DEPARTMENT OF ECOLOGY
State of Washington

Response to Comments

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

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

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

- Department of Ecology website: www.ecology.wa.gov/SwiftCreek
- Whatcom County website: 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

For more information contact:

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- 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[1].

[1] 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[2] 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[3]
    - Whatcom County's Swift Creek website[4]
  - The Swift Creek comment period was featured on Ecology's home webpage[5] 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.

[2] https://twitter.com/ecyseattle/status/1177631334799273984
[3] https://ecology.wa.gov/SwiftCreek
[4] http://www.whatcomcounty.us/513/Swift-Creek
[5] 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 years 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 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, 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[6], 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

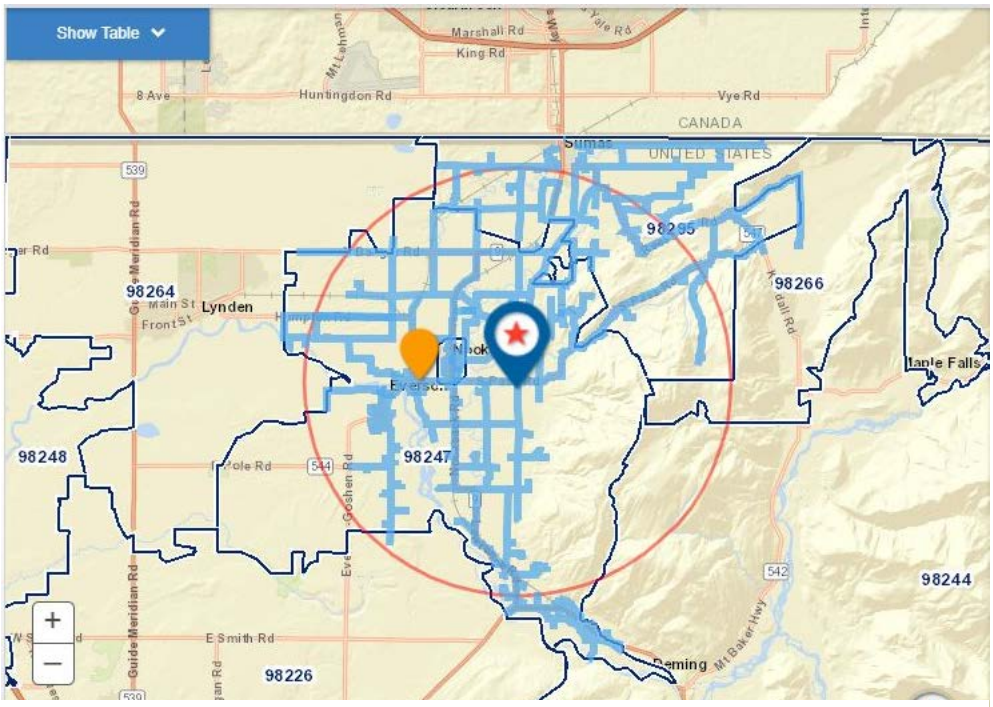


Figure 1: USPS Every Door Direct Mail carrier route and post office map

[6] 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[7] – 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[8]

[7] https://ejscreen.epa.gov/mapper/index.html?wherestr=47.505875%2C+-122.290814
[8] https://ecology.wa.gov/Asset-Collections/Doc-Assets/Contamination-cleanup/Sediment-cleanups/Swift-Creek-Public-Participation-Plan-Draft-(1)

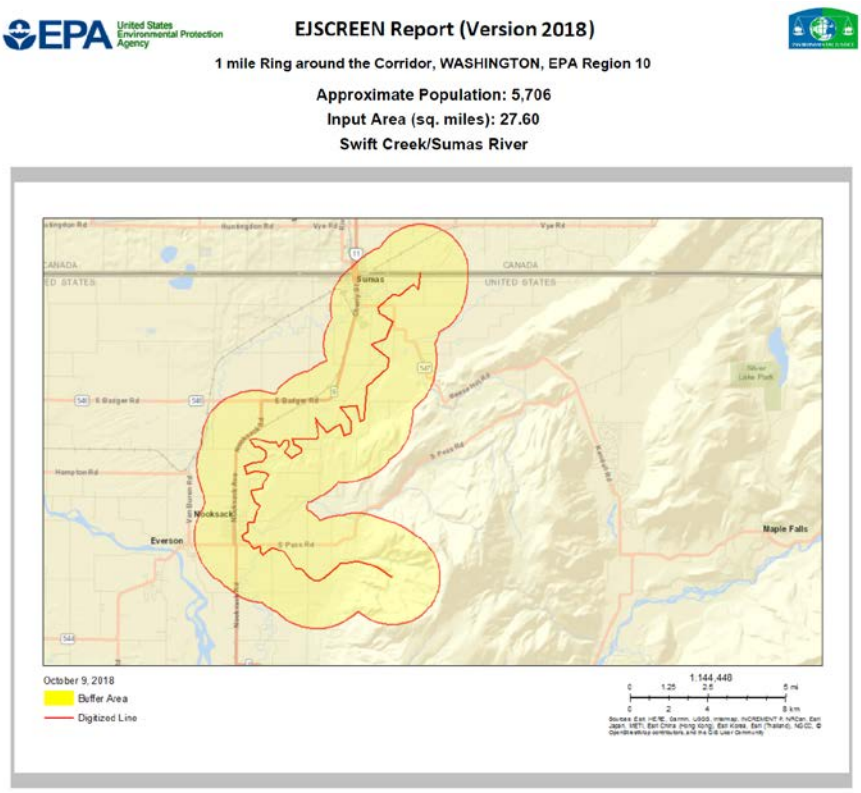


Figure 2: Swift Creek/Sumas River 1- mile buffer map, EPA EJSCREEN Report

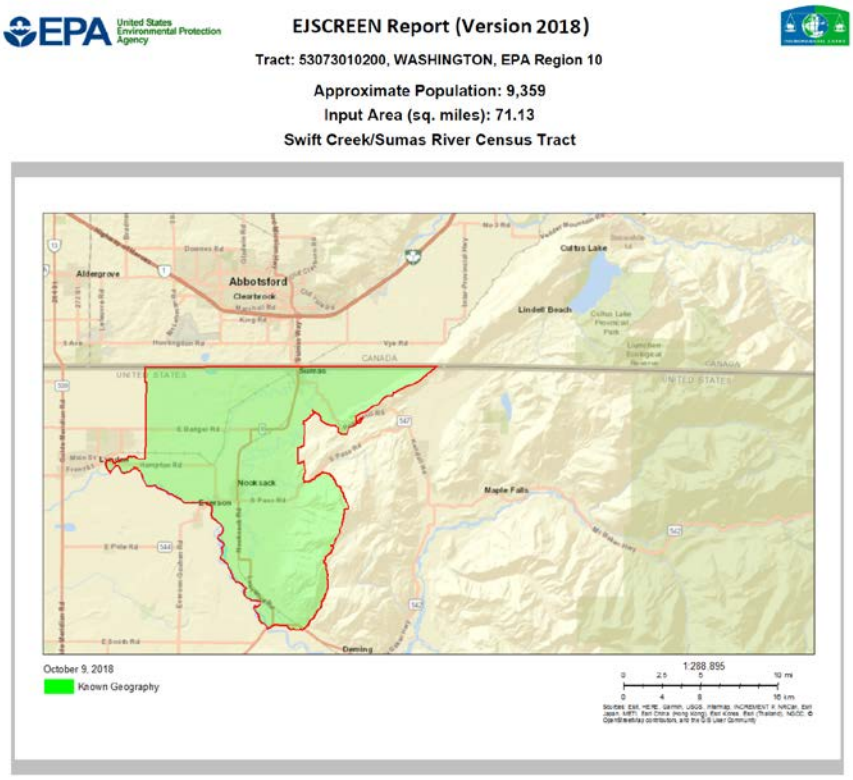


Figure 3: Census Tract map for Swift Creek/Sumas River area, EPA EJSCREEN Report

The EPA establishes an 80th percentile filter as an initial starting point for early applications of the EJSCREEN tool[9] "for the purpose of identifying geographic areas that may warrant further consideration, analysis or outreach." Those demographic indicators above the 80th 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" (85th or 82nd percentile). "Population under 5 years of age" is also higher for the same 1-mile buffer area and census tract (78th or 84th percentile respectively).

The EPA EJSCREEN reported no significant "linguistically isolated populations" above the 80th percentile threshold (69th percentile for 1- mile buffer and 66th 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[10]. 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**[11].

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.

[9] https://www.epa.gov/ejscreen/frequent-questions-about-ejscreen
[10] https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml
[11] https://www.govinfo.gov/content/pkg/FR-2004-06-25/pdf/04-14464.pdf

- We translated Swift Creek website[12] 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 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.

[12] http://www.ecology.wa.gov/SwiftCreek

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?

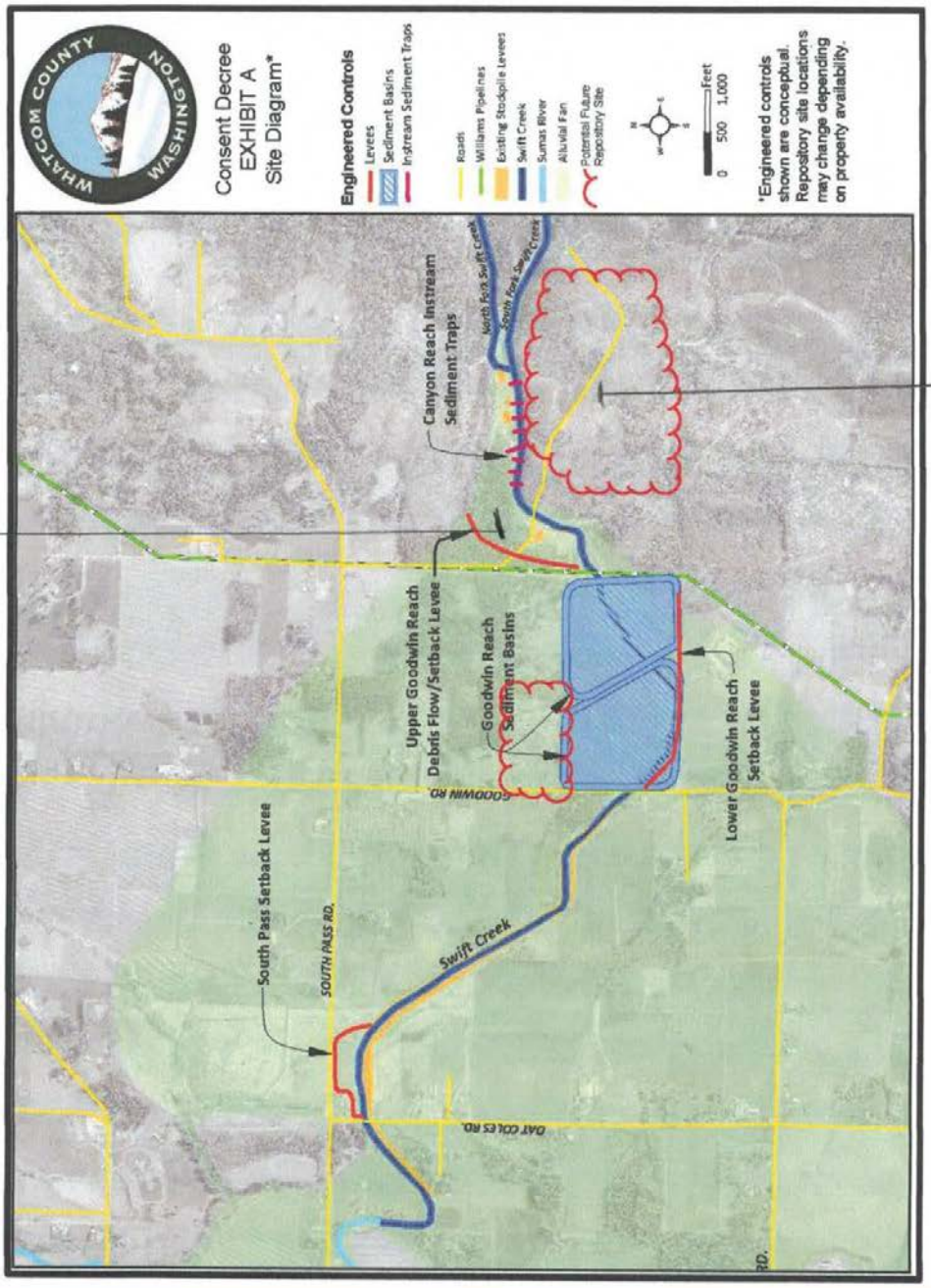
3. The rainy season is now beginning. As described in Wikipedia, "Prior to the March 2014 mudslide, the Oso area had heavy rainfall during the previous 45 days, up to 200 percent of normal". Given the loss of the forest buffer, it appears that property owners and their families have had a significant 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?

Whatcom County and the Department of Ecology

DEPARTMENT OF ECOLOGY State of Washington

Swift Creek Action Plan



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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 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 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.).

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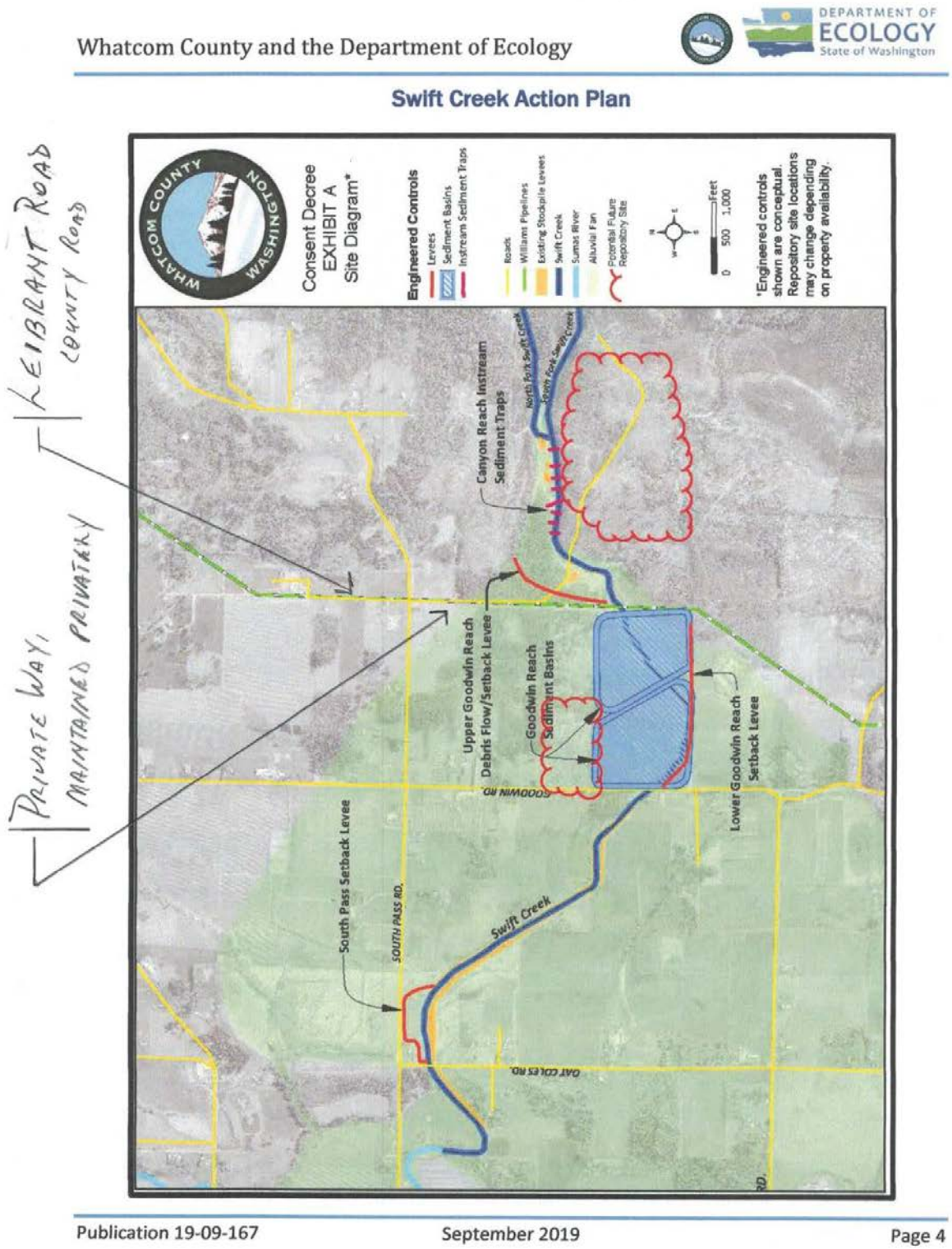

Publication 19-09-167 September 2019 Page 4

1/2

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General Diagram Orientation

General Project Location

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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.

Willams 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.**
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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 flows 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 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.

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

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

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- Placing legal restrictions on future use of the properties.
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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.)

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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 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.

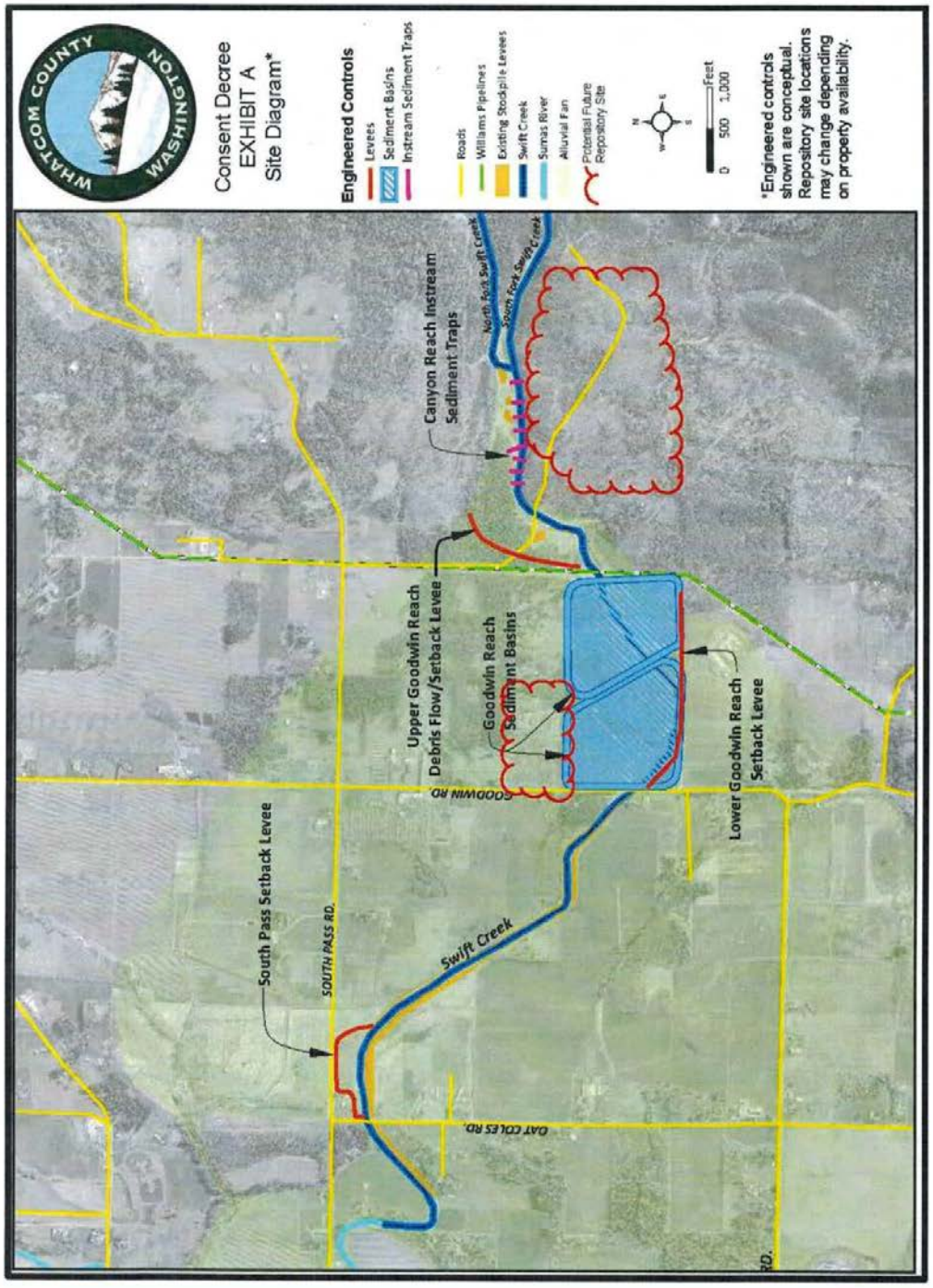
2. Such accumulations have the potential of creating serious air quality issues. What will be done to avert such and how timely will such actions be taken? Only recently have I observed capping of accumulations at the South Pass Setback Levee, while such accumulations occurred over many years.

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



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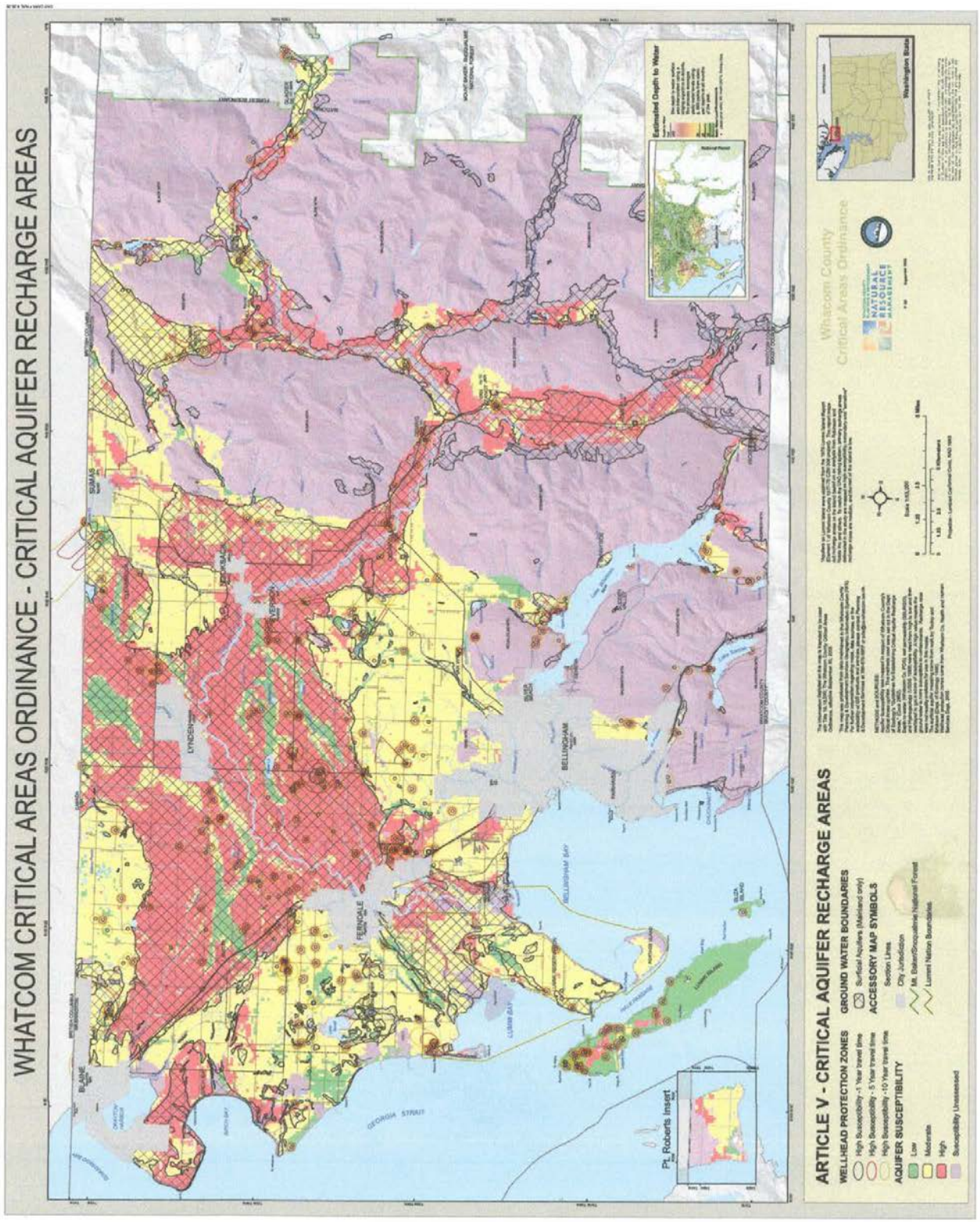

WHATCOM CRITICAL AREAS ORDINANCE - CRITICAL AQUIFER RECHARGE AREAS
ARTICLE V - CRITICAL AQUIFER RECHARGE AREAS
WELLHEAD PROTECTION ZONES
High Susceptibility - 1 Year travel time
High Susceptibility - 5 Year travel time
High Susceptibility - 10 Year travel time
AQUIFER SUSCEPTIBILITY
Low
Moderate
High
Susceptibility Unassessed
GROUND WATER BOUNDARIES
Surficial Aquifers (Mainland only)
ACCESSORY MAP SYMBOLS
Section Lines
City Jurisdiction
Mt. Baker/Snoqualmie National Forest
Lummi Nation Boundaries
Estimated Depth to Water
Pt. Roberts Insert
Whatcom County
Critical Areas Ordinance
Washington State
BLAINE
LYNDEN
SUMAS
EVERSON
NOOKSACK
FERNDALE
BELLINGHAM
GEORGIA STRAIT
BIRCH BAY
LUMMI BAY
BELLINGHAM BAY

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

RESOURCES FOR SUSTAINABLE COMMUNITIES
PROTECT. ACTIVATE. INNOVATE. THRIVE.

2309 Meridian Street
Bellingham, WA 98225
(360) 733-8307 • re-sources.org

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

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, 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.

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:

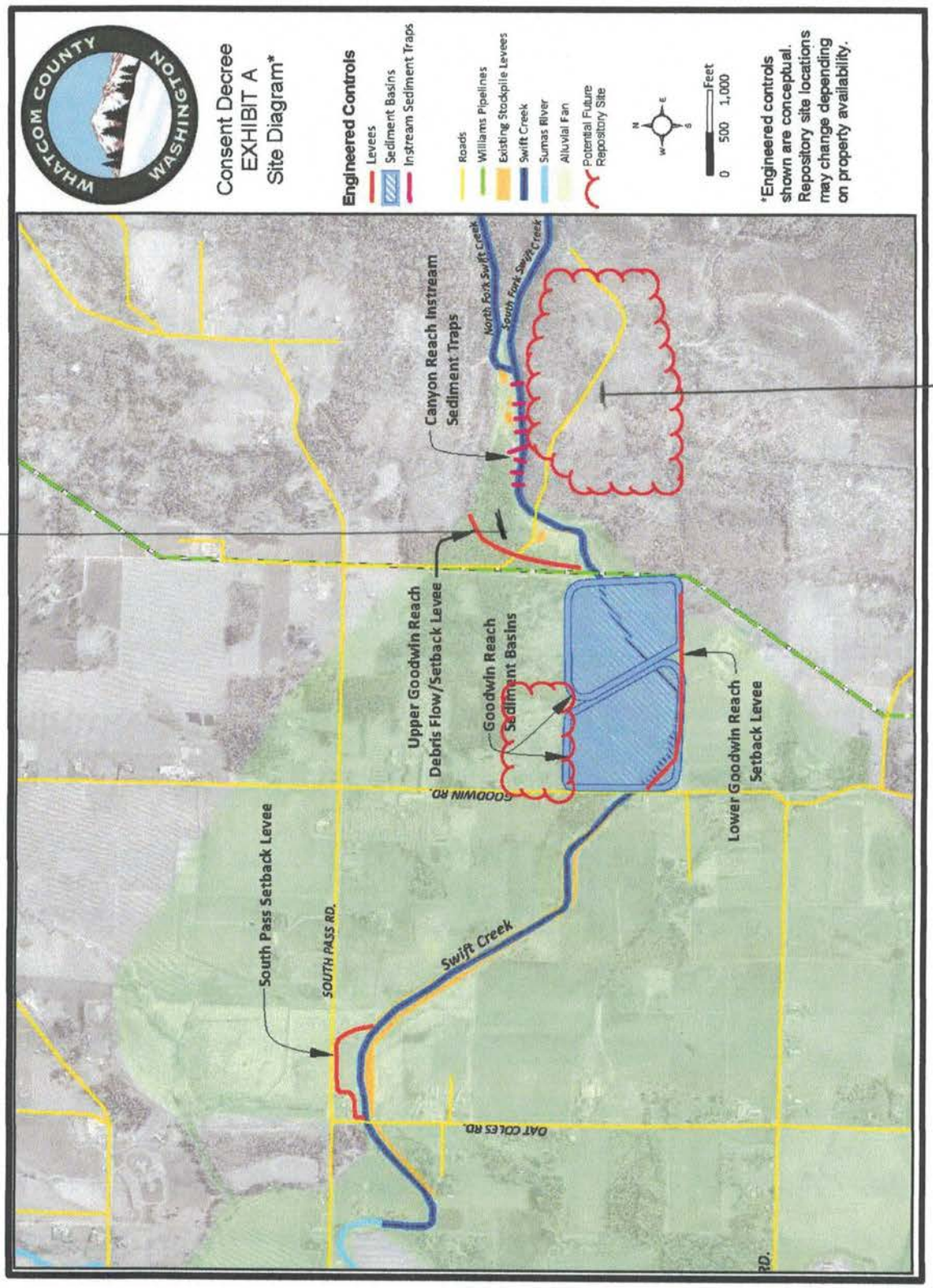
1. Why were these clear-cuts taking place prior to the public hearing and the comments accepted time frame? These activities seem to negate any merits attributable to the meeting and comments. Apparently, the project moves ahead without consideration of the public.

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



(1)

(2)

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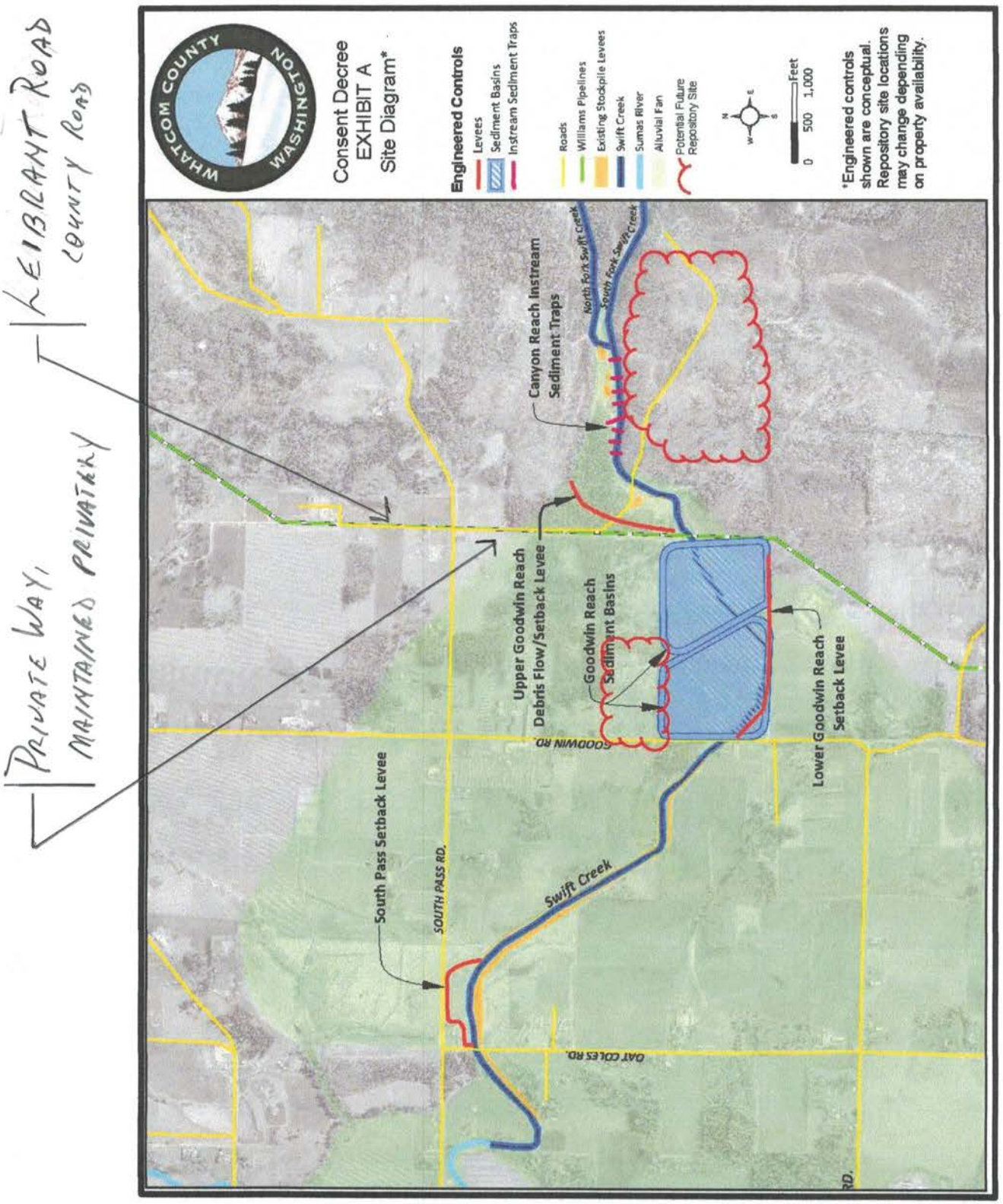

KELBRANT ROAD
COUNTY ROAD

PRIVATE WAY
MAINTAINED PRIVATELY

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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.

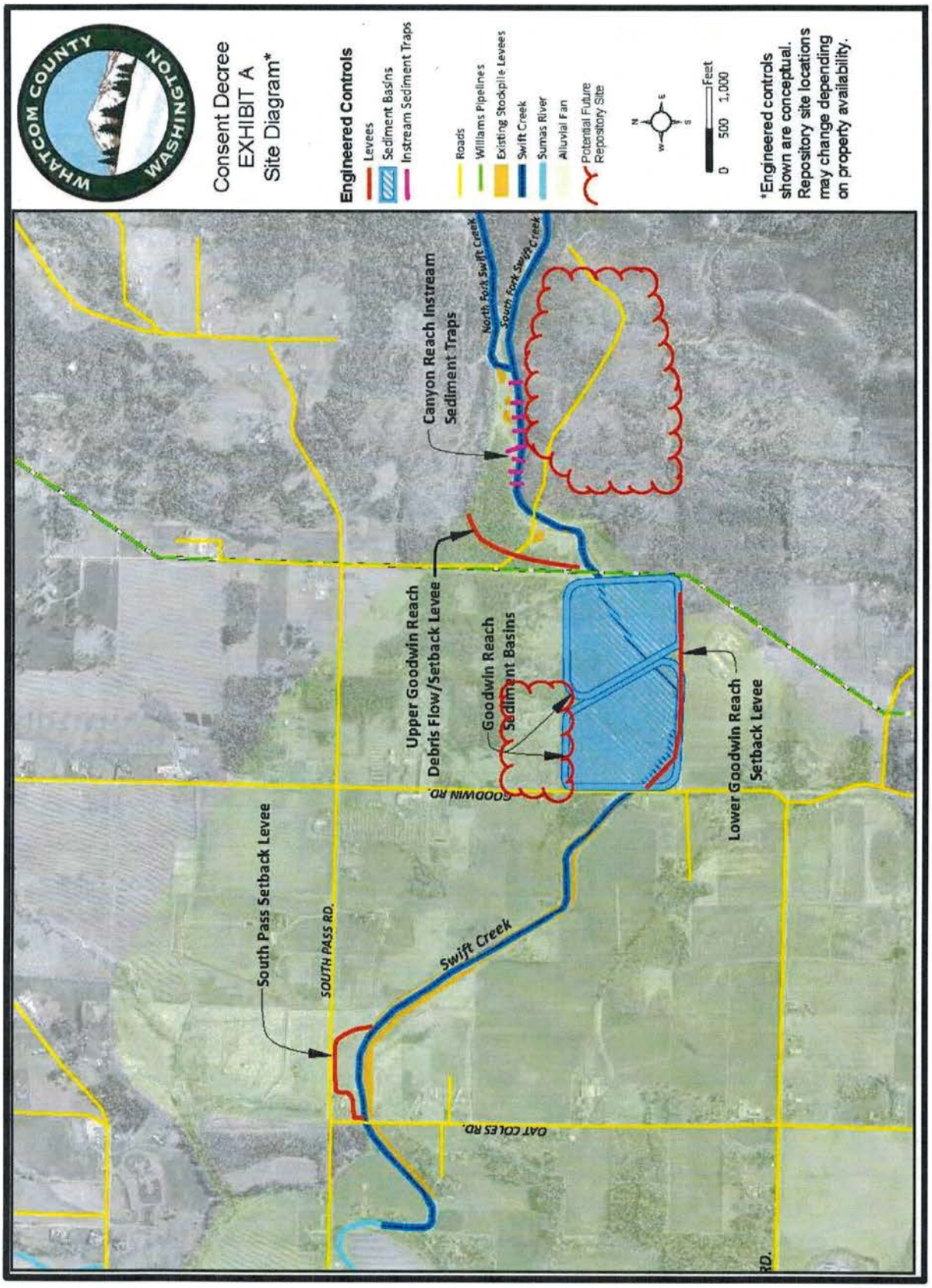
2. Such accumulations have the potential of creating serious air quality issues. What will be done to avert such and how timely will such actions be taken? Only recently have I observed capping of accumulations at the South Pass Setback Levee, while such accumulations occurred over many years.

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

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.

Willams 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.**

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 flows westward through the sediment basins. The two sediment basins will cover approximately 80 acres.

Canyon Reach Instream Sediment Traps

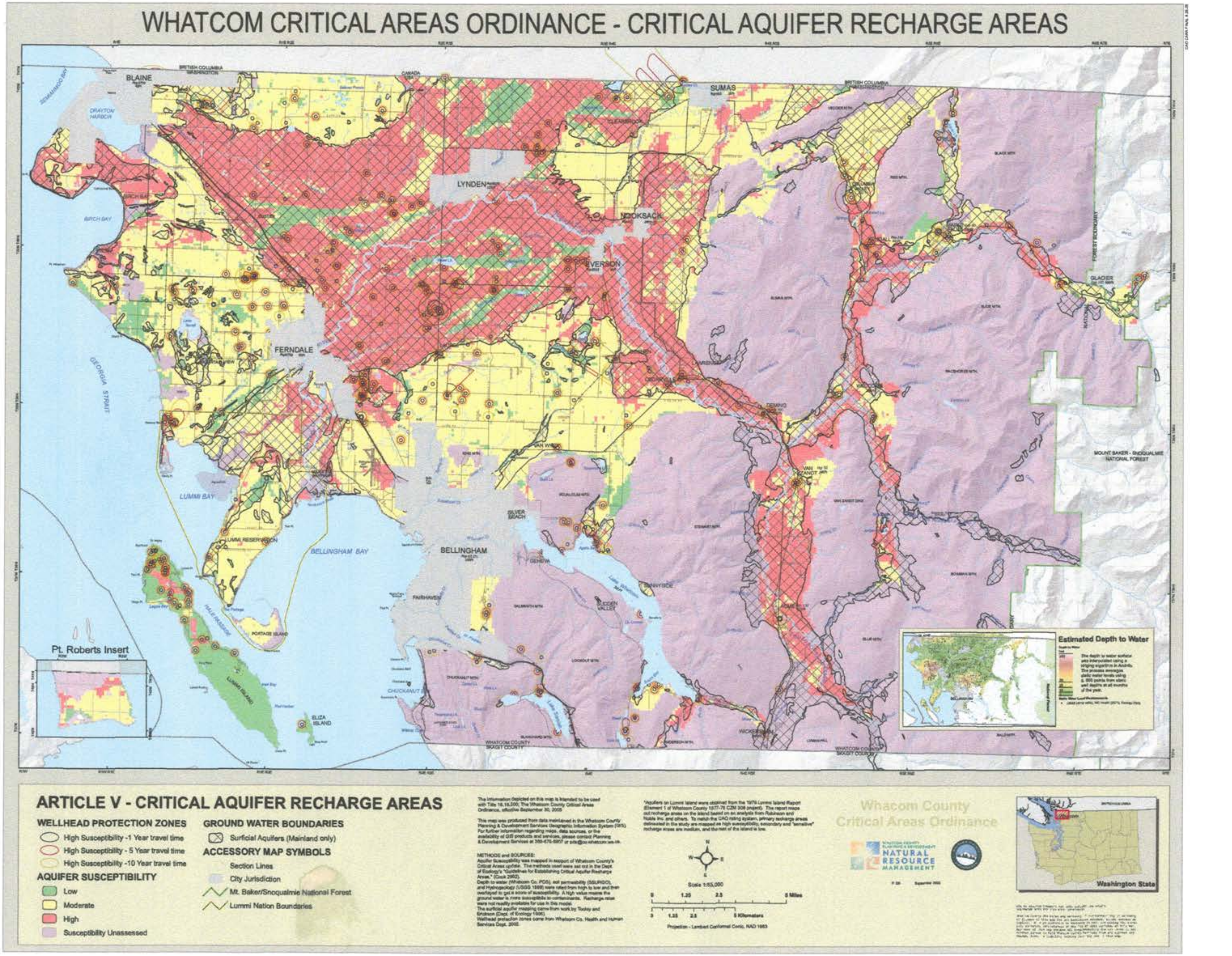
Multiple sediment traps will be located west of the confluence of Swift Creek's North and South Forks. The sediment traps will extend approximately 1,000 feet before the creek reaches the sediment basins.

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.


WHATCOM CRITICAL AREAS ORDINANCE - CRITICAL AQUIFER RECHARGE AREAS
BLAINE
SUMAS
LYNDEN
NOOKSACK
EVERSON
FERNDALE
BELLINGHAM
VAN WYCK
SILVER BEACH
GENEVA
SUDDEN VALLEY
FAIRHAVEN
VAN ZANDT
ACME
WICKERSHAM
GLACIER
DRAYTON HARBOR
BIRCH BAY
GEORGIA STRAIT
LUMMI BAY
LUMMI RESERVATION
HALE PASSAGE
PORTAGE ISLAND
LUMMI ISLAND
ELIZA ISLAND
BELLINGHAM BAY
CHUCKANUT
BRITISH COLUMBIA WASHINGTON
CANADA
WHATCOM COUNTY SKAGIT COUNTY
MOUNT BAKER - SNOQUALMIE NATIONAL FOREST
Pt. Roberts Insert
Estimated Depth to Water
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
AQUIFER SUSCEPTIBILITY
Low
Moderate
High
Susceptibility Unassessed
GROUND WATER BOUNDARIES
Surficial Aquifers (Mainland only)
ACCESSORY MAP SYMBOLS
Section Lines
City Jurisdiction
Mt. Baker/Snoqualmie National Forest
Lummi Nation Boundaries
METHODS and SOURCES:
N
W
E
S
0
1.25
2.5
5 Miles
5 Kilometers
Projection - Lambert Conformal Conic, NAD 1983
Whatcom County
Critical Areas Ordinance
NATURAL RESOURCE MANAGEMENT
Washington State