

Skagit CFHMP Document C

DRAFT CRITERIA FOR SCREENING PROJECTS/MEASURES

The Skagit County Flood Control Zone District Advisory Committee is developing screening criteria for determining flood risk reduction projects to be advanced for further analysis, design and review through as part of the development of a Comprehensive Flood Hazard Management Plan (CFHMP). The criteria could also be used to provide local screening of the measures proposed in the U.S. Army Corps of Engineers' General Investigation Study (Skagit GI). The Skagit GI has identified 37 conceptual projects (or measures) that are currently under consideration. Additional projects may be added through the CFHMP planning process.

PROJECT SCREENING CRITERIA

Because of the large number of projects under consideration, it is desirable to undertake a phased project selection approach (see Figure 1). In many cases, multiple projects have been identified to address the same flood-related problem. Ultimately, a suite of individual projects will be needed to address all identified flood-related problems in the Skagit River study area.

The screening criteria that the Advisory Committee is developing will focus on capturing local values and perceptions and identifying "fatal flaws" or problematic projects. Because all the projects under consideration are at an early stage of analysis and design, these criteria will not be highly technical or detailed, but rather be used to conduct an initial screening or filtering of projects or suites of projects.

A second, more detailed phase of criteria development and project selection will occur after projects with promise have advanced in analysis and design. Additionally, the Corps of Engineers will be conducting a detailed cost-benefit analysis, which will be the primary basis for project selection through the Skagit GI.

TECHNICAL COMMITTEE ASSIGNMENTS

In September 2008, the Advisory Committee requested that each Technical Committee (Environmental, Dike and Drainage, Land Use) develop recommendations for flood project screening criteria. Each Technical Committee met several times since then to develop input for the Advisory Committee.

Technical Committees took different approaches to developing screening criteria. The Land Use Technical Committee developed a concise list of 10 criteria. The Environmental Technical Committee provided more detailed input, with criteria tied to draft objectives for the CFHMP. The Dike and Drainage District Technical Committee also provided detailed input, which included criteria for design considerations. Original Technical Committee documents are attached.

Thoughts about criteria:

- **Definition:** a rule or principle for evaluating or testing something (Dictionary.com).
- Synonyms include: decisive factor, principle, measure, standard, norm, condition, reason.
- Used to assist in deciding what CFHMP actions should be implemented or prioritized. May also be used in Skagit GI measures selection.
- Can be weighted or include fatal flaw screening component.

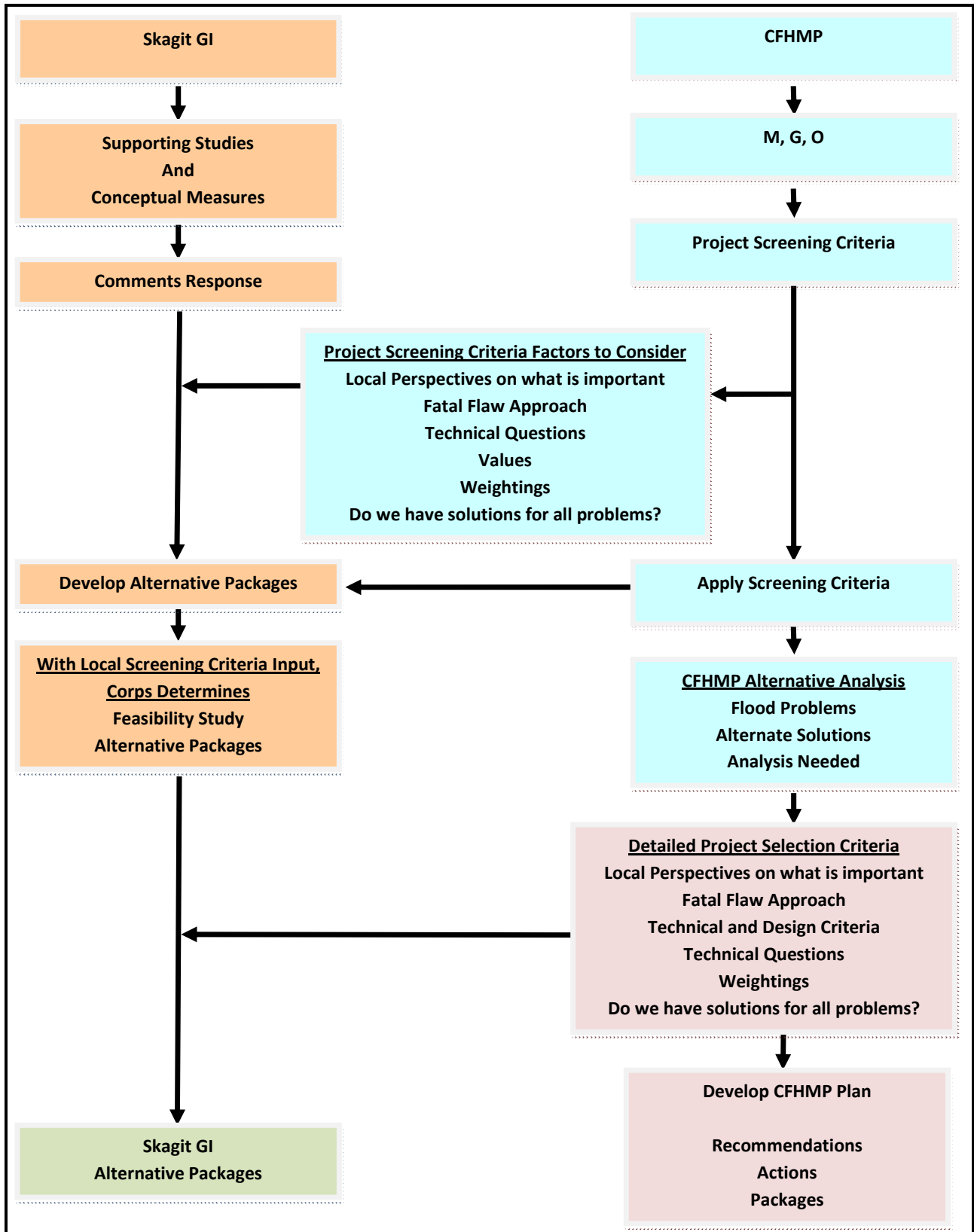


Figure 1. Phased Project Selection Approach

DECEMBER 15 ADVISORY COMMITTEE MEETING

Selection of screening criteria is a goal of the December Advisory Committee meeting. A future meeting would then be used to apply the screening criteria to conceptual flood-related projects, such as the 37 measures currently under consideration in the Corps of Engineers GI Study.

When considering the criteria, think about a 1-5 rating scale to evaluate the degree to which each criterion is met; i.e., if a project fully meets a criterion, it might be rated a 5, and if it doesn't meet it at all, it might be rated a 1. Since there are still many unknowns associated with each project, also consider including a designation of some sort that would indicate, "We don't know, but think the concept may have promise." The rating system is only mentioned here to help Advisory Committee members envision how the criteria might be used in a second phase of project selection, and to help with how the criteria might be worded so that they are established correctly for ultimate use.

SCREENING CRITERIA OPTIONS FOR CONSIDERATION

Three approaches for project screening criteria are presented below for Advisory Committee consideration. These approaches range from a high level of detail (Option 1) to a short list of broad categories (Option 3). These, or new ideas, can be discussed and developed further at the December Advisory Committee meeting.

Option 1—Consolidated Input from Technical Committees

The criteria below are a compilation of the criteria developed by all of the Technical Committees. Individual criterion from each committee have been grouped into categories by the Tetra Tech team. The actual list of criteria for each of these categories, however, are copied verbatim from Technical Committee criteria documents (original versions from each Committee are also attached). Because numbered items were copied verbatim from Technical Committee reports, the list includes some redundancies, gaps and inconsistencies.

OPTION 1: CONSOLIDATED INPUT FROM TECHNICAL COMMITTEES	
Category	Criteria (Numbered Items)
CFHMP Congruence	1. Be consistent with CFHMP mission/goals/objectives.
Public Safety	<ol style="list-style-type: none"> 1. Does the project maintain or improve overall Public Safety at existing level of flood risk? 2. Does the project provide for evacuation routes and early warning systems for high risk areas?
Existing Infrastructure	<ol style="list-style-type: none"> 1. Protect existing infrastructure and essential public facilities (wastewater and water treatment plants, transportation hubs, fire/police stations, etc). or 2. Does the project maintain or improve flood protection to critical infrastructure? 3. Does the project increase conveyance efficiency of the existing levee system? 4. Encourage maintenance and preservation of existing flood protection infrastructure before consideration of new or expanded projects. 5. Does the project put the existing levee system “at risk”? 6. Does the project reduce the potential for levee failures?
Effectiveness of Flood Risk Reduction	<ol style="list-style-type: none"> 1. Demonstrate effectiveness in reducing flood risk. 2. Reduce the number of properties that experience repetitive flood damage. 3. Does the project increase conveyance and reduce the water surface elevation (WSE) throughout project location? 4. Does the project identify maximum conveyance through project area? 5. Does the project incorporate natural topographic features of the project location? i.e. natural swales and high ground, off channel storage etc? 6. Does the project identify overland pathways and locations for properly sized outlet structures? i.e. Gages, Joe Leary, Higgins sloughs? 7. Does the project require modification or relocation of infrastructure that may impede overland flow? 8. Does the project increase off-channel storage capacity? 9. Does the project reduce peak flow? 10. Does the project increase debris conveyance, in-channel and through bridge structures? 11. Does the project address safety valves where the excess flow will need to exit the system?
Regulatory Considerations	<ol style="list-style-type: none"> 1. Be consistent with applicable plans, regulations, and programs. 2. Does the use of local vs. Corps hydrology cause a significant difference in project effectiveness?
Basin-Wide Impacts	<ol style="list-style-type: none"> 1. Recognize impacts to entire river system and mitigate where feasible. 2. Can the project be implemented without increasing the flood risk up and downstream of the project area? If no, can the increased risk be mitigate? 3. Does the project increase or decrease the WSE and or flood risk downstream of project location? 4. Does the project increase or decrease the WSE and or flood risk upstream of project location? 5. Does the project support preservation of existing rural land use designations?

**OPTION 1 (continued):
CONSOLIDATED INPUT FROM TECHNICAL COMMITTEES**

Category	Criteria (Numbered Items)
<p>Incorporate ecosystem protection, restoration and natural resource considerations into flood hazard solutions (draft CFHMP Goal).</p>	<p><i>Criteria below pertains to draft Objective: Increase the natural flood water and sediment storage capacity of the floodplain through the protection and restoration of natural river, bank, tidal marsh, off channel, and wetland habitats.</i></p> <ol style="list-style-type: none"> 1. Address channel modification that impacts fish <ul style="list-style-type: none"> • Restores flood plain processes or provides fish access to the flood plain by reducing constraints on channel migration • Reduce the amount of bank armoring • Restore flood plain processes or reconnect river to its floodplain 3. Increase amount (reconnect) of functional floodplain habitat 4. Increase amount of functional tidal marsh 5. Increase amount of estuarine and nearshore habitat 6. Address projected climate change impacts, such as sea level rise and hydrologic / sediment changes, in project selection and design <p><i>Criteria below pertains to draft Objective: Protect and restore natural riverine, riparian and estuarine processes.</i></p> <ol style="list-style-type: none"> 7. Restore riparian function 8. Improves and/or preserves existing Connectivity between freshwater and nearshore habitat 9. Improve large woody debris conveyance & recruitment 10. Maintain or restore native flow regime (including velocity) 11. Any project should have a net environmental gain 12. Provides benefits to multiple species of fish and wildlife <p><i>Criteria below pertains to draft Objective: Increase the natural water filtration through wetland restoration and prevent water quality contamination during flood events.</i></p> <ol style="list-style-type: none"> 13. Reduction of pollutants when flood occurs <ul style="list-style-type: none"> • Sewer Treatment facilities • Chemical Storage • Pollution reduction management plans 14. Reduce water temperatures through riparian forest restoration (shading) 15. Increase the amount of floodplain/tidal wetlands (to filter pollutants) <p><i>Criteria below pertains to draft Objective: Protect the floodplain by minimizing development in the floodplain outside Urban Growth Areas.</i></p> <ol style="list-style-type: none"> 16. Reduce scouring of prime soils in overflow events 17. Achieve less than 100 year flood protection outside of UGAs

OPTION 1 (continued): CONSOLIDATED INPUT FROM TECHNICAL COMMITTEES	
Category	Criteria (Numbered Items)
Cost and Funding	<ol style="list-style-type: none"> 1. Be economically feasible and cost effective. Cost effective needs to address a broader community interest. 2. Is the project cost effective? 3. Can the project maintenance and operational costs be sustained locally? 4. Does the project support Corps guidance preference for non-structural methods of flood control?
Timeframe for Implementation	<ol style="list-style-type: none"> 1. Acknowledge and encourage those projects that can be implemented in a short time frame.
Broad-based Support	<ol style="list-style-type: none"> 1. Have multi-jurisdictional cooperation including broad-based support from the public and elected officials.

Option 2—Themes from the Technical Committees

This option was put together using the input from the Technical Committees along with the stakeholder interviews, but with an eye to reducing the number of criteria in order to reduce complexity when applying them.

1. Critical infrastructure protection
2. Other existing infrastructure protection
3. Minimal known land use conflicts
4. Minimal known regulatory conflicts
5. Could be designed to benefit multiple objectives
6. Degree of environmental impact/mitigation and could it be designed for ecosystem benefits
7. Timeliness of implementation
8. Cost
 - Capital
 - Land acquisition
 - Maintenance
 - Cost-benefit
9. Perceived community acceptance
 - Shared burden
 - Impacts on privately owned land

Criteria from Stakeholder Interviews*

- Life safety
- Higher level of protection for critical infrastructure
- Consider benefits of ecosystem restoration
- Satisfy multiple objectives
- Consider scale of projects – large may not be feasible
- Consider resource losses and how they impact the valley
- Frequency of floods and number of people affected
- Level of benefits to region in general
- Chance of success
- Fundable
- Compatible with land use laws

** Stakeholder interviews were conducted by FCZD consultants in March-June, 2008 during formation of the FCZD Technical and Advisory Committees*

Option 3—The Three “E’s”

This option simplifies the screening process by including only three basic criteria:

1. Engineering feasibility
2. Environmental feasibility
3. Economic (benefit and fundable).

One thought about this approach is that for screening purposes, if there are a significant number of criteria along with a large number of projects to assess, the Advisory Committee may have created a task that would be quite complex and involved. This option reduces the complexity.

Meeting Summary
Skagit Flood Control Zone District Land Use Technical Committee
Thursday, November 6, 1:30-3:30 p.m.

Location: Skagit Room, County Continental Building, 1800 Continental Place, Mount Vernon.

Meeting Purpose: 1) To conduct normal business and 2) To “fine tune” the project screening criteria previously drafted in respond to a request from the FCZD Advisory Committee (AC) to provide input from the perspective of folks with expertise on land use, on criteria to be considered for screening CFHMP recommended projects or measures.

Attendees: Margaret Fleek (Chair), Esco Bell (Vice Chair), Mark Watkinson, Dan O'Donnell, Dave Chamberlain, Chuck Steele, and Tom Karsh (staff support),

Action Items: Revised the project screening criteria previously developed by Land Use Technical Committee (LUTC) at its 9/22/2008 meeting. The criteria will be forwarded to the FCZD Advisory Committee.

Public Comment: None

Previous Meeting Summary: Action on the 9/22/2008 postponed due to lack of quorum.

Report out from AC representatives: None. Advisory Committee representatives were unable to attend today's meeting.

Background Discussion: Group continued to emphasize need to get hydrology correct. Resolving the hydrology controversy should be afforded the highest priority in order determine baseline for future flood control projects and land use measures.

Screening Criteria: After discussion, the following project screening criteria were approved to be forwarded to the Advisory Committee:

- Projects/Measures should:
 - Be consistent with CFHMP mission/goals/objectives.
 - Protect existing infrastructure and essential public facilities (wastewater and water treatment plants, transportation hubs, fire/police stations, etc).
 - Be consistent with applicable plans, regulations, and programs.
 - Recognize impacts to entire river system and mitigate where feasible.
 - Encourage maintenance and preservation of existing flood protection infrastructure before consideration of new or expanded projects.
 - Demonstrate effectiveness in reducing flood risk.
 - Be economically feasible and cost effective. Cost effective needs to address a broader community interest.
 - Acknowledge and encourage those projects that can be implemented in a short time frame.
 - Reduce the number of properties that experience repetitive flood damage.
 - Have multi-jurisdictional cooperation including broad-based support from the public and elected officials.

11/12/08 draft of 11/6 LUTC Meeting

Other items: None discussed.

Next steps and meeting schedule: To be determined by assignment from AC.

Meeting adjourned at 3:15 pm

See attached sign-in sheet for members/guests present at 11/6/08 LUTC meeting.

Environmental Technical Committee
Draft Criteria for Screening of CFHMP Measures
Revised 11/24/2008
Criteria for Evaluation of CFHMP Measures

Preamble – Provided by Terry Stevens

The members of the ETC understand the significant and potentially catastrophic impacts from major flood events on the Skagit River. Development in the lower valley floodplain, the location of critical infrastructure, and current agricultural practices now require floodwaters to be restrained, diffused, and/or managed to reduce potential impacts to the community. We also understand the impact of anthropogenic changes in the valley over the past 100+ years and the loss of habitat, natural and cultural resources associated with these alterations. The ETC believes that Skagit County has an enormous, once-in-a-lifetime opportunity to address these two issues in a simultaneous, mutually supporting manner – a potential win-win that advances two of the most pressing and heartfelt concerns to the local community: flood control and natural resource conservation.

Within our assignment to develop criteria upon which to evaluate the forthcoming measures there are several overarching considerations to which we strongly subscribe: 1) control measures must be presented with complete scientific and ecological understanding of real and potential impacts; 2) cost/benefit data presented must contain the full ecological value of both restoration components and resources lost; 3) control measures and related restoration elements must address the sustainability of both the measure and the environmental benefits; 4) control measures should identify adaptive management scenarios and related costs; 5) land-use policies and regulations must be included in the mix of flood control measures to be considered (including restrictions on floodplain and farmland development); 6) control measures must have a net environmental gain and provide synergy with other programs (shared-strategy goals, etc). Within these considerations, the ETC presents the following criteria for evaluation of CFHMP measures:

Note: Goal statement and objectives are taken from FCZD Advisory Committee draft mission, goals, and objectives. Numbered items under each objective are the draft ETC criteria associated with each objective.

Goal statement from AC draft

2. Incorporate ecosystem protection, restoration and natural resource considerations into flood hazard solutions.
- Objective 1: Increase the natural flood water and sediment storage capacity of the floodplain through the protection and restoration of natural river, bank, tidal marsh, off channel, and wetland habitats.

1. Address channel modification that impacts fish
 - a. Restores flood plain processes or provides fish access to the flood plain by reducing constraints on channel migration
 - b. Reduce the amount of bank armoring
 - c. Restore flood plain processes or reconnect river to its floodplain
3. Increase amount (reconnect) of functional floodplain habitat
4. Increase amount of functional tidal marsh
5. Increase amount of estuarine and nearshore habitat
6. Address projected climate change impacts, such as sea level rise and hydrologic / sediment changes, in project selection and design

- **Objective 2. Protect and restore natural riverine, riparian and estuarine processes.**

7. Restore riparian function
8. Improves and/or preserves existing Connectivity between freshwater and nearshore habitat
9. Improve large woody debris conveyance & recruitment
10. Maintain or restore native flow regime (including velocity)
11. Any project should have a net environmental gain
12. Provides benefits to multiple species of fish and wildlife

[M1]

- **Objective 3. Increase the natural water filtration through wetland restoration and prevent water quality contamination during flood events.**

13. Reduction of pollutants when flood occurs
 - d. Sewer Treatment facilities
 - e. Chemical Storage
 - f. Pollution reduction management plans
14. Reduce water temperatures through riparian forest restoration (shading)
15. Increase the amount of floodplain/tidal wetlands (to filter pollutants)

- **Objective 4. ~~Minimize impacts on farmland while maximizing ecosystem restoration opportunities~~ Protect the floodplain by minimizing development in the floodplain outside Urban Growth Areas.**

Note from Cynthia: I added this proposed revision to Objective 4 to the Mission, Goals, Objectives to be considered by the Advisory Committee on 12/15

16. Reduce scouring of prime soils in overflow events
17. Achieve less than 100 year flood protection outside of UGA's

Other Issues for the AC to consider regarding criteria development. These were discussed, but not agreed upon by the ETC.

- Recreation opportunities should be considered. This will be important in the development of public support for funding.
- Ensure any agricultural land conversion achieves ecosystem restoration.



Draft Meeting Summary
Skagit FCZD Dike and Drainage Technical Committee
Tuesday, December 2, 2008; 4:00 p.m. – 6:30 p.m.

Location: Dike District # 12 Flood Fight Headquarters

Meeting Purpose: To continue discussion on Measure Criteria per September 15th Advisory Committee request to Technical Committees

Attendees: Chuck Bennett, Dike, Drainage and Irrigation District 12; Daryl Hamburg, Dike District 17; Dave Olson, Dike District 3; Dave Towne, Britt Slough SFCZ District; Jason Vanderkooy, Dike District 1; Stan Nelson, Dike District 22; Leonard Eliason, DD # 17; Dean Flaig, Drainage District 21; David Hedlin, Dike District 9; Brian Olson, Drainage and Irrigation District 17; Tom Slocum, Skagit Conservation District; Cathy Desjardin, for Linda Smith, USACE; John Shultz, Dike District # 1; Chal Martin, City of Burlington and Lorna Ellestad, County staff. Gary Jones, Dike District #3 & 22 was excused.

Absent: Ronald Knutzen, Dike, Drainage and Irrigation District 5; Robert Swanson, Dike, Drainage and Irrigation District 20; Mike Shelby, Western Washington Agricultural Association.

Action Items

- Next Meeting – January 8, 2008, 4:00 – 6:00 pm, Dike District # 12 Flood Fight Headquarters
- Group will review revisions and provide additional comments/criteria to Lorna by Friday the 5th.
- Additions will be incorporated into the document and redistributed by Monday, December 8th with the final review due by Wednesday December 10th for submission to the AC.

Dike District Technical Committee Measure Criteria

As compiled by members at December 2, 2008 meeting:

1. Does the project maintain or improve overall Public Safety at existing level of flood risk?
2. Does the project maintain or improve flood protection to critical infrastructure?
3. Does the use of local vs Corps hydrology cause a significant difference in project effectiveness?
4. Does the project increase conveyance and reduce the water surface elevation (WSE) throughout project location?
5. Does the project put the existing levee system "at risk"?
6. Does the project increase or decrease the WSE and or flood risk upstream of project location?
7. Does the project increase or decrease the WSE and or flood risk downstream of project location?
8. Does the project identify maximum conveyance through project area?
9. Does the project increase conveyance efficiency of the existing levee system?
10. Can the project be implemented without increasing the flood risk up and downstream of the project area? If no, can the increased risk be mitigate?
11. Is the project cost effective?
12. Can the project maintenance and operational costs be sustained locally?
13. Does the project incorporate natural topographic features of the project location? i.e. natural swales and high ground, off channel storage etc?
14. Does the project identify overland pathways and locations for properly sized outlet structures? i.e. Gages, Joe Leary, Higgins sloughs?
15. Does the project require modification or relocation of infrastructure that may impede overland flow?
16. Does the project increase of-channel storage capacity?
17. Does the project reduce peak flow?
18. Does the project increase debris conveyance, in-channel and through bridge structures?
19. Does the project provide for evacuation routes and early warning systems for high risk areas?
20. Does the project reduce the potential for levee failures?
21. Does the project address safety valves where the excess flow will need to exit the system?

12/05/2008 Additions:

Does the project support Corps guidance preference for non-structural methods of flood control?

Does the project support preservation of existing rural land us designations?