

MEMORANDUM FOR RECORD

SUBJECT: Skagit River Flood Damage Reduction Study Potential Cultural Resources Impacts Assumptions Based On 10% Design

1. The Skagit River Flood Damage Reduction Study encompasses alternatives that have the potential to adversely affect cultural resources. Cultural resources can be the tangible, physical remains of past human activity (e.g., archaeological sites, buildings, structures, districts, objects, and landscapes) or traditional cultural properties (TCPs) associated with the cultural practices or beliefs of a living community. The age of these resources in the greater project area ranges from thousands of years to recent times. The term "historic properties" refers to those tangible cultural resources that are eligible for listing on the National Register of Historic Places (NRHP) regardless of cultural affiliation or age, although the upper limit for classification as "historical" is generally at least 50 years old. Also eligible for listing on the NRHP, TCPs are rooted in the community's history and important in maintaining the community's cultural identity. Particularly important to tribal members are sacred landforms, ceremonial sites, rock art, cairns, certain animal and plant resources, and locations prominent in mythology and tribal history; not all of these can be classified as TCP for NRHP purposes. The whole suite of such resources can be referred to as "culturally important resources". Finally, the treatment of *cemeteries* (and isolated interments), regardless of cultural affiliation, must be addressed with respect and dignity; cemeteries are not normally eligible for the NRHP and their management is accomplished in conjunction with real estate activities.

2. Delta formation processes of meandering and progradation and other land forming processes have been active since human occupation of the region first began after the glaciers departed from the lowlands. Shifting of the river channel and deposition of sediment mean that sites on older buried landforms and surfaces can be expected nearly anywhere within the floodplain. Most notably, the delta contains anaerobic wet sites (below the water table) containing perishable organic material not normally surviving in upland sites subjected to wet/dry cycles. Wet sites and other buried archaeological sites may only be encountered through deep subsurface archaeological or geotechnical testing or during construction. Although they are most likely located along ancient channels, there is no way to anticipate their location in deep alluvial deposits. Hence, no particular alternative is better or worse in regard to these unrecorded sites than any other except for a correlation between the degree of ground disturbance represented by a given alternative and the likelihood of encountering buried sites (more disturbance = more chance of hitting an unrecorded site).

3. Although numerous project-related cultural resources projects have occurred in the Skagit Valley, no systematic survey has produced a comprehensive inventory of prehistoric or historic archaeological sites, or traditional cultural properties. Owing to cultural resources work associated with a prior Corps study and other work along the

river, more sites have been recorded along the river downstream of Mt. Vernon on the North and South Forks than in other reaches or in proposed diversion areas. Thus, alternatives that entail more work along the lower reaches (such as Alternative 2 and Alternative 5) will encounter more recorded sites and this should be kept in mind for the following rating. Some of the alternatives (such as Alternatives 1, 2, 6, and 7) incorporate diversion floodways that will affect areas away from the river that have not been subjected to as much archaeological survey and are likely to directly or indirectly affect unrecorded sites. As noted above, any of the alternatives may encounter buried sites regardless of whether the project area has a survey and inventory of surface sites.

4. Additional assumptions, caveats, and information pertinent to preliminary alternatives analysis are presented here in no particular order:

- Some areas in the valley have been surveyed for cultural resources (there will be more recorded sites), some have not (fewer recorded sites but that does not mean there are not any).
- Historic structures are primarily in the towns but a few along the rivers.
- Buried sites (some archaeological valuable wet sites) may be encountered throughout the project area.
- Diversion floodways may impact sites along alignments of parallel levees and grade control structures during construction and some sites may be affected by erosion during flood events.
- Relocated setback levees will potentially directly destroy shallow sites in new alignment through surface preparation.
- Direct destruction of sites along river if over bank excavation is undertaken in conjunction with setback levees.
- If no overbank excavation, indirect site destruction may occur if river is allowed to meander within new setback levees and wipe out sites.
- There may be some unrecorded historic archaeological deposits but they will not be deeply buried so they will be found during cultural resources reconnaissance.
- Any unrecorded historic structures will be identified by cultural resources reconnaissance.

5. Potential Effects to Cultural Resources by Alternative.

- **Alternative 1** (Swinomish Diversion): 3-bridge corridor to Avon has recorded sites but has not seen systematic survey so new sites are anticipated in area of overbank excavation, 2000' diversion alignment has not been systematically surveyed, crosses known relic channel with higher probability for buried sites, slight potential to erode sites during use but construction impacts of levee parallels and grade control features represent primary effects.
- **Alternative 2** (Small Swinomish Diversion and Set Back Levees to Mouth): 3-bridge corridor to Avon has recorded sites but has not seen systematic survey so new sites are anticipated in area of overbank excavation, 1000' diversion alignment has not been systematically surveyed, crosses known relic channel with higher probability for buried sites, slight potential to erode sites during use but construction impacts of levee parallels and grade control features represent primary effects, setback levees along lower river forks will potentially affect many recorded sites through construction and erosion.
- **Alternative 3** (Ring Dikes with Selective Overtopping): 3-bridge corridor to Avon has recorded sites but has not seen systematic survey so new sites are anticipated in area of overbank excavation, same for West Mount Vernon setback, direct construction impacts in dike alignments.
- **Alternative 4** (Ring Dikes with Overtopping): 3-bridge corridor to Avon has recorded sites but has not seen systematic survey so new sites are anticipated in area of overbank excavation, same for West Mount Vernon setback, direct construction impacts in dike alignments.
- **Alternative 5** (Setback Levee): 3-bridge corridor to Avon has recorded sites but has not seen systematic survey so new sites are anticipated in area of overbank excavation, same for West Mount Vernon setback, same for area down to 536 bridge, setback levees along lower river forks will potentially affect many recorded sites through construction and erosion.
- **Alternative 6** (Samish Diversion): crosses known relic channels and will connect with Samish River with higher probability for sites, slight potential to erode sites during use but construction impacts of levee parallels and grade control features represent primary effects.
- **Alternative 7** (North Swinomish Diversion): 3-bridge corridor to Avon has recorded sites but has not seen systematic survey so new sites are anticipated in area of overbank excavation, 2000' diversion alignment has not been systematically surveyed, crosses known relic channel with higher probability for buried sites, slight potential to erode sites during use but construction impacts of levee parallels and grade control features represent primary effects.

6. Preliminary Ranking of Alternatives Relative to Cultural Resources Impacts.

Readily quantifiable information (albeit conceptual and incomplete) pertinent to ranking the proposed alternatives in relation to their relative effects to cultural resources includes a) total number of recorded sites and structures to be directly or indirectly effected and b) total acreage of the footprint.

a) Ranking according to potential impacts to recorded cultural resources (note high numbers exhibited by projects entailing work along North and South Forks in areas of prior cultural resources surveys/larger number of recorded sites).

Rank According to Total Sites Affected	Prehistoric Sites Affected	Historic Sites Affected	Total Known Sites Affected
Alternative 6	4	1	5
Alternative 3	3	3	6
Alternative 1	4	2	6
Alternative 4	4	3	7
Alternative 7	5	2	7
Alternative 5	15	12	27
Alternative 2	16	12	28

b) Ranking according to total acreage (assuming more acreage of footprint will have a higher likelihood of encountering previously unrecorded sites).

Rank According to Acreage in Footprint	Estimated Acreage
Alternative 3 and Alternative 4	500 Acres Each
Alternative 6	2,000 Acres
Alternative 5	2,300 Acres
Alternative 1 and Alternative 7	2,500 Acres Each
Alternative 2	3,400 Acres

Comparing these two ranking systems we arrive at the following rough alternatives analysis for cultural resources.

Alternatives	Preliminary Relative Ranking
Alternative 6 (Samish Diversion)	Pretty Good
Alternative 3 (Ring Dike)	Okay
Alternatives 4, 1, & 7 (Ring Dike, Large Swinomish Diversion, N Swin. Diversion)	Medium
Alternative 5 (Setback Levee)	Not Good
Alternative 2 (Small Swinomish Diversion and Setback Levees)	Not Good/Bad

7. I attempted to anticipate and compare additional information about the Skagit and Samish archaeological record in relation to each alternative, such as direct effects from construction, indirect effects such as increased erosion, potential for eligible/non-eligible sites, and the probability for unrecorded sites near and away from the rivers and relic river channels. I realized, however, that there are too many unknown variables for these to be realistically used in a ranking system. Bottom line: Cultural resources will be a big part of this project, regardless of the preferred alternative.

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Addendum:

Dr. Astrida Onat conveyed some additional insight into the potential for cultural resources in the Skagit Valley during a phone conversation with the author on 21 March 2001. Dr. Onat has stayed involved with cultural resources of the Skagit Valley, acting as the primary archaeological advisor to the Swinomish Indian Tribal Community, throughout the 33 years since her doctoral work on an archaeological site near the mouth of the North Fork. She thought it was a safe assumption that the density of recorded sites (both historic and pre-historic) along the North and South Forks (roughly 3 sites per river mile) could be safely extended to other areas of the Skagit that have not been subjected to systematic archaeological survey.

She pointed out information specific to Alternative 6. Due to the counterclockwise migration of the main channel from north to south, the northern portion of the delta potentially contains a greater age range of sites (e.g. older lithic sites on ridges and terraces and older buried sites near the Samish River) than the relatively younger deposits associated with the current North and South Fork. She knows of sites along the Samish River that were located in the 1970s during amateur surveys but that have never been officially recorded in the state database. In addition to the potential for older sites, the areas that may be affected by Alternative 6 also have the potential for well preserved sites capped by lahars from Mt. Baker and sites with important information about paleo-seismic events (Lawr Salo: personal communication on 12 April 2001). Sites buried in anaerobic conditions (under the permanent water table or under lahars) have a good potential to contain organic materials. In an additional note, deeply buried sites with well preserved organics that require considerable work to excavate, stabilize, conserve, and curate will be more expensive to mitigate than, for example, surface sites with primarily lithic materials surviving. For these reasons, Alternative 6 might be brought down one or two levels in the alternative ranking at the end of the 8 March 2001 MFR above.

Nonetheless, Dr. Onat and Lawr Salo agreed on the basics of the 8 March 2001 MFR. Namely, all of the project alternatives have the potential to adversely affect significant sites that contain important information about pre-history, history, and geology.

