

SKAGIT RIVER GENERAL INVESTIGATION
Feasibility Phase
Response to Public Comments
Meeting Date: August 2008

The US Army Corps of Engineers (USACE) Skagit River General Investigation Project Development Team (PDT) conducted a public meeting in August 2008. The purpose of this meeting was to present measures that have been developed by the PDT as elements of future alternatives that will be developed and evaluated under the Feasibility Study.

Comments received were logged and categorized. The PDT prepared responses to comments that were deemed appropriate for the level of data analysis that has been completed and reported to date. All comments received will be used to inform the PDT as the project progresses.

Process

Comments were received that expressed concern over the amount of time taken by the feasibility study to produce results.

The process for completing a General Investigation (GI) Feasibility Study encompasses a 6-step planning process. Each step provides the building blocks upon which the federal government and local sponsor make decisions regarding which alternative to recommend.

The Skagit River GI Feasibility Study process has completed the first step of identifying and solidifying the problems and opportunities. The project development team is currently immersed in inventory and forecast conditions and formulating alternative plans, steps two and three. Step two, inventory and forecast conditions, is an extremely important and exhaustive step. This step provides foundational information such as the hydrology and hydraulics (H&H) models, environmental baselines, and economic damage modeling. The PDT will provide reports of model results as they are developed throughout the remainder of the project.

Additionally, the PDT will be developing the initial range of alternatives. Each alternative is comprised of one or more measures. Measures can be viewed as puzzle pieces that will be put together in various combinations to form alternatives to address the problems identified. It is anticipated, based on funding history, that completion of the inventory and forecast conditions and the development of the initial range of alternatives will take the majority of the next 18 to 24 months. Once completed the remaining planning process steps include evaluate effects of alternative plans, compare alternative plans, and select recommended plan.

Additional Information

Many comments provided additional information to the PDT with regard to the existing conditions within the basin, historic efforts to reduce flood damage, previous studies, and potential impacts related to individual measures.

The PDT makes every effort to incorporate up to date information into its 6-step planning process. The team utilizes the public as an important source of information, especially with regard to our inventory and forecast conditions step, and comments are an important source of information utilized by the PDT during the development of this project.

Alternatives Development

Comments requested a holistic approach to reducing flooding in the study area. Additionally, some comments provided suggestions for grouping measures or opinions so certain measures would not resolve flooding issues if not implemented with other measures.

The process for developing alternatives is based on a concept of developing building blocks, in the form of measures that are later used to build the alternatives. Alternative development comes later in the USACE's 6-step planning process. The alternative development exercise is incremental in nature and by identifying discrete projects, the team is able to add or subtract measures to determine a measures' contribution to the alternative. The process involves first seeking to use measures as "puzzle pieces" to maximize hydrologic performance. Then the alternatives are compared to various goals with regard to cost/benefit and environmental impact to formulate and define alternatives with a higher probability of implementation. Finally, alternatives are refined to increase cost/benefit or reduce impacts based on information obtained during the alternative analysis process.

Alternative Impacts

Other comments from the public expressed concern regarding potential impacts resulting from implementation of various measures.

The assessment of impacts by alternative will include a detailed, in-depth technical analysis not only for GI requirements, but to fulfill the requirements of the National Environmental Policy Act (NEPA), Endangered Species Act (ESA), Clean Water Act (CWA), and other applicable local, state and federal regulations for project development. It is anticipated that this analysis will commence, pending funding, in 18-24 months. At that time, the PDT will be able to provide quantification of impacts within the Skagit Basin as a measure is selected as part of an alternative and included in the final impact analysis.

Approve/Disapprove of Measures

A number of comments received expressed approval or disapproval of individual measures for a variety of reasons, from cost to impacts.

The opinions of the public are a vital part of this process as the project moves forward in the 6-step planning process and written comments become part of the project record. Although the selection of a recommended measure or alternative is not based on a "public vote", there is significant value in hearing the voices and opinions in the communities that may be impacted by the project outcome. As the project progress, there will be

additional opportunities for the public to provide input, information and to further comment.

Funding

A number of commenters expressed concern about the amount of time and money that has been expended thus far on the Skagit River GI, with no preferred plan selected.

To date, an exhaustive effort has been expended on generation of baseline and inventory data. Furthermore, the H&H for the project has gone through several iterations of review and validation with USACE experts and external agency and private industry experts. This level of data generation, analysis, and validation has taken extensive time and project resources.

Anticipated total cost to complete the remaining work on the GI is anticipated to be over \$4,000,000 and the selection of a preferred plan is currently scheduled during Step 3 for completion in or about 2012. Each step in the planning process is methodical to ensure that decision-makers have an analysis that is scientifically sound. The outcome of this project will have lasting impacts on the social and physical landscape in Skagit County, most likely for decades to come. The PDT is making every effort to move the project along; however, the magnitude of what is at stake for the communities make it critical to do it right, even if it takes more time.

The current estimated construction cost for a recommended plan may be near \$200,000,000. The Skagit GI process anticipates that the planning process (including all work that has been conducted to date as well as all work to complete the Feasibility Study, Environmental Impact Statement, and 35% design) will cost in the neighborhood of \$15,000,000 total, approximately 7.5% of the construction costs. The relative cost of planning such a project is a small fraction of the cost of construction.

Current federal funding for FY2009 is \$358,000. The PDT is currently funding the revision of the H&H model, completion of the Environmental Baseline reporting, and preparation of a range of measures that will be used as the building blocks of alternatives. Several work items, including geotechnical investigations, H&H and Economics without project condition report and alternatives formulation are the next step items required prior to alternatives analysis and the selection of a preferred alternative plan. The estimated cost to complete each of these work items or deliverables range from \$200,000 to \$500,000. The development of these tasks are prioritized based on funding received and timing. Timing is important not only because of the need to complete this project but as it relates to when the data will be needed in order to maximize efficiency as some reports have a limited "shelf life". In order to use the best scientific information available some reports that were needed and prepared in the past will need updating in order to accurately reflect the existing conditions during alternatives development and in the impact analysis.

Measure Modification/New Measure

Some comments suggested incorporating various changes to measures to improve performance or reduce impacts.

Public involvement on this project is carried out with multiple goals in mind. One of those goals is to consider a "universe of ideas". The PDT appreciates the submittal of ideas from the participants of the August 2008 meeting. As the team moves toward alternative development, public comments and opinions are considered and if warranted are further developed and analyzed. However, this consideration should not be construed to mean that each new idea will be selected for further or in-depth analysis as some ideas are outside the scope of the project and will be eliminated from further study. The team will use these submissions to ensure that they have made every effort to consider the impacts and ramifications of the alternatives.

Lack of Detail

The PDT received comments indicating disappointment with the lack of detail presented at the August meeting.

At this stage of the GI process, the PDT has not tasked technical experts to generate impact reporting or measure design with a significant level of detail. As the project moves forward, the PDT will attempt to screen from further study the measures with limited usefulness or which fail to further the goals and objectives of the project. Once this happens, the remaining measures will be formulated into alternatives and then the PDT will task technical experts with delving into significant detail as to design elements and impacts of each alternative as part of the range of alternatives.

Levee Certification

Some of the comments inquired as to the levee certification process and justification for use of certain certification limits.

Any levees constructed or modified by this project will be designed in accordance with the USACE levee standards and guidance. USACE policy guides the PDT toward providing the maximum amount of protection while complying with cost/benefit criteria that is in the national interest. Levees in urban areas must protect to the 100-flood event in order to qualify for FEMA certification. However, 100 year certification is not a guaranteed outcome of projects recommended for construction. The cost/benefit analysis will guide the determination for the level of protection afforded to urban areas.

Hydrology and Hydraulics

Several comments received pertained to the H&H for the project. Most of the comments requested additional information, while others referred to discrepancies between USACE generated H&H data and information generated by others.

An H&H without Project Condition Report was prepared and released in 2004. Since that time, USACE engineers have continued to incorporate data from a variety of scientifically published sources and refined the H&H model to maximize its scientific confidence. The presentations prepared and delivered by the PDT in 2008 were results of

that work. Currently, additional geotechnical data is in the process of being gathered for the project and will be incorporated into the model. Once the geotechnical data is complete, the PDT will prepare and release a revised H&H without Project Condition Report for review. It is anticipated that this report will provide the baseline H&H for the project. Once this report is completed, the PDT will update and finalize the measures report reflecting each measure's hydrologic performance. The team anticipates this report to be completed, based on funding, in late 2010.

The PDT is dedicated to utilizing the most up to date, scientifically accepted data published. Technical review of previous H&H reports has been completed. In addition, future reports will be reviewed prior to release and will culminate in an Independent Expert Panel Review conducted outside of the USACE at the end of the project.

Economics Detail

A few comments were received requesting additional detail or with questions regarding certain aspects of the economic analysis.

The Economic without Project Condition Report was completed in 2004 detailing anticipated economic damages and benefits generated by inputting data from the hydrologic and hydraulics reporting. Since completion of this report, USACE has adopted use of a revised economic model. Due to changes in the economic landscape, data generated from the model and reported in 2004 needs to be updated. This update may impact data presented in 2008 as well. The PDT anticipates, based on funding, that the updated report will be completed and released in 2010. This report should yield sufficient detail to provide answers to economics focused questions.

Measures Screening

Some comments expressed concern that measures were being excluded from further examination.

The PDT is has not yet concluded any screening that will exclude a measure from further consideration in the GI. Much of the work of the PDT will be to determine what measures are feasible, further the goals and objectives of the project and are within a reasonable cost. Currently, there is not a sufficient level of detail known about how individual measures contribute to an alternative to know for sure if they are feasible or not. Comments made by staff at the August meeting were based on professional judgment for the purpose of transparency, but were not the formal decision of the project.

Potential Alternative Outcomes

Some comments expressed concern that no fruitful alternative would be generated by the GI because of what appears to be limitations in USACE jurisdiction or inability to meet USACE cost/benefits criteria.

The USACE civil works guidance does require that a recommended alternative have an acceptable National Economic Development (NED) rating. This NED is part of the alternative analysis and incorporates all projects that will be eligible for federal funding.

It is also possible that the GI study will result in the development of a Locally Preferred Alternative or even spin off projects that may include additional measures, not eligible for federal funding, but are determined by Skagit County to be of significant value. As such, it is not the intent of the PDT to disregard measures from further consideration until both USACE and Skagit County no longer deem the measure to be viable. At this time, no measures identified at the August 2008 meeting has been screened from further consideration.

Local Governments Should Not Wait for the GI

Many comments expressed concern with regard to the time and money required to complete the GI. These comments suggested that local governments move forward with flood reduction projects.

The PDT is aware that local jurisdictions have immediate needs to reduce the impacts from severe flooding events. It is not the intent of the GI process to postpone, delay, or interfere with construction of flood reduction projects. Should a local jurisdiction chose to move forward with design and construction of flood reduction projects, the PDT will coordinate with those jurisdictions so that the projects constructed are incorporated into the without project condition analysis and are compatible with any future alternative selected.

The significant federal investment for construction of activities associated with this project will not be authorized until the GI is completed and the project successfully moves through the USACE approval process, including Congressional authorization and appropriation.

Implementation

Many questions have been raised as to "how" a measure would be operated.

Measures that have operational flexibility may or may not be included in alternatives analyzed later in the process. For measures with operational flexibility, the PDT will include operations as part of the details for the alternatives. Some alternatives may have the same overall measure in them, but the PDT may modify operational characteristics from one alternative to the next to determine how this impacts the performance of the alternative.

Data Availability

Comments were submitted with regard to a lack of data availability.

The PDT makes every attempt to incorporate the best science into our analysis and takes many steps through the 6-step planning process to ensure that information used meets proven scientific standards. As data is generated, the PDT generates reports to record the outcome of that work and provide guidance for future activities. Prior to the release of reports they are reviewed by agency technical experts to confirm the validity of the methodologies used.

Currently, the PDT is generating new data to prepare updated reports for inventory of H&H and Economics. As this reporting is completed, the PDT will release reports for public information. This data generation and document preparation takes significant amounts of time, effort and money with the ultimate goal of informing the public and providing project decision-makers the tools and information they need to make useful and appropriate decision for the project.

Action Should be Taken to Motivate Burlington Northern Santa Fe Railroad to Replace it's Bridge

The USACE does not have the federal authority to mandate Burlington Northern Santa Fe Railroad (BNSF) to replace this bridge or to require them to participate or adopt any measure recommended in the GI study. BNSF is aware of the study and has participated in discussions with the USACE. The USACE anticipates that BNSF will continue to participate in discussions as the study progresses.

Overtopping Levees

The question was raised as to why levees would require overtopping at five years.

The reference to the 5-year level refers to a channel flow low enough to avoid the potential for levee failure at a larger event (i.e. 100-year event). This would allow the water to leave the system early at an elevation that could be exceeded in a 5-year event. The overtopping measure is being evaluated for the affect of the action by itself, affect on other actions as a separable element and to see if the actions warrant being included in future alternatives. The analysis is showing that the overtopping measure could be added later as part of an alternative to reduce the volume of water coming down the river.

Property Relocations

Comments were received inquiring as to the process for property relocations.

On cost share projects, such as the Skagit River GI, the relocation of displaced residences and businesses will be identified in the final study which receives public review and comment. After the study is complete and an alternative is selected, the actual implementation of any real estate acquisition or relocations is the responsibility of the Non-Federal Sponsor, Skagit County. If a property is required for the project to go forward, a written notification for each residence will be delivered in person or by certified mail delivery. After reasonable replacement housing has been found, the Non-Federal Sponsor is required to give at least 90 days written notice to the displaced person regarding the deadline date for completing the move or relocation. This notification will be delivered at the earliest possible time in order to allow residents an appropriate amount of time to vacate. The Non-Federal Sponsor is responsible for ensuring that the public is provided access to adequate knowledge of programs involving relocations and those persons to be displaced are fully informed.

Sedimentation

Questions arose as to the potential for sedimentation in the event that levees are setback.

Sediment currently deposits on the existing benches during floods and deposition is likely to increase on wider benches. The increase is not expected to be problematic to the project because the infrequent occurrence and short duration of large flood events will limit deposition. Channel deposition is not expected to increase significantly because most of the sediment transported during floods is finer than the bed material in the river. The potential sediment deposition on the benches and in the channel will be re-evaluated during later design phases of this study. Channel migration with setback levees should not increase, unless the riverbanks are also moved back. Bank protection may be necessary on new setback levees at outside bends to protect them during large floods. The potential for channel migration will be evaluated as the designs are refined.

Rural Inundation

Some comments expressed concern about additional inundation to rural lands as a result of increased protection for urban lands.

The PDT will not induce flooding in areas beyond what historically exists. Any measures which induce flooding will be compensated with other measures or actions that decrease potential damages.

Emergency Project at 3-Bridges Corridor

Comments were received requesting that the PDT investigate immediate construction projects in the 3-Bridges Corridor.

The GI Feasibility Study will analyze the existing condition of the project area and consider activities within the scope of the project purpose and need. This GI investigation is not an appropriate study avenue to develop an emergency plan to widen the 3-Bridge Corridor. Any emergency actions to widen the corridor must occur outside of the GI process and will be incorporated into the GI as part of the without project condition. Should emergency action take place, the overall cost of the GI recommended alternative will likely be reduced.

Levees with Excavation

Some comments asked for information concerning excavation and whether it would destabilize the system.

The current system of levees and bank protection has resulted in a stabilized alignment of the lower river. Only a very preliminary analysis has been completed related to the potential or extent to which excavation leading to a wider channel would "destabilize the river system" or allow for the river to meander and migrate within its banks. The extent to which meandering might occur would depend on the configuration and size of the excavation. However, it should be noted that the current stabilized condition is an alteration of the river's natural tendency to meander and migrate over time. The potential for channel migration will be evaluated as the designs are refined.

Ring Dikes

Comments were received indicating that ring dikes cause a “bath tub effect”.

The PDT concurs with this statement. The bath tub effect for ring dikes is a concern for the PDT and will be given consideration and proper analysis during the alternatives generation.

Restoration Measures

Comments were received concerning an apparent lack of attention given to environmental impacts and restoration measures.

The project is still in the feasibility stage and non-structural measures are still under consideration, and will receive as much scrutiny as any of the other measures considered. This is the stage in the GI process where measures will begin to be screened out due to technical feasibility, excessive costs, and environmental red flags. After screening, alternatives will be developed and most likely, be various combinations of the measures.

Dam Storage

Several comments or questions have been received with regard to investigating dam storage on the project and the capability of upstream dams to provide increase storage as a flood reduction project.

In regards to additional storage at the dams, Upper Baker Dam currently provides significant support in reducing floods and will continue to do so for the foreseeable future. This action is related to a 1977 Congressional Authorization approving the USACE to control 74,000 acre-feet. To implement actions to gain additional storage or methods to achieve greater flood damage reduction at either Upper or Lower Baker Dam, the USACE will have to receive additional Congressional authorization. A recommendation leading to a possible Congressional authorization would need to include documentation that the additional benefits exceed the cost, are implementable, meet safety regulations, and are environmentally acceptable.

For Upper Baker Dam, there is a need to explore the dam safety issues and evaluate any environmental concerns. For Lower Baker Dam, the only way to achieve a benefit is to change the operation of the dam when the river will hit its peak, which is difficult to predict consistently. While PSE has shown some ability to do this in recent floods, it is still not certain that this operation can be guaranteed or done consistently due to variable forecasts. The USACE and PSE we will continue to explore dam storage but hurdles will have to be overcome before this becomes a viable measure.

USACE Authority

One comment was submitted regarding the fact that the USACE does not have the jurisdiction to tell local entities that they cannot construct a flood control project. A story in the Sacramento Bee, issue dated August 21, 2008, was cited as a case in which it was believed the USACE did have this authority.

In certain circumstances, the USACE does have the ability to decide how a levee will be repaired, restored or even removed. For instance, the example of alternatives to the levee system cited in the Sacramento Bee, this project is referring to levees that were already under USACE control and thus need USACE approval before any physical changes are to occur. In the case of levees in Skagit County, any levee systems that are not owned by the USACE do not need USACE approval for modifications outside of the ordinary high water mark. USACE coordination is only required if the project places fill within the ordinary high water mark.

Section 205 Hamilton Study

A comment regarding the validity of the Hamilton Section 205 study was posed. Due to the increased risk of flood hazard to the Town of Hamilton and the surrounding area and increased construction cost, the findings of the study conducted in 1982 are most likely outdated.

The previous Section 205 study contains useful data that will help in the preliminary planning associated with the Skagit GI Study. The preferred alternative in the 1982 study was determined not to be economically justified. For purposes of the Skagit GI study, the evaluation of relocating the Town of Hamilton will include analysis of the environmental benefits which do not require a benefit-to-cost ratio for justification. The costs and impacts of such relocation will be included in the economic and social impact analysis if it is selected as a measure included in an alternative.

Dredging

Some questions submitted by the public asked why wide scale dredging is not being pursued by the USACE.

At this time, given the high costs and environmental impacts of dredging, dredging is not considered to be a viable solution for any of the areas identified in the Skagit River GI. The information on sediment yield and river deposition in the USACE's 2005 Hydrology report is being updated. The new report includes revisions concerning the Skagit River sediment yield and the yield is being revised downward to approximately 1 to 4 million tons/year. Over the last 48 years the river channel has experienced periods of both aggradation and degradation. Since 1975, there has been aggradation ranging from around 2 ft near Sedro-Woolley to about 1 ft in the North Fork creek. A dredged channel would likely cause an increase in deposition due to reduced flow velocities, especially in the tidal reaches of the river.

Mount Vernon Bypass/Bypass General

There were some questions raised regarding the effectiveness of the Mount Vernon Bypass.

Mount Vernon Bypass does not remove water from the river but it does overcome a constriction in the channel at the Division Street Bridge which allows the bypass to move water downstream.

There is some potential for deposition and/or erosion in the bypass channels and deposition in the river downstream of the diversion points. The overall magnitudes of erosion/deposition are limited by the infrequent use of the bypasses, i.e. diversions would only occur for floods larger than 10 to 25 yr events. Erosion in the bypass channels can be inhibited by controlling the depth, velocity, and vegetative cover in the channels. Fir Island flow diversion would divert some sediment to the central portion of the Skagit Bay shoreline. There could be some deposition in the bypass channel and near the shoreline of Skagit Bay. The shoreline deposition could offset some of the recent erosion. The potential for erosion and deposition can be evaluated during later design phases of this study.

The PDT has not performed any screening of measures to date, thus all measures are still under consideration. These measures may be combined with other measures to form a viable alternative. Alternatives will be formulated later in the 6-step planning process.

Levee Construction

One commenter posed the question if interlocking sheet pile driven into the levee could be used as an option to protect densely populated areas.

The analysis will address the option of a sheet pile wall versus a levee in areas where population and development are in close proximity to the river. The PDT will also evaluate costs associated with possible measures or alternatives, including those which are estimated to have potentially high costs associated with real estate and construction.