streaming with the ability to ask questions, qand/or minimally a transcript of questions, answers thereto, and comments. **It appears that an effort to keep the public fully informed was/is lacking.**

In conclusion, and based upon the above, it appears that one might judge the public meeting, and communications thereof, to be inadequate, and that another meeting be held recifying, minimally, the above.

And also, as a result, the comments accepted time frame should be revised/extended.

## **Response**

“Public Meeting”

Ecology appreciated your phone call to inquire about the details of the Swift Creek Project community outreach.

### **Mailing Addresses**

➔ Ecology Action: Ecology will mail future Swift Creek Project outreach materials to any additional requested mailing addresses and re-confirm selected mailing routes and post office boxes with Whatcom County.

Ecology coordinated mailing lists with Whatcom County to capture all addresses used in previous Swift Creek outreach mailings to inform the community. Based on positive feedback from Whatcom County that these previous mailings reached the Swift Creek Project community, Ecology used Whatcom County’s mailing list and then expanded the postal

address list to include additional postal carrier routes. We then added other specific addresses for a total of approximately 4,050 interested individuals, local/county/state/federal agencies, and interested community groups.

Using the [United State Postal Service \(USPS\) Every Door Direct web search tool](#)<sup>6</sup>, we selected seven postal carrier routes and two post office box drops that would cover mailing addresses in the Swift Creek and Sumas River Watersheds (see lists and figure below):

**Postal Carrier Route Deliveries:**

1. 98247-R002
2. 98247-R003
3. 98247-R004
4. 98247-R005
5. 98276-R003
6. 98276-R005
7. 98276-R002

**Post Office Drops:**

1. 98247 – Everson
2. 98276 - Nooksack

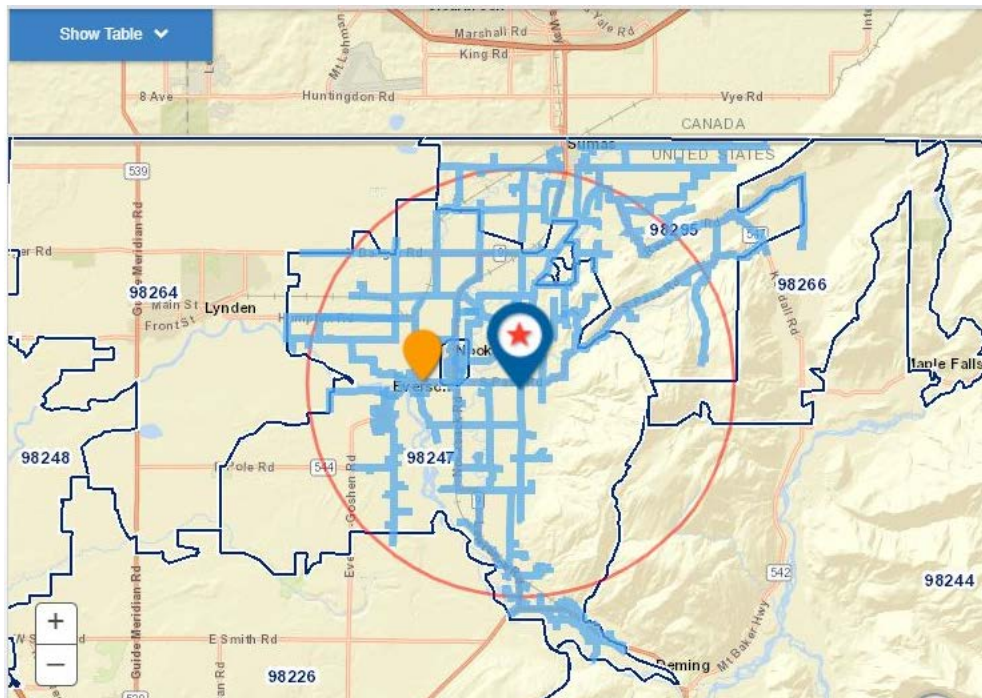


Figure 1: USPS Every Door Direct Mail carrier route and post office map

<sup>6</sup> <https://eddm.usps.com/eddm/customer/routeSearch.action>



Thank you as well for providing Ecology your preferred mailing address. You will now receive future Swift Creek Project mailings at your provided address.

### **Notification Timing**

→ **Ecology Action:** Ecology will work with the Washington State Department of Enterprise Services printing services to secure earlier delivery and confirmation of delivery for future Swift Creek Project mailings.

You were correct that Ecology learned from attendees at the Swift Creek Project public meeting on Wednesday, October 9, 2019 that the fact sheet had arrived in their mailboxes after our scheduled delivery date of Friday, October 4, 2019.

However, you were incorrect in quoting that Ecology knew of fact sheets arriving in mailboxes *after* the public meeting since the in-person conversation referenced occurred *at the meeting*. One meeting attendee commented that they had not checked their P.O. box the few days before the October 9, 2019 meeting. We apologize for any misunderstanding, but Ecology received no feedback from the community that mailed notifications arrived after the public meeting.

### **Spanish Translation**

→ **Ecology Action:** Ecology will make a fully-translated Spanish fact sheet available online and at all document repository locations. A Spanish insert will be mailed along with the English fact sheet providing translated information on how to obtain the fully-translated Spanish fact sheet.

Ecology screens for environmental justice concerns using the [United States Environmental Protection Agency's \(EPA\) EJSCREEN tool](#)<sup>7</sup> – an environmental justice screening and mapping tool. Ecology used this screening tool based on a 1-mile buffer of Swift Creek/Sumas River as well as a census tract area. See figures below and the “Community demographics” section on page 5 of the [Swift Creek Project Public Participation Plan](#)<sup>8</sup>

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<sup>7</sup> <https://ejscreen.epa.gov/mapper/index.html?wherestr=47.505875%2C+-122.290814>

<sup>8</sup> [https://ecology.wa.gov/Asset-Collections/Doc-Assets/Contamination-cleanup/Sediment-cleanups/Swift-Creek-Public-Participation-Plan-Draft-\(1\)](https://ecology.wa.gov/Asset-Collections/Doc-Assets/Contamination-cleanup/Sediment-cleanups/Swift-Creek-Public-Participation-Plan-Draft-(1))



EJSCREEN Report (Version 2018)



1 mile Ring around the Corridor, WASHINGTON, EPA Region 10

Approximate Population: 5,706

Input Area (sq. miles): 27.60

Swift Creek/Sumas River

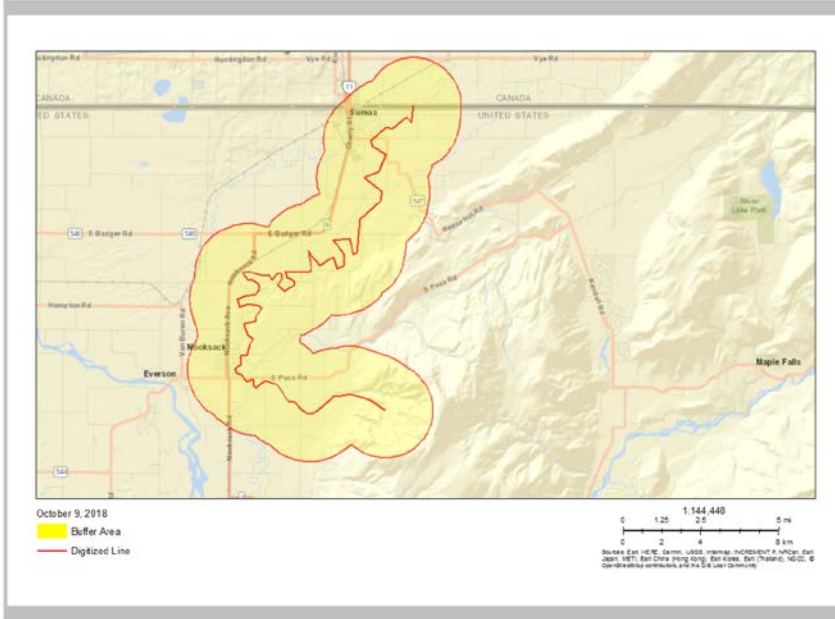


Figure 2: Swift Creek/Sumas River 1- mile buffer map, EPA EJSCREEN Report



EJSCREEN Report (Version 2018)



Tract: 53073010200, WASHINGTON, EPA Region 10

Approximate Population: 9,359

Input Area (sq. miles): 71.13

Swift Creek/Sumas River Census Tract

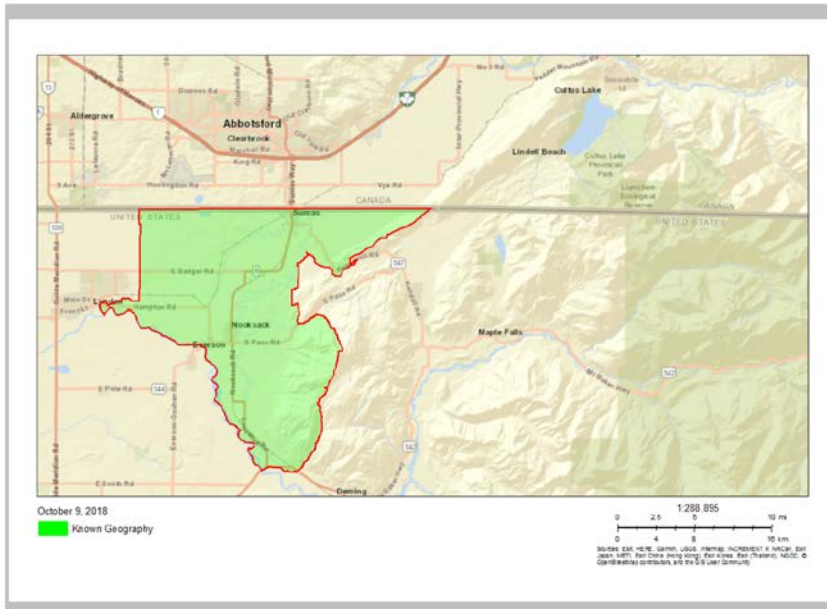


Figure 3: Census Tract map for Swift Creek/Sumas River area, EPA EJSCREEN Report

The EPA establishes an 80<sup>th</sup> percentile filter as an initial starting point for early applications of the [EJSCREEN tool](#)<sup>9</sup> “for the purpose of identifying geographic areas that may warrant further consideration, analysis or outreach.” Those demographic indicators above the 80<sup>th</sup> percentile are highlighted in the tables below.

**Table 2: Environmental Justice results for Swift Creek/Sumas River area, EPA EJSCREEN Report**

Demographic Indicator	Percentile in WA State (by 1-mile buffer)	Percentile in WA State (by census tract)
Minority Population	47	42
Low Income Population	65	63
Linguistically Isolated Population	69	66
Population with Less Than High School Education	85	82
Population Under 5 years of age	78	84
Population over 64 years of age	45	45

The EPA EJSCREEN reports a significant “population with less than high school education” (85<sup>th</sup> or 82<sup>nd</sup> percentile). “Population under 5 years of age” is also higher for the same 1-mile buffer area and census tract (78<sup>th</sup> or 84<sup>th</sup> percentile respectively).

The EPA EJSCREEN reported no significant “linguistically isolated populations” above the 80<sup>th</sup> percentile threshold (69<sup>th</sup> percentile for 1- mile buffer and 66<sup>th</sup> percentile for census tract) so based on this screening **no additional translation needs for any language were identified by this screening tool.**

Ecology also screens translation needs based on the most recent [United States Census Bureau’s American Fact Finder website](#)<sup>10</sup>. The 2011-2015 “Language Spoken at Home by Ability to Speak English for the Population 5 Years and Over” (B16001 Table) for Census Tract 102 **identified 5.47% or 442 people** “speaking English less than ‘very well’” **which meets the EPA threshold criteria of population of 5% or over 1000**<sup>11</sup>.

Based on this criteria for Spanish translation:

- We translated a fact sheet insert with the most pertinent information and contact information on how to request further Spanish translation.
- We had staff available at the public meeting for translation support.

<sup>9</sup> <https://www.epa.gov/ejscreen/frequent-questions-about-ejscreen>

<sup>10</sup> <https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml>

<sup>11</sup> <https://www.govinfo.gov/content/pkg/FR-2004-06-25/pdf/04-14464.pdf>

- We translated [Swift Creek website](#)<sup>12</sup> information including the online comment form.

To date, Ecology has received no translation requests for the Swift Creek project or any other Whatcom County project.

### **Public Meeting Recording**

- ➔ Ecology Action: Ecology will explore methods to improve recording future Swift Creek public meetings.

We hope that the email Ian Fawley sent on Friday, October 25, 2019 following your phone conversation - which included all outreach materials, handouts, and a copy of the meeting's PowerPoint presentation – provided more information about the Swift Creek Project.

You are correct that Ecology did not record the October 9, 2019 public meeting. However, Ecology did have correspondence with another community member who was not able to attend as you mentioned. We were able to answer their inquiry with details of the meeting and provided a copy of the meeting's PowerPoint presentation. We also emailed a copy of the meeting's PowerPoint presentation to meeting attendees who provided email addresses.

While Ecology strives to do effective, inclusive community outreach, our staffing and audio/visual resources are limited to be able to record public meetings while facilitating the meeting and presentation.

### **Whatcom County general response to concerns**

Whatcom County is available to discuss the current plan and projects as well as the decades of background research on the Sumas Mountain Landslide and Swift Creek Sediment. See contact information after this document's cover page ii.

## **Comment from: Larry Lonagan**

Swift Creek – Activities Prior

November 5, 2019

Swift Creek **activities prior** to Public Meeting Oct 9., 2019, and Comments Accepted time frame Oct. 7 — Nov. 5, 2019

Please refer to attached "Consent Decree EXHIBIT A Site Diagram"

1. In mid September 2019, I, like many locals, set out to enjoy Sumas Mtn. by going for a walk. In doing so, I observed that the area described as a "Potential Future Repository Site" which is south of the "Canyon Reach Instream Sediment Traps" had been clear-cut.

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<sup>12</sup> <http://www.ecology.wa.gov/SwiftCreek>

*Response to Comments: Swift Creek Project*

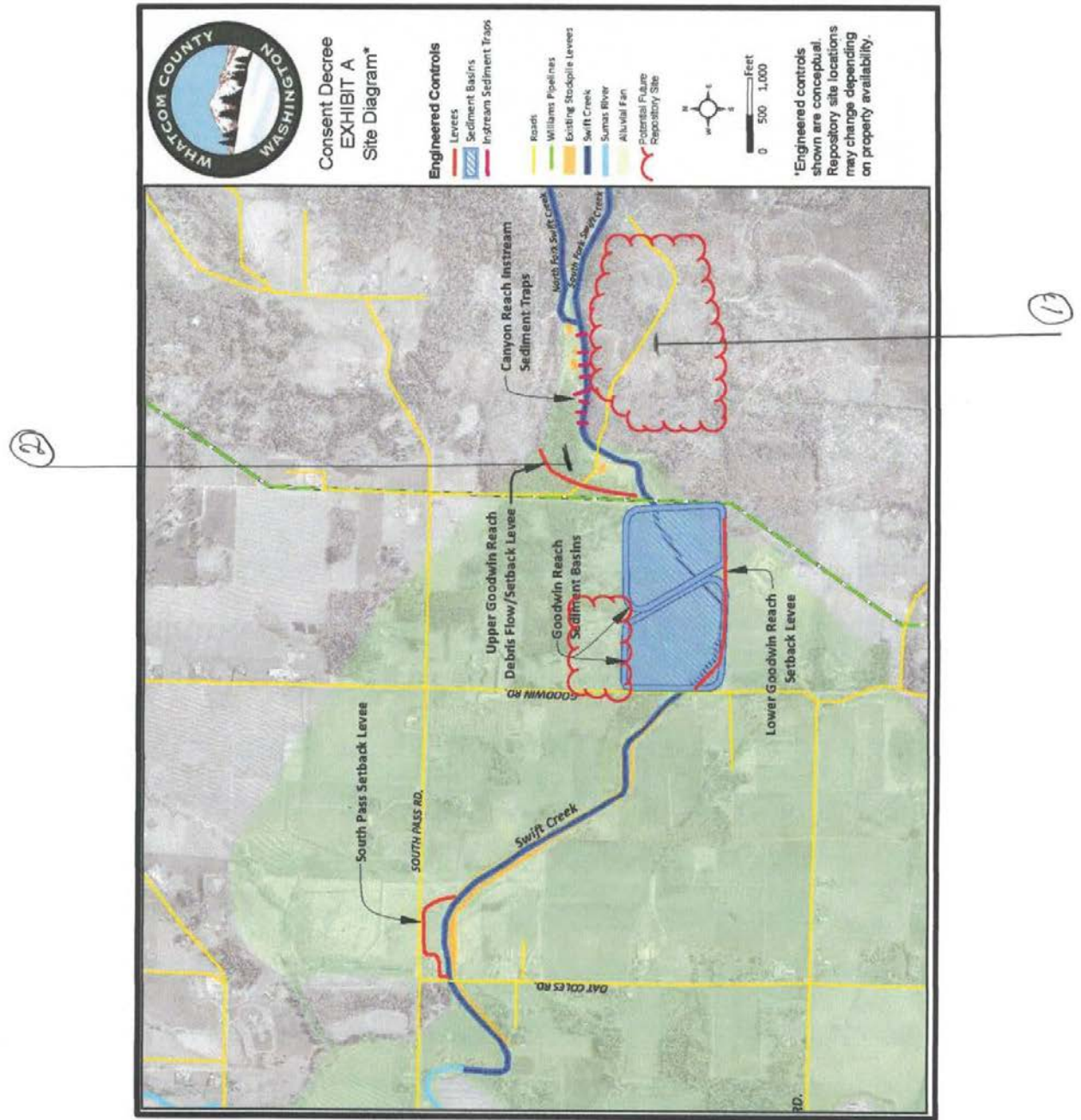
2. Subsequently, and prior to the public meeting, I again went for a walk and observed another large clear-cut taking place, effectively from mid way of the sediment traps to the "Williams Pipelines". This clear cut approximates 1700 feet wide. This clear cut joins up with a clear area that begins at the point where the North and South forks of the Swift Creek join. This clear area approximates 900 feet wide and has piles of unprotected Naturally Occurring Asbestos (NOA). So effectively, there is now a clear area 2600 feet wide from the base of Sumas Mtn. to the William Pipelines.

Comments, questions, regarding the above include, but are not necessarily limited to:

1. Why were these clear-cuts taking place prior to the public hearing and the comments accepted time frame? These activities seem to negate any merits attributable to the meeting and comments. Apparently, the project moves ahead without consideration of the public.
2. It appears that the areas of the clear-cuts "contain critical areas, protective buffers and/or mitigation as defined by Chapter 16.16 and/or Chapter 23, Whatcom County Code" (PL4-86-002-C Rev: July 2014). The forest buffer has been eliminated. What happened here? How and why did these clear-cuts occur?
3. The rainy season is now beginning. As described in Wikipedia, "Prior to the March 2014 mudslide, the Oso area had heavy rainfall during the previous 45 days, up to 200 percent of normal". Given the loss of the forest buffer, it appears that property owners and their families have had a significant increase in the risk of a catastrophic event should the toe of the Swift Creek landslide give way. What is being done or will be done shortly to mitigate the loss of the forest buffer in this critical area?
4. The northeast winds will be coming. Given the loss of the forest buffer, what will be done to limit the NOA unprotected piles becoming airborne, and as a result, subject locals to unclean air and potentially resultant health issues?



**Swift Creek Action Plan**



## **Response**

“Activities Prior”

The forest practices activity was performed by the property owner on their private property. Whatcom County does not currently own the property. Forest practices needed for future development of the sediment basins and repositories will conform to the requirements in the Consent Decree and the Swift Creek Sediment Management Action Plan including vegetative buffers, capping of sediment repositories and specific air monitoring.

## **Comment from: Larry Lonagan**

Swift Creek – Roads

See Attached

November 5, 2019

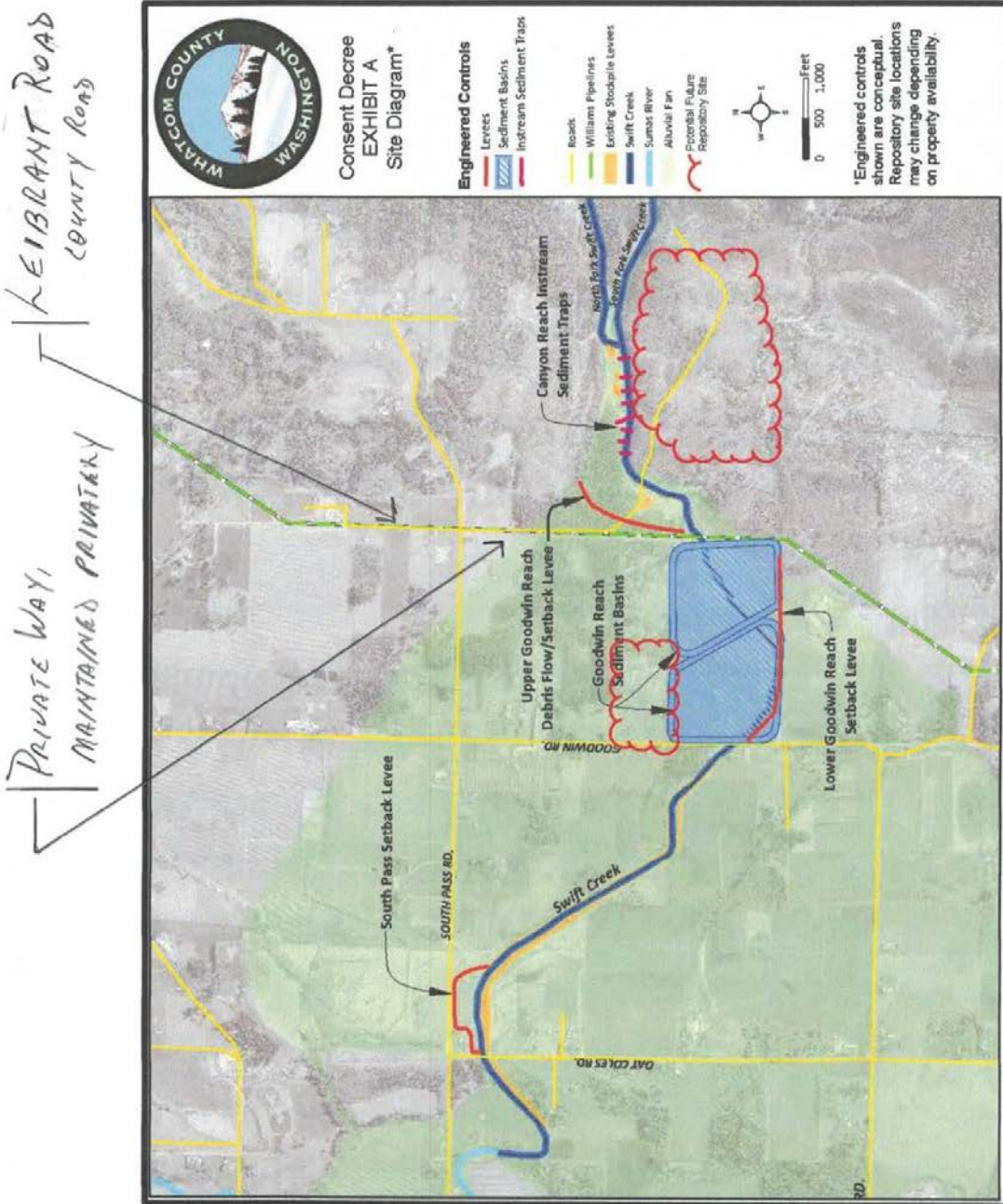
Swift Creek — Roads per Text Explanation

Please refer to the attached **Consent Decree EXHIBIT A Site Diagram, and to the attached text explanation entitled Swift Creek Action Plan engineered controls diagram.**

Comments regarding such include, but are not necessarily limited to:

1. The text explanation relative to roads states: "...and LeibrantRoad (listed from west to east)". It appears that this statement is lacking. On the Site Diagram a yellow line is identified as a road that travels north of South Pass Rd, and south of South Pass Rd, and then turns to proceed west to east towards the Canyon Reach Instream Sediment Traps.
2. That **section north of South Pass Rd. is indeed Leibrant Rd and is a county road maintained by the county.**
3. That **section that proceeds south of South pass Rd is a private way maintained privately.** Utilization of this section would be inappropriate, detrimental to the private rural character of the area, detrimental to horses grazing, etc. in adjacent fields, and detrimental to members of the local community who utilize it as a safe way to exercise (walk, etc.).
4. **To accomplish the objective of reaching the Sediment Traps with the least negative impact would be to utilize the way that Great Western currently uses to access that area.** This Great Western way starts on the east side of the Goodwin Rd just north of Swift Creek.

Swift Creek Action Plan





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## Swift Creek Action Plan engineered controls diagram

This diagram appears in the Consent Decree (legal agreement) between Ecology and Whatcom County.

### General Diagram Orientation

#### General Project Location

The Swift Creek flood control and sediment management project is located east of Everson, WA in Whatcom County.

#### Swift Creek Path

The North and South Forks of Swift Creek originate from the western slope of Sumas Mountain and join at the base of Sumas Mountain east of Leibrant Road. After joining as one creek, it flows westward for approximately 1,500 feet and then southwest for approximately 3,000 feet. The creek then flows generally northwest for 1,000 feet and flows underneath Goodwin Road. It continues northwest for approximately 6,000 feet and then flows underneath Oat Coles Road. It continues generally southwest another 1,500 feet where it joins the Sumas River.

#### Roads

Within the Swift Creek Project area, roads running east/west include South Pass Road to the north and Massey Road to the south. Roads running north/south include Oat Coles Road, Goodwin Road, and Leibrant Road (listed from west to east).

#### Alluvial Fan

At the confluence of Swift Creek's North and South Forks, an alluvial fan extends from the base of Sumas Mountain west of Leibrant Road, north of South Pass Road, and south of Massey Road.

#### Williams Pipelines

Natural gas pipelines extend from the north to the south through the project area paralleling Leibrant Road for approximately 4,000 feet before crossing Swift Creek at the base of Sumas Mountain.

### Engineered Controls

#### Levees

- South Pass Setback Levee: This levee will be located north of Swift Creek. Oat Coles Road will border the levee to the west and South Pass Road to the north. It will be approximately 1,500 feet long.
- Lower Goodwin Reach Setback Levee: This levee will be located south of Swift Creek, extending east of Goodwin Road. It will be approximately 2,500 feet long.
- Upper Goodwin Reach Debris Flow/Setback Levee: This levee will be located north and west of Swift Creek and east of the Williams Pipeline. It will be approximately 1,500 feet long.

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#### Goodwin Reach Sediment Basins

Two sediment basins will be located east of Goodwin Road, west of the Williams Pipeline, and north of the Lower Goodwin Reach Setback Levee. Swift Creek flows generally westward through the sediment basins. The two sediment basins will cover approximately 80 acres.

#### Canyon Reach Instream Sediment Traps

Multiple sediment traps will be located west of the confluence of Swift Creek's North and South Forks. The sediment traps will extend approximately 1,000 feet before the creek reaches the sediment basins.

#### Existing Stockpile Levees

Existing stockpile levees are located on both sides of Swift Creek from the confluence of Swift Creek's North and South Forks on Sumas Mountain to west of Oat Coles Road and within approximately 1,000 feet of the confluence with the Sumas River.

#### Potential Future Repository Sites

The diagram estimates two potential future repository locations. The first repository could be located north of the Goodwin Reach sediment basins and east of Goodwin Road. This first repository could be 16 acres. The second repository could be located south of the confluence of Swift Creek's North and South Forks and east of the Williams Pipelines. This second repository could be 90+ acres.

## Response

"Roads"

Upon the transfer of the private property for the sediment management projects the current recreational use will be closed due to the requirements of the Consent Decree to ensure safety.

## Comment from: Larry Lonigan

Swift Creek – Control Access

See Attached

November 5, 2009

Swift Creek - Control Access

Comments regarding such include, but are not necessarily limited to:

1. Per the attached section entitled Control Access, various items are listed as control items.
2. These control items imply that all access that has been enjoyed by the public to Sumas Mt. at the base by Swift Creek will be eliminated.
3. Based upon my observations of the clear-cuts that have been done to date, actions appear to be excessive and unreasonable. This would appear to hold true for these control access items.

4. So what have you considered and what do you propose for the continuing enjoyment of the mountain?

→

**Control access**

Control use and access to the levees to prevent disturbance of, and exposure to, the sediment and airborne asbestos such as:

- Fencing off levees, sediment capture facilities, and storage basins.
- Placing legal restrictions on future use of the properties.
- Inspecting areas to ensure compliance.
- Purchasing additional property or easements may be required.

## Background

### Location

Swift Creek is in the northeastern lowlands of Whatcom County. The South Fork of Swift Creek originates from the toe (downslope end) of an ongoing, slowly moving landslide on Sumas Mountain. Swift Creek flows generally westward before joining the Sumas River near the city of Nooksack.



Swift Creek watershed map (Click image above to enlarge or [download a text explanation](#).)

### Landslide, flooding, and sediment

The 225-acre landslide on Sumas Mountain has resulted in a large amount of sediment containing naturally-occurring asbestos (NOA) and metals continuously filling up the creek bed. For several decades Swift Creek has been dredged to manage sediment and limit downstream flooding. When the deposited sediment material dries, NOA in the sediment can become airborne and present a risk to human health and the environment. The main concern with the metals in the sediment is the impact to plants on land and aquatic life.

## Response

“Control Access”

Accessing the DNR public lands on Sumas Mountain will need to be accomplished by ways of public right-of-ways.

In addition please see response to “Roads” above.

## **Comment from: Larry Lonagan**

Swift Creek – EXHIBIT A

See attached

November 5, 2019

Swift Creek - EXHIBIT A

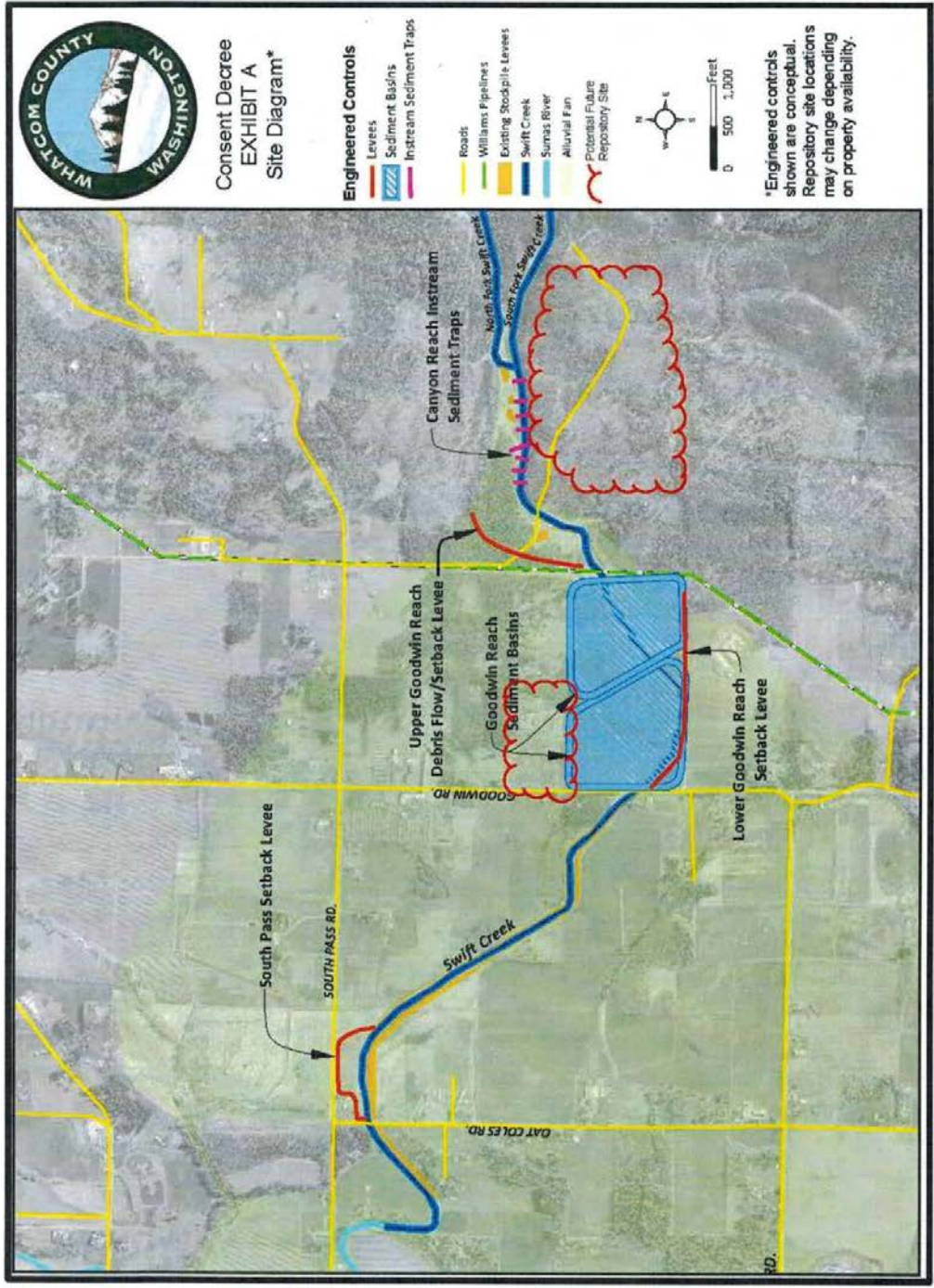
Please refer to the attached Consent Decree EXHIBIT A Site Diagram, and to the attached text explanation entitled Swift Creek Action Plan engineered controls diagram.

Comments regarding such include, but are not necessarily limited to:

1. Per review of Exhibit A, naturally occurring asbestos (NOA) is proposed to be accumulated in a very small and compact geographical area.
2. Such accumulations have the potential of creating serious air quality issues. What will be done to avert such and how timely will such actions be taken? Only recently have I observed capping of accumulations at the South Pass Setback Levee, while such accumulations occurred over many years.
3. Such accumulations have the potential of creating serious water quality issues. As noted on the attached **Whatcom...-Critical Aquifer Recharge Areas**, the accumulations will be on a critical aquifer recharge area and a wellhead protection zone. This can be observed much better on the Internet. What will be done to avert serious water quality issues?
4. The "Upper Goodwin Reach Debris Flow/Setback Levee" appears to be an excessive distance from the Swift Creek. Is there something else here that is not being disclosed?
5. Years ago alternatives such as pits were to be pursued as possible sites for accumulating the NOA. This appeared to be a potentially excellent solution. What happened?



Swift Creek Action Plan



1/2

## Swift Creek Action Plan engineered controls diagram

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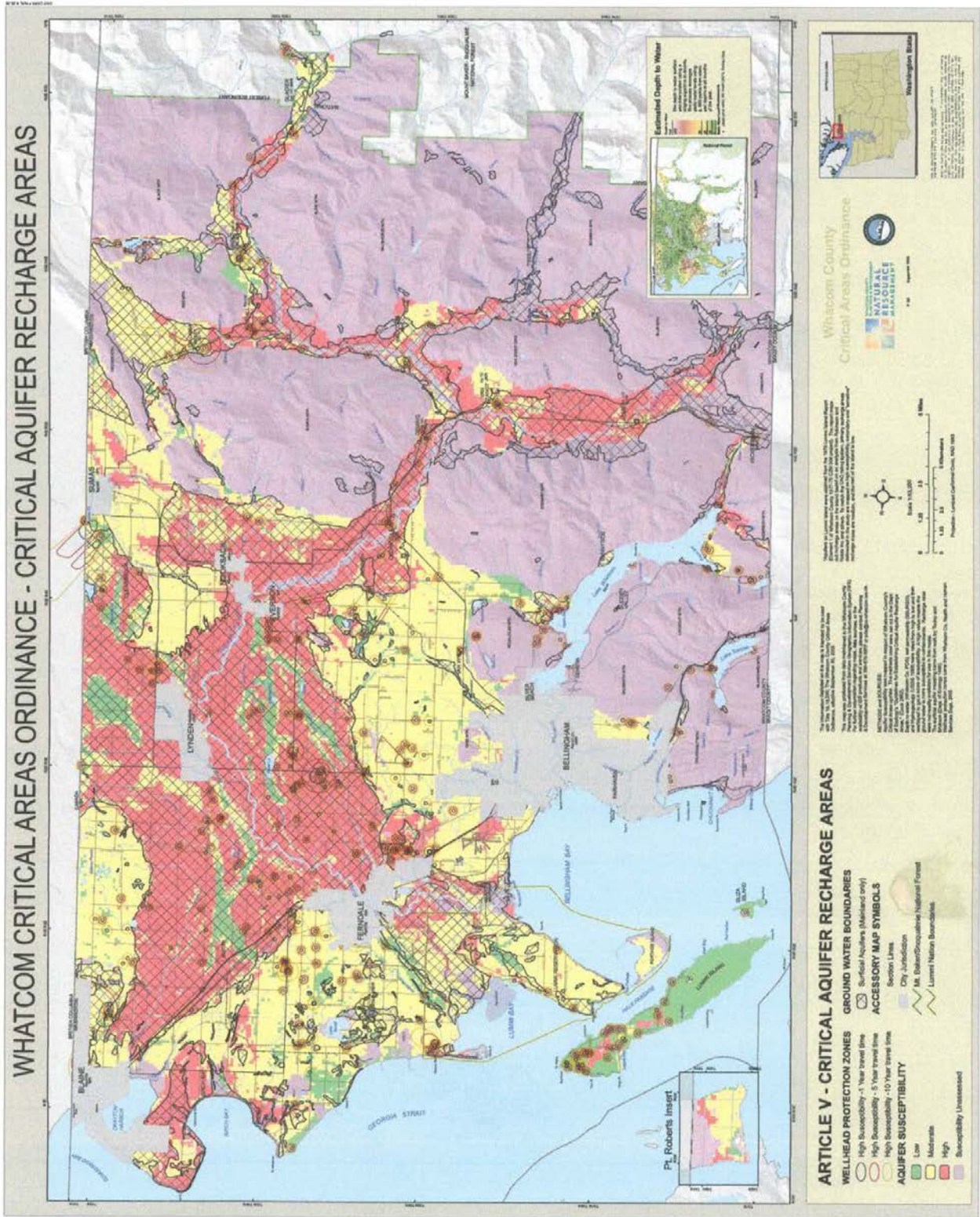
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## **Response**

“Exhibit A”

Air and groundwater impacts were investigated in the Draft and Final Environmental Impact Statements. Monitoring protocols are in place to ensure mitigation. Detailed information may be found in documents 55B and 77, *Swift Creek Health Impact Assessment*, and *Health Consultation, Asbestos and Metals in Groundwater and Leachate*, respectively:  
<http://www.co.whatcom.wa.us/3067/Swift-Creek-Background-Documents>

The location of the “Upper Goodwin Reach Debris Flow/Setback Levee” is currently in design. The exact location is similar to the general location shown on the exhibit. The final design will be posted on the website upon its completion.

Whatcom County researched the idea of utilizing “old” gravel pits as a potential location for long term repository. This appeared to be a potential solution. Unfortunately due to the environmental hazards and exorbitant cost this idea was set aside. For further detailed information please see reports 66 and 66A; *2016 Sediment Repository Conceptual Site Screening* by Wheeler Consulting Group: <http://www.co.whatcom.wa.us/3067/Swift-Creek-Background-Documents>

## **Appendices**

Appendix A. Public Comments in Original Format

## Scott Smith

With the greatest respect for the efforts of everyone, let me offer the honest reality of this problem (that you know but can't acknowledge). This is an exercise in futility: the classic, rolling a rock uphill only for it roll back down. (Humor is not intended) You are struggling to get funding to construct a system that separates solids from the suspending water at the bottom of the mountain. A bit myopic...That system requires significant maintenance through time thus its greatest flaw. Or seen another way, it's a job that can never be finished. Who would ever buy into such a ludicrous proposition? No matter the lofty, meaningful goals, no one will sign on forever or they're a fool. If this is the underlying reality of this project, then you should be searching for another answer...that does not include eternity in its solution. Futility...

If you continue your present path (and I expect you will), you must also plan for its eventual demise. **THE FUNDS WILL NOT BE THERE FOREVER!** So then what? What will be built into your system plans when that eventuality happens? It's imperative that this is included in your plans. **IT MUST BE!** Or the plans are incomplete. The project can not be open-ended, forever.

## Dennis Tjoelker

Greetings

As I look at the plans that you all have worked so hard at and look great I can not help but say this will not fix the problem at its source. As Scott mentioned in his comment you will need to be prepared to continue to spend more of our hard earned moneys to maintain this plan in the future.

The problem is not a major flow of mud but a gradual flow of mud and rock with the seasonal rains with the differing volumes of material which I'm sure you have figured out. I suggest stopping the solid material flow at the source and keep it on the mountain. Build a dam east of the mouth of the canyon with drainage behind and through it, there is enough material that has already come through that you can screen out rock for a natural filter behind the dam to let clean water flow through. I'm guessing there is enough clay to seal it up so at some point you will have to get the dam high enough to create a lake with a spillway that will still allow the release of water. I know I have not addressed all of the potential issues but I'm sure you have enough sharp engineers at your disposal to figure it out. As far as looks go maybe it can be a rock/earthen dam that can have trees and shrubs planted on it, then in 30 years no one will know the difference. I figure if a river can be dammed up and hold back the water it does this should be a walk in the park.

Thank You for your consideration DT

# Anonymous Anonymous

test

TEST

To: Cris Matthews  
Project Manager  
Department of Ecology  
913 Squalicum Way, Unit 101  
Bellingham, WA 98225

Transmitted Via Online Comment Form: <http://cs.ecology.commentinput.com/?id=ic9NJ>

November 5, 2019

**RE: Swift Creek Project**

Dear Cris Matthews,

Thank you for taking the time to consider our comment on the Swift Creek Project. I found the presentations at the public meeting to be very informative and appreciate the work that went into delivering those. Our biggest concern with the current plan is that it is an expensive, short term fix to a long-term problem that has potential adverse health effects.

RE Sources for Sustainable Communities is a local organization in northwest Washington, founded in 1982. RE Sources works to build sustainable communities and protect the health of northwest Washington's people and ecosystems through the application of science, education, advocacy, and action. Our North Sound Baykeeper program is dedicated to protecting and enhancing the marine and nearshore habitats of northern Puget Sound and the Georgia Strait. Our chief focus is on preventing pollution from entering the North Sound and Strait, while helping our local citizenry better understand the complex connections between prosperity, society, environmental health, and individual wellbeing. Our North Sound Baykeeper is the 43<sup>rd</sup> member of the Waterkeeper Alliance, with over 300 organizations in 34 countries around the world that promote fishable, swimmable, drinkable water. RE Sources has over 20,000 members in Whatcom, Skagit, and San Juan counties, and we submit these comments on their behalf.

It is well known that breathing in asbestos can lead to lung cancer, mesothelioma, or asbestosis and that exposures to heavy metals can lead to a myriad of health effects including kidney damage, neurological damage, and cancer. During the presentation it was mentioned by the Department of Health that there is no evidence of asbestos related diseases in people living in the Swift Creek drainage. Could you please provide the source of this information and explain how this will be monitored over time? Have there been any studies related to heavy metal related illnesses? Because both asbestos-related and heavy metal-related illnesses can take decades to manifest, it is important to maintain a long-term health study. The people that live in this drainage should be kept up to date on the risks.



At the public meeting it was mentioned by Whatcom County staff that this project was only expected to “manage” swift creek for about 20-25 years. This seems short sighted. Are there measures that could be done now that work toward long-term, long-lasting solutions? Are there incentives for people to leave the area or not move into the area? Could money be spent on relocation of people rather than trying to manage thousands of cubic yards of sediment every year in perpetuity? What other long-term solutions have been considered?

Thank you for your time in addressing our concerns and comments on this complex and difficult issue.

Sincerely,

Kirsten McDade  
Pollution Prevention Specialist  
RE Sources for Sustainable Communities



Larry Lonegan

Swift Creek - Public Meeting

See attached

November 5, 2019

Swift Creek Public Meeting Oct.9, 2019

Comments regarding such include, but are not necessarily limited to:

1. As an owner of property within the alluvial fan area and in close proximity to the watershed area, I am dismayed that **I did not receive any indication of the meeting, etc..** While mail is not delivered and I do not have a PO Box in Everson, my address is readily available in Whatcom assessor records. If the assessor can send me a tax bill, certainly I, and anyone in a similar situation, should receive a meeting notification.
2. As conveyed to Ian Fawley via phone conversation on Oct.25, 2019, it came to my attention that at least one member of the public did not receive notification until after the meeting. Ian indicated that he was aware that **some members of the public did not receive notification until after the meeting.**
3. In the copies of meeting notice that I received from Ian, there were two fact sheet attachments. One in English and one in Spanish. **The English fact sheet was six (6) pages long, and the Spanish fact sheet was only two (2) pages long.** At the 2010 census per Wikipedia, the Hispanic or Latino makeup of Everson was 28.9%, Nooksak was 17.9%, and Sumas was 15.8%. Why the Spanish fact sheet was only two (2) pages is beyond my comprehension, and obviously **those who speak Spanish as a primary language were not fully informed via the attached fact sheet.**
4. The public meeting was hosted "to provide information, answer questions, and collect comments". In response to my inquiry, I was informed that **neither a transcript nor a recorded video was available. I was also informed that the meeting was not broadcast.** Many people can not physically attend public meetings for various reasons, including but not necessarily limited to: attending to their children, on vacation, out of town, physically unable to attend due to personal or family health issues, employment obligations, etc. **Those people that could not attend should have been accommodated** via a live broadcast, a video recording, live streaming with the ability to ask questions, and/or minimally a transcript of questions, answers thereto, and comments. **It appears that an effort to keep the public fully informed was/is lacking.**

In conclusion, and based upon the above, it appears that one might judge the public meeting, and communications thereof, to be inadequate, and that another meeting be held recifying, minimally, the above.

And also, as a result, the comments accepted time frame should be revised/extended.

Larry Lonegan

Swift Creek - Activities Prior

November 5, 2019

Swift Creek **activities prior** to Public Meeting Oct 9., 2019, and Comments Accepted time frame Oct.7 – Nov. 5, 2019

Please refer to attached "Consent Decree EXHIBIT A Site Diagram"

1. In mid September 2019, I, like many locals, set out to enjoy Sumas Mtn. by going for a walk. In doing so, I observed that the area described as a "Potential Future Repository Site" which is south of the "Canyon Reach Instream Sediment Traps" had been clear-cut.
2. Subsequently, and prior to the public meeting, I again went for a walk and observed another large clear-cut taking place, effectively from mid way of the sediment traps to the "Williams Pipelines". This clear cut approximates 1700 feet wide. This clear cut joins up with a clear area that begins at the point where the North and South forks of the Swift Creek join. This clear area approximates 900 feet wide and has piles of unprotected Naturally Occurring Asbestos (NOA). So effectively, there is now a clear area 2600 feet wide from the base of Sumas Mtn. to the William Pipelines.

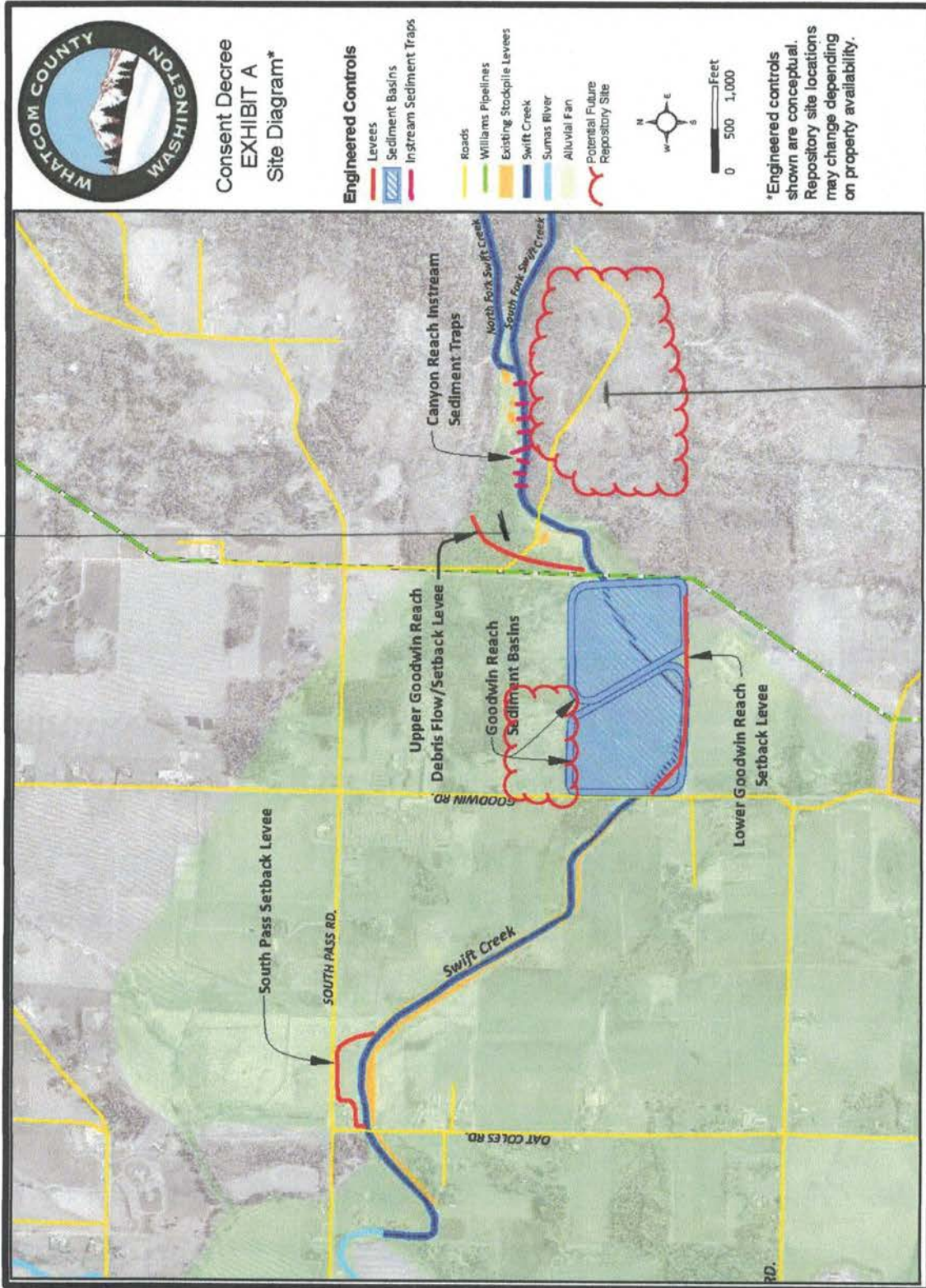
Comments, questions, regarding the above include, but are not necessarily limited to:

1. Why were these clear-cuts taking place prior to the public hearing and the comments accepted time frame? These activities seem to negate any merits attributable to the meeting and comments. Apparently, the project moves ahead without consideration of the public.
2. It appears that the areas of the clear-cuts "contain critical areas, protective buffers and/or mitigation as defined by Chapter 16.16 and/or Chapter 23, Whatcom County Code" (PL4-86-002-C Rev: July 2014). The forest buffer has been eliminated. What happened here? How and why did these clear-cuts occur?
3. The rainy season is now beginning. As described in Wikipedia, "Prior to the March 2014 mudslide, the Oso area had heavy rainfall during the previous 45 days, up to 200 percent of normal". Given the loss of the forest buffer, it appears that property owners and their families have had a significant increase in the risk of a catastrophic event should the toe of the Swift Creek landslide give way. What is being done or will be done shortly to mitigate the loss of the forest buffer in this critical area?
4. The northeast winds will be coming. Given the loss of the forest buffer, what will be done to limit the NOA unprotected piles becoming airborne, and as a result, subject locals to unclean air and potentially resultant health issues?





### Swift Creek Action Plan



(2)

(1)

Larry Lonegan

Swift Creek - Roads

See attached

November 5, 2019

Swift Creek – Roads per Text Explanation

Please refer to the attached **Consent Decree EXHIBIT A Site Diagram**, and to the attached text explanation entitled **Swift Creek Action Plan engineered controls diagram**.

Comments regarding such include, but are not necessarily limited to:

1. The text explanation relative to roads states: "...and Leibrant Road (listed from west to east)". It appears that this statement is lacking. On the Site Diagram a yellow line is identified as a road that travels north of South Pass Rd, and south of South Pass Rd, and then turns to proceed west to east towards the Canyon Reach Instream Sediment Traps.
2. That **section north of South Pass Rd. is indeed Leibrant Rd and is a county road maintained by the county.**
3. That **section that proceeds south of South Pass Rd is a private way maintained privately.** Utilization of this section would be inappropriate, detrimental to the private rural character of the area, detrimental to horses grazing, etc. in adjacent fields, and detrimental to members of the local community who utilize it as a safe way to exercise (walk, etc.).
4. **To accomplish the objective of reaching the Sediment Traps with the least negative impact would be to utilize the way that Great Western currently uses** to access that area. This Great Western way starts on the east side of the Goodwin Rd just north of Swift Creek.

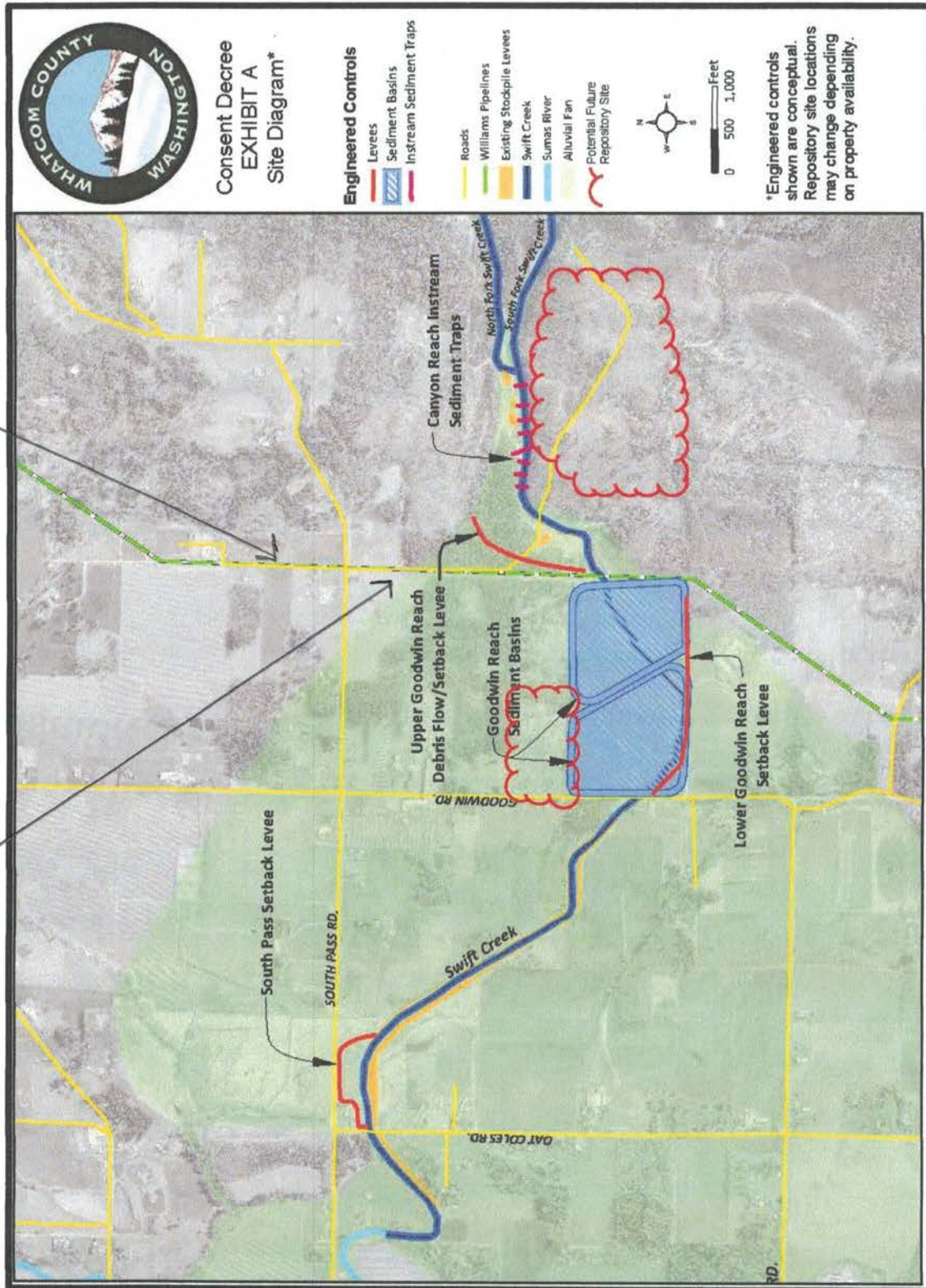




**Swift Creek Action Plan**

KEIBRANT ROAD  
COUNTY ROAD

PRIVATE WAY,  
MAINTAINED PRIVATELY





1/2

# Swift Creek Action Plan engineered controls diagram

This diagram appears in the Consent Decree (legal agreement) between Ecology and Whatcom County.

## General Diagram Orientation

### General Project Location

The Swift Creek flood control and sediment management project is located east of Everson, WA in Whatcom County.

### Swift Creek Path

The North and South Forks of Swift Creek originate from the western slope of Sumas Mountain and join at the base of Sumas Mountain east of Leibrant Road. After joining as one creek, it flows westward for approximately 1,500 feet and then southwest for approximately 3,000 feet. The creek then flows generally northwest for 1,000 feet and flows underneath Goodwin Road. It continues northwest for approximately 6,000 feet and then flows underneath Oat Coles Road. It continues generally southwest another 1,500 feet where it joins the Sumas River.

### Roads

Within the Swift Creek Project area, roads running east/west include South Pass Road to the north and Massey Road to the south. Roads running north/south include Oat Coles Road, Goodwin Road, and Leibrant Road (listed from west to east).

### Alluvial Fan

At the confluence of Swift Creek's North and South Forks, an alluvial fan extends from the base of Sumas Mountain west of Leibrant Road, north of South Pass Road, and south of Massey Road.

### Williams Pipelines

Natural gas pipelines extend from the north to the south through the project area paralleling Leibrant Road for approximately 4,000 feet before crossing Swift Creek at the base of Sumas Mountain.

## Engineered Controls

### Levees

- South Pass Setback Levee: This levee will be located north of Swift Creek. Oat Coles Road will boarder the levee to the west and South Pass Road to the north. It will be approximately 1,500 feet long.
- Lower Goodwin Reach Setback Levee: This levee will be located south of Swift Creek, extending east of Goodwin Road. It will be approximately 2,500 feet long.
- Upper Goodwin Reach Debris Flow/Setback Levee: This levee will be located north and west of Swift Creek and east of the Williams Pipeline. It will be approximately 1,500 feet long.

2/2

#### Goodwin Reach Sediment Basins

Two sediment basins will be located east of Goodwin Road, west of the Williams Pipeline, and north of the Lower Goodwin Reach Setback Levee. Swift Creek flows generally westward through the sediment basins. The two sediment basins will cover approximately 80 acres.

#### Canyon Reach Instream Sediment Traps

Multiple sediment traps will be located west of the confluence of Swift Creek's North and South Forks. The sediment traps will extend approximately 1,000 feet before the creek reaches the sediment basins.

#### Existing Stockpile Levees

Existing stockpile levees are located on both sides of Swift Creek from the confluence of Swift Creek's North and South Forks on Sumas Mountain to west of Oat Coles Road and within approximately 1,000 feet of the confluence with the Sumas River.

#### Potential Future Repository Sites

The diagram estimates two potential future repository locations. The first repository could be located north of the Goodwin Reach sediment basins and east of Goodwin Road. This first repository could be 16 acres. The second repository could be located south of the confluence of Swift Creek's North and South Forks and east of the Williams Pipelines. This second repository could be 90+ acres.

Larry Lonegan

Swift Creek - Control Access

See attached

November 5, 2009

Swift Creek - Control Access

Comments regarding such include, but are not necessarily limited to:

1. Per the attached section entitled Control Access, various items are listed as control items.
2. These control items imply that all access that has been enjoyed by the public to Sumas Mt. at the base by Swift Creek will be eliminated.
3. Based upon my observations of the clear-cuts that have been done to date, actions appear to be excessive and unreasonable. This would appear to hold true for these control access items.
4. So what have you considered and what do you propose for the continuing enjoyment of the mountain?



### Control access

Control use and access to the levees to prevent disturbance of, and exposure to, the sediment and airborne asbestos such as:

- Fencing off levees, sediment capture facilities, and storage basins.
- Placing legal restrictions on future use of the properties.
- Inspecting areas to ensure compliance.
- Purchasing additional property or easements may be required.

## Background

### Location

Swift Creek is in the northeastern lowlands of Whatcom County. The South Fork of Swift Creek originates from the toe (downslope end) of an ongoing, slowly moving landslide on Sumas Mountain. Swift Creek flows generally westward before joining the Sumas River near the city of Nooksack.



Swift Creek watershed map (Click image above to enlarge or [download a text explanation.](#))

### Landslide, flooding, and sediment

The 225-acre landslide on Sumas Mountain has resulted in a large amount of sediment containing naturally-occurring asbestos (NOA) and metals continuously filling up the creek bed. For several decades Swift Creek has been dredged to manage sediment and limit downstream flooding. When the deposited sediment material dries, NOA in the sediment can become airborne and present a risk to human health and the environment. The main concern with the metals in the sediment is the impact to plants on land and aquatic life.

Larry Lonegan

Swift Creek - EXHIBIT A

See attached

November 5, 2019

Swift Creek - EXHIBIT A

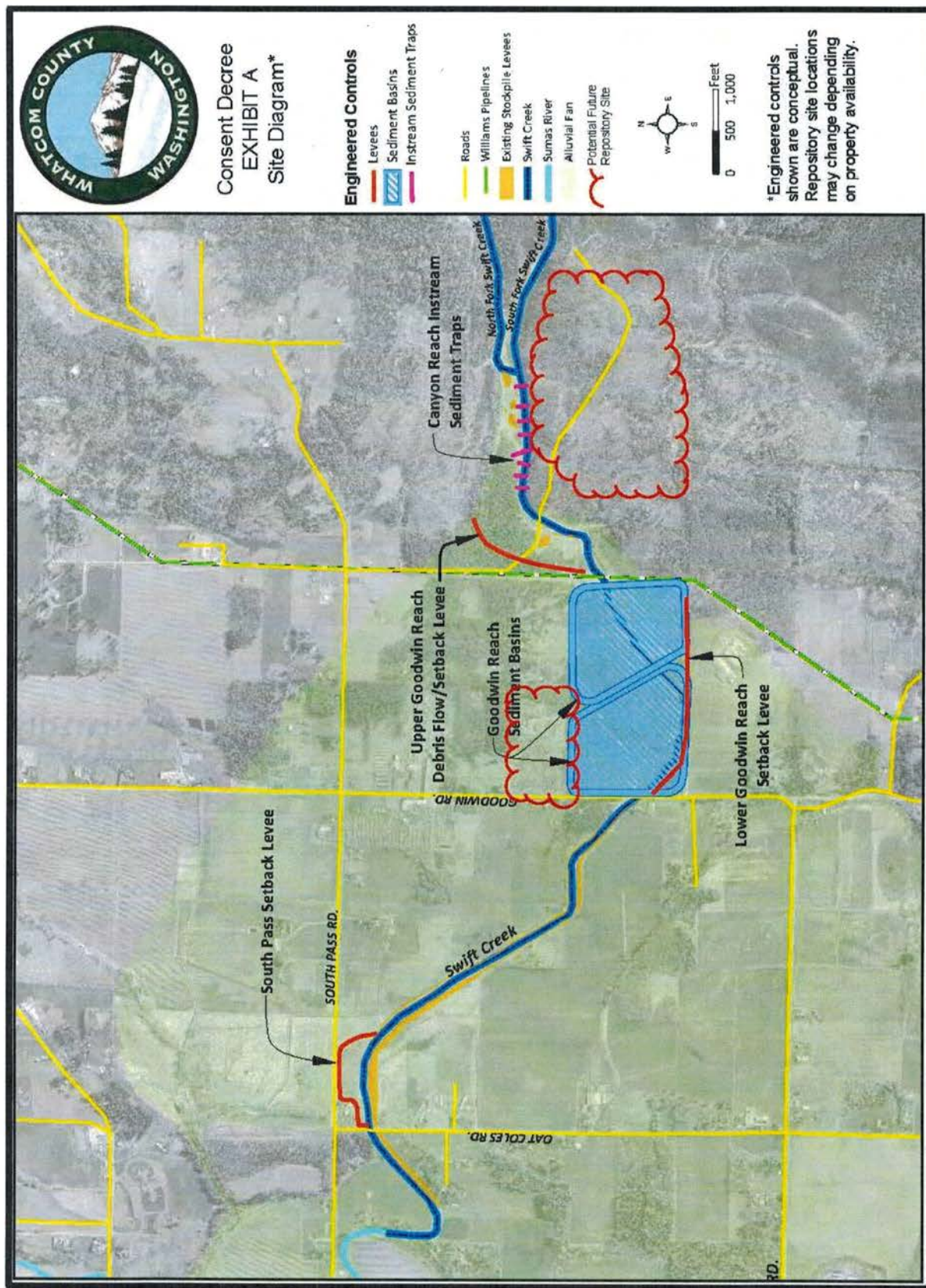
Please refer to the attached Consent Decree EXHIBIT A Site Diagram, and to the attached text explanation entitled Swift Creek Action Plan engineered controls diagram.

Comments regarding such include, but are not necessarily limited to:

1. Per review of Exhibit A, naturally occurring asbestos (NOA) is proposed to be accumulated in a very small and compact geographical area.
2. Such accumulations have the potential of creating serious air quality issues. What will be done to avert such and how timely will such actions be taken? Only recently have I observed capping of accumulations at the South Pass Setback Levee, while such accumulations occurred over many years.
3. Such accumulations have the potential of creating serious water quality issues. As noted on the attached **Whatcom...-Critical Aquifer Recharge Areas**, the accumulations will be on a critical aquifer recharge area and a wellhead protection zone. This can be observed much better on the Internet. What will be done to avert serious water quality issues?
4. The "Upper Goodwin Reach Debris Flow/Setback Levee" appears to be an excessive distance from the Swift Creek. Is there something else here that is not being disclosed?
5. Years ago alternatives such as pits were to be pursued as possible sites for accumulating the NOA. This appeared to be a potentially excellent solution. What happened?



### Swift Creek Action Plan





# Swift Creek Action Plan engineered controls diagram

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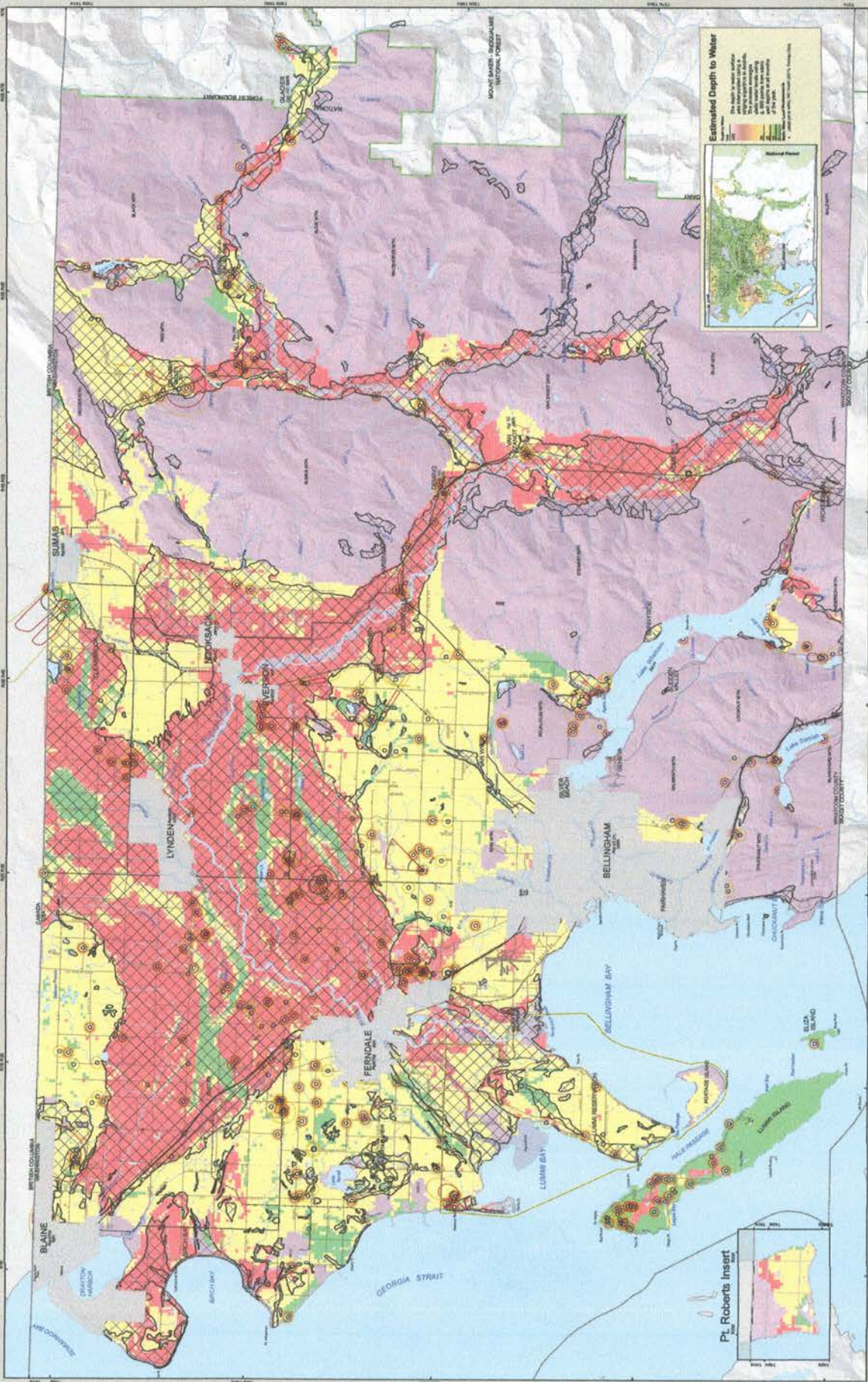
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# WHATCOM CRITICAL AREAS ORDINANCE - CRITICAL AQUIFER RECHARGE AREAS



## ARTICLE V - CRITICAL AQUIFER RECHARGE AREAS

- WELLHEAD PROTECTION ZONES**
  - High Susceptibility - 1 Year travel time
  - High Susceptibility - 5 Year travel time
  - High Susceptibility - 10 Year travel time
- GROUND WATER BOUNDARIES**
  - Surficial Aquifers (Mainland only)
- ACCESSORY MAP SYMBOLS**
  - Section Lines
  - City Jurisdiction
  - Mt. Baker/Squakine National Forest
  - Lummi Nation Boundaries
- AQUIFER SUSCEPTIBILITY**
  - Low
  - Moderate
  - High
  - Susceptibility Unassessed

**Whatcom County Critical Areas Ordinance**

**NATURAL RESOURCES MANAGEMENT**

**Scale 1:10,000**

0 0.5 1.0 1.5 2.0 2.5 3.0 Miles

0 0.5 1.0 1.5 2.0 2.5 3.0 Kilometers

**North Arrow**

Projection - Lambert Conformal Conic, NAD 1983

The information depicted on this map is based on the best available data as of the date of preparation. The information is provided for informational purposes only and is not intended to constitute a warranty of any kind. The user assumes all liability for any and all uses of this information. The user acknowledges that the information is not a guarantee of any kind and that the user shall be responsible for verifying the information for their own use.

**Pl. Roberts Inset**

**Estimated Depth to Water**

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