

MEMORANDUM FOR RECORD

SUBJECT: Minutes of 20 August 2003 Flood Control and Erosion Control Task Force Meeting – Mississippi Headwaters ROPE

1. The subject meeting was held from 1 pm to 3:45 pm on 20 August 2003, in the meeting room of the Gull Lake Recreation Area Administration Building. 14 participants attended (see the attached enclosure 1 for a complete listing of meeting attendees).
2. The primary purposes of this meeting were to update and coordinate ongoing Task Force activities, present and discuss the PRM and STELLA models, and initiate efforts to populate the formulation models (see the agenda and handouts for this meeting attached as enclosure 2).
3. Key points and items of discussion during this meeting are summarized below:
 - The partnership between the Corps and the US Forest Service was discussed and the status and funding for the ROPE study was described (see handout 1 of the meeting handouts).
 - The current schedule is for both models to be initially populated with data by the end of the calendar year. Then, by mid-summer of next year a alternative screening report is scheduled to be prepared and distributed for stakeholder and interagency review and comment.
 - The PRM and STELLA models were presented and questions were addressed to help the participants see the capability and the inputs and outputs of these formulation models. Beth Faber represented HEC at the meeting and provided the presentation of the PRM optimization model. Kenton Spading provided information and background regarding the STELLA simulation modeling. The presenters addressed a number of general and technical questions regarding modeling assumptions and process.
 - Inputs about user preferences that were recently received from the citizen volunteer groups were summarized and additional review and comment from the task force regarding those inputs was requested. See attachment 3 for the summary of inputs received.
 - Initial strategies to model flood control and erosion control were presented and discussed by the group. Additional though, review, and comment from the task force regarding ways to improve the flood control and/or the erosion control modeling outputs were requested (see enclosure 4 for the initial

- strategies handouts that were presented and discussed).
- Key points that will affect the way we proceed with the Flood Control (FC) and Erosion Control (EC) formulation surfaced during this meeting; They follow:
 - Flooding at Aitkin and at Sandy Lake are both major considerations in our current and future operations. The efforts underway to focus on local flood protection at Aitkin need to be expanded to include the Sandy Lake area as well. Additional H&H data and evaluation will be needed to adequately address potential localized flood protection in this reach (including the Sandy Lake reach and the Pine Knoll area south of Aitkin).
 - Erosion factors need to be expanded beyond frequency of exceeding channel-forming thresholds to include duration and season. Further coordination to define how these additional factors can be reasonably quantified in the models is needed. Follow-up with task force members to identify how best to flesh-out this idea will be needed.
 - Efforts to involve Lake Associations, Corps Park Managers, and FS staff in the identification of thresholds for flooding and erosion at strategic locations in the system is needed. This input, in combination with the citizen volunteer inputs, should be the basis for the initial population of FC and EC data in the models.
4. This meeting was very constructive. The next meeting of the task force will likely be needed in October to continue to make progress on model formulation inputs and coordination of FC and EC issues.

/s/

Ed McNally
Project Manager

Enclosures 4

Meeting Sign-In Attendance Sheet
Meeting Agenda
Summary of Citizen Inputs to Models
Strategy for Model Outputs for FC and EC

CF: All FC/EC Task Force Members

Sign-In Roster

	<u>Name</u>	<u>Organization</u>	<u>Email and/or Telephone</u>
1.	Bob GREIFZU	Big SANDY LAKE ASSOC.	218-426-4055
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4.	TERRY ZIEN	COE/ST-PAUL	651-290-5714 TERRY.R.ZIEN@USACE.ARMY.MIL
5.	Stan Kumpala	Cass SWED	218-680-2026 skumpala@tds.net
6.	Brenda Glenn	USFS	218-335-8651 bhalluglenn@fs.fed.us
7.	Nancy Salminen	USFS	218-335-8666 nsalminen@fs.fed.us
8.	Gregg STRUSS	COE-Gull	218-889-2797
9.	David Morley	USFS	218-547-1044 damorley@fs.fed.us
10.	Jim Murphy	COE	651-290-5608 james.g.murphy@usace.army.mil
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12.	Mel Schwab	Camp DuSable, STAR Island Prot. League	218-335-2692 mlschwab@aol.com
13.	Ed McNally	COE	651-290-5387
14.	Kentou Spading	COE	651-290-5327
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Subject: Flood Control and Erosion Control Task Force Meeting – to be held at Gull Lake Recreation Area Administration Building on 20 August, 2003

AGENDA

1:00 pm - Start

Welcome / Introductions & Overview of Agenda

Purpose of Meeting -

The primary purpose of this meeting is to obtain your specific inputs for incorporation into the planning models that will be used to analyze and improve the Headwaters systemwide reservoir operations (your inputs are to be focused on the task force objective, interagency, science based, and systemwide in nature). A secondary purpose of the meeting is to keep you updated about the progress being made towards completion of the ROPE study.

Status of Overall ROPE Study

- See **Handout 1**
(summary listing of ROPE study progress and upcoming events)

Overview of Operations

Historical Review of Corps/Service Operations

- See **Handout 2**
(graphs of the Historical record – pools and river reaches)

Overview of Operations in System

- See **Handout 3** description of model nodes and sample annual hydrographs of the existing and natural conditions

Presentation of the HEC-PRM optimization model and the STELLA simulation model

- Q&A

Summary and Discussion on the Model Inputs Provided by Citizen Volunteer Groups

- See **Handout 4** for the summary of inputs received
- Validate, refute, refine inputs received - See **Handout 5** for the input format requested

Document Your Inputs – Discussion and Input of the Task Force Perspectives

- Discussion of needed outputs for the models (from a systemwide perspective and for your Task Forces focus – See **Handout 6** for tentative Flood Control Strategy and **Handout 7** for Erosion Control Strategy)
- O&A

Discuss Logistics for Next Continuation Meeting, as needed.

Thank You, Summary of Meeting Findings,

3:00 pm - Adjourn Meeting

Summary of Initial Citizen Volunteer Group Inputs into the Models

Recently a number of Citizen Volunteer Groups met to provide proxy public inputs relevant to their immediate lake or river area. The Citizen Groups that met included the Cass/Winnibigoshish, Leech, Pokegama, Sandy, Cross, and Gull Citizens Lake Groups and the Downstream Citizen Volunteers Group also met to provide river reach inputs. Lake Bemidji Citizens Lake Group has not yet met and Winnibigoshish will need to meet with the Winnibigoshish Lake Association to complete the needed inputs. Similarly, additional meetings will be needed for the Downstream Citizens Group to complete the inputs needed (flow hydrographs are being revised in preparation for that meeting). Prairie Lake inputs were also provided by an individual for consideration...

Generally, the initial Citizen Volunteer Groups were able to provide meaningful inputs but the completeness and format of inputs varied and interpretation of the inputs is not always clear. So, some follow-up with the Citizen Group Champions to clarify and complete the Citizen inputs will be needed. Adjustments to these model inputs will also be sought from the task forces...

The raw input data is attached as enclosure 1 for further detail and interpretation.

A summary of the inputs received follows (Note that this is a summary from the ROPE Project Manager's perspective only):

Lake Bemidji

Still needs to meet to provide inputs...

Cass Lake

The volunteers thought that the Recreation, Environmental, Flood Control and Erosion Control categories of use were all of high and equal importance.

Lake elevations over 1302 were thought to be a problem from flooding perspective.

Lake elevations over 1301 were thought to be a problem for erosion.

Boating for pleasure, boat fishing, sailing, waterfowl observation, and swimming were the highest valued recreation activities and these would generally be activities that would prefer lower water levels (from -1 to -2 feet below the normal summer pool).

Winnibigoshish

Still needs to meet to provide inputs...

Leech Lake

The volunteers thought that the Environmental, Flood Control, and Erosion Control have a high important than the Recreation category of use.

Tight lake elevations of less than one foot from the normal summer pool were considered to be preferred for most recreational high valued uses.

Pleasure boating, boat fishing, bank fishing, ricing, ice fishing, and waterfowl hunting were the highest valued recreational uses.

Pokegama Lake

The volunteers thought that Environmental, Recreation, Flood Control, and Erosion Control were all equal and of high priority.

Environmental uses would be adversely impacted if the summer pool drops a foot.

Flooding becomes a problem over elevation 1274.42.

The group prefers a lower lake elevation to maximize recreational uses (generally, 0 to -2 feet from the summer pool is desired).

Waterskiing, jet skiing, boating, sailing, ricing, waterfowl hunting, ice fishing, and waterfowl observation are the highest valued recreation uses.

Big Sandy Lake

The volunteers thought that Flood Control and Environment ranked higher than Recreation in importance.

A tight range of water level management was preferred for Recreation, Flood Control, and Environmental (ranging from 18" above the normal summer pool to 6" below that elevation).

Swimming, boating for pleasure, and boat fishing were thought to be the most valued recreation uses.

Cross Lake

The volunteers thought that Flood Control and Environment are the highest priority categories of use followed by Recreation.

Elevations over 1229.6 were thought to be a problem from a flooding perspective.

Elevations lower than 1229.07 were thought to adversely impact fisheries.

Waterskiing, boat fishing, ice fishing, and snowmobiling are the most valued recreation uses.

Gull Lake

The volunteers thought that Flood Control, Erosion Control, Environment, and Recreation were all of equal and high importance.

The preferred range of lake elevations was from 1193 to 1194 for recreation use.

Waterskiing, boating for pleasure, jet skiing, boat fishing, bank fishing, sailing, waterfowl observation, swimming, ice fishing, waterfowl hunting, snowmobiling, and trapping were the highest valued recreational uses.

Downstream / River Reaches

This group will be meeting again to identify flow preferences for various uses and thresholds for constraining uses.

The volunteers thought that Flood Control and Environmental were more important than Recreation and Erosion Control categories.

Canoeing, swimming, bank fishing, waterfowl hunting, and wildlife observation were the most valued recreation activities.

Off channel backwater and adjacent ponds were thought to be of high significance from the Environmental perspective (i.e., horizontal connectivity very important on river reaches).

Modeling Strategies for Erosion Control – ROPE Study

Constraints and Problems – Erosion and associated sedimentation is a complex physical phenomena with many factors, existing inventories associated with erosion factors that are specific to study area are very limited, time to accomplish the ROPE limits the extent of effort and so does the available funding. Yet, **we need to capture in some meaningful way how erosion is affected by headwater reservoir operations** in both the PRM and STELLA models. Clearly, operational effects on shoreline/riverbank erosion and associated sedimentation could and should be a factor in the plan formulation models. The strategy for how to include erosion as a decision factor in the models needs to be coordinated through the Flood Control / Erosion Control Task Force.

Strawman Strategy - A tentative erosion strategy for your consideration addresses lake and river erosion separately. This strategy is outlined below:

Lake Erosion Strategy

The Corps/USFS Ordinary Operating Limits (OOL) were established in large part because it was recognized that stages higher than those lake elevations had a detrimental affect on shoreline stability/erosion. It is proposed that the upper end of the OOL for each lake be used as threshold from which to compare lake erosion susceptibility. In this way, the frequency of exceeding that level would become a factor in determining how alternative operating plans would affect shoreline erosion. The task force would need to help establish the ranges of elevations that would allow for a description of erosion affects (i.e., what increases in frequency of events that exceed the ordinary operating limits are minor, substantial, and significant. And, if we reduce the frequency, what reductions are minor, substantial, and significant)? This information could be used for both the PRM and STELLA models.

There would also be a need at each lake area to define the water levels at which a variety of private, commercial, and public amenities (such as roads, beaches, bridges, recreation sites, cultural sites, etc) are affected by erosion (see the Sandy Lake sample). This is information that could be gathered by Lake Groups or Corps and Forest Service Rangers. This information would be used in the STELLA model.

River Erosion

The discharges/flows associated with channel forming events at the river nodes would be identified. The frequency of this “natural” channel forming event would then become the threshold for comparing riverbank stability (This assumes that a flood frequency of approximately a 2.5 year event is desirable and associated with a sustainable and natural stability condition). The frequency of the operations induced channel forming events would then be compared to the identified natural frequency as the indicator of riverbank erosion susceptibility. The HEC-RAS model can be used in reaches and the HEC-5 and STELLA models can be used for other river reaches to complete the needed H&H models for this work. The task force would need to help establish the ranges of channel forming frequencies that would allow for a description of erosion affects (i.e., what increases in frequency of events that exceed the natural channel forming frequency of events to be defined as minor, substantial, and significant. And, if we reduce the frequency, what reductions are minor, substantial, and significant)? This information could be used for both the PRM and STELLA models.

There could also be an effort taken to identify the elevation/flow at which important riverbank structures are impacted and include these thresholds into the STELLA model.

8/14/03

Brainstorming on FC and EC strategies:

Flood Control

Flood Impacts/Flood Risk

of structures

Damage potential

Total value of structures potentially impacted

Reservoir

Store water

Increase in lake stage

Decrease in stages downstream

Potential damage at lake or upstream

Release water

Decrease in lake stage

Increase in stages downstream

Potential damage downstream

What are the GOALS?

Traditional flood control

Benefit/Cost Analysis

Maximize "net benefits"

Optimize level of protection

Minimize damages system wide

Protect Aitkin

Protect the lakes

Fairness

Share the pain

Keep in mind:

Trade offs

One better off another worse off

Operational limits of the reservoirs

Drainage area not controlled by the reservoirs

Priority assigned to flood control

High or low

Other outputs (environmental, water quality, tribal trust, etc.)

Future development

Floodplain management

Smart growth

Erosion Control

Measurement difficulties

What are the causal relationships?

Proper measurement metric

Quantitative

Loss of land value

Cost to fix

Qualitative

Linear feet of shoreline

Ideal, acceptable, unacceptable