

Zoar Levee and Diversion Dam, Dam Safety Modification Study
Community Advisory Committee
Meeting Summary
May 2, 2013
7:00-8:30 pm
Zoar School House

A regularly scheduled Zoar Levee & Diversion Dam, Dam Safety Modification Study, Community Advisory Committee (CAC) meeting was held at the Zoar SCHOOL HOUSE on May 2, 2013. Those present included: Mayor Larry Bell (Zoar), Jon Elsasser (Zoar), Chuck Knaack (Zoar), Scott Gordon (Zoar), Holly Thouvenin (Zoar), Aaron Smith (USACE), Adam Kays (USACE), Mike Nield (USACE), Mike Spoor (USACE), Brian Maka (USACE), Darin White (USACE), Rodney Cremeans (USACE), and Gus Drum (USACE).

Rodney Cremeans began the meeting by thanking everyone for attending and requesting that everyone fill in the sign-in sheet for the meeting minutes. Everyone then introduced themselves around the table.

Aaron Smith discussed the current schedule milestones and noted that there hadn't been any changes to the schedule since March 2013 (Table 1).

Table 1. Zoar Levee & Diversion Dam, Dam Safety Modification Study Schedule Milestones

<p><u>SEPTEMBER 2013:</u> COMPLETE STEP 2: ESTIMATE EXISTING & W/O ACTION RISK CONDITION = BASELINE CONDITION</p> <p><u>FEBRUARY 2014:</u> COMPLETE STEP 3: FORMULATE ALTERNATIVE RISK MANAGEMENT PLANS = COMBINE MEASURES INTO SEVERAL ALTERNATIVES</p> <p><u>JUNE 2014:</u> COMPLETE STEPS 4 & 5: EVALUATE & COMPARE RISK MANAGEMENT PLANS = LOOK FOR BEST ALTERNATIVE & RANK THEM</p> <p><u>DECEMBER 2014:</u> DRAFT REPORT COMPLETE</p> <p><u>JANUARY 2015:</u> AGENCY TECHNICAL REVIEW (ATR)</p> <p><u>FEBRUARY –APRIL 2015:</u> PUBLIC & AGENCY REVIEW</p> <p><u>APRIL-JULY 2015:</u> MAJOR SUBORDINATE COMMAND (MSC) AND HEADQUARTERS (HQ) POLICY & LEGAL REVIEW</p> <p><u>JULY-AUGUST 2015:</u> DAM SAFETY SENIOR OVERSIGHT GROUP (DSOG) REVIEW</p> <p><u>AUGUST 2015:</u> DISTRICT & MSC DAM SAFETY OFFICERS (DSO) & DSOG CHAIRMAN RECOMMEND APPROVAL</p> <p><u>AUGUST-OCTOBER 2015:</u> INDEPENDENT EXTERNAL PEER REVIEW (IEPR) FINALIZED</p> <p><u>OCTOBER-DECEMBER 2015:</u> COMPLETE STEP 6: SELECT A RECOMMENDED PLAN = NOTICE OF AVAILABILITY (NOA), USACE DSO APPROVES DSMR & SIGNS RECORD OF DECISION (ROD)</p> <p><u>DECEMBER 2015:</u> NOTIFY USACE & MSC COMMANDER (CDR) AND ASSISTANT SECRETARY OF THE ARMY FOR CIVIL WORKS (CW) OF DECISION</p>

Aaron Smith then discussed the milestone activities associated with completing Step 2 of the DSMS, Estimate Existing & Without Action Risk Condition or the Total Baseline Condition (Table 2).

**Table 2. Step 2 of the Zoar Levee & Diversion Dam,
Dam Safety Modification Study Schedule Milestones**

<p style="text-align: center;">Baseline Risk Assessment</p> <p><u>29 APRIL-29 MAY 2013</u>: DISTRICT QUALITY CONTROL (DQC) & AGENCY TECHNICAL REVIEW (ATR) <u>30 MAY-29 JUNE 2013</u>: QUALITY CONTROL & CONSISTENCY (QCC) PANEL REVIEW <u>30 JUNE-26 JULY 2013</u>: DAM SAFETY SENIOR OVERSIGHT GROUP (DSOG) REVIEW <u>27 JULY- 09 AUGUST 2013</u>: REVISE AND FINALIZE BASELINE RISK ASSESSMENT PER DSOG COMMENTS</p> <p style="text-align: center;">+</p> <p style="text-align: center;">Planning Baseline Studies</p> <p><u>30 MARCH-19 JUNE 2013</u>: REVISE PLANNING BASELINE STUDIES <u>22 APRIL-19 JUNE 2013</u>: GET OMB APPROVAL <u>20 JUNE-12 AUGUST 2013</u>: CONDUCT SMALL WORKSHOPS & STAKEHOLDER MEETINGS</p> <p style="text-align: center;"> </p> <p style="text-align: center;">TOTAL BASELINE CONDITION</p> <p><u>13 AUGUST-09 SEPT 2013</u>: FINALIZE TOTAL BASELINE CONDITION <u>09-13 SEPTEMBER 2013</u>: HOLD <i>RISK MANAGEMENT MEASURES IDENTIFICATION MEETING (RMMIM)</i></p>
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Aaron Smith noted that this condition included the Baseline Risk Assessment being completed by a Risk Cadre in New England District and the Risk Management Center as well as the Baseline Planning Studies being finalized. Planning Baseline Studies were discussed in depth at the 6 March and 7 March 2013 meetings held. For more information on these studies, please visit:

<http://www.lrh.usace.army.mil/Missions/CurrentProjects/Zoar.aspx>

Go to the studies tab to see draft copies of the baseline planning studies. Go the presentations tab to view meeting presentation from the March 6, 2013 and March 7, 2013 meeting.

Step 2 is scheduled for completion in September of 2013 with the Risk Management Measures Identification Meeting (RMMIM). This is a USACE vertical team meeting designed to determine which measures, or individual ways of addressing any identified dam safety risks, to carry forward for consideration in the formulation of multiple alternatives.

Aaron Smith added that the CAC would have the opportunity to brainstorm and provide feedback on potential measures prior to the RMMIM and that feedback would be communicated upward. This is

discussed in more detail below while summarizing the purpose of the Small Group Workshops planned for July 2013.

Aaron Smith noted that a draft copy of the Baseline Risk Assessment has been completed and is being reviewed by a District Quality Control (DQC) team and an Agency Technical Review (ATR) team. Following completion of these reviews, the Baseline Risk Assessment will be presented to a Quality Control and Consistency (QCC) panel of experts to ensure that the risk assessment was of similar scope and nature as other risk assessments being prepared across the country. Finally, the Baseline Risk Assessment is schedule to be presented to the Dam Safety Senior Oversight Group (DSOG) for final approval.

Mayor Bell asked whether the Risk Cadre actually meet in person during this process or only had teleconferences.

Aaron Smith responded that the Risk Cadre, including representatives from Huntington District and the Great Lakes & Ohio River Dam Safety Production Center had meet in person, via video and web-based teleconferences, as well as working together by emails and telephone calls during the process. This included a site visit to Zoar Levee & Diversion Dam in November of 2012.

The majority of the Risk Cadre is located in the New England District. Other members of the Risk Cadre included an Economist and Hydraulic and Hydrologic Engineer from Huntington District, a RMC Technical Advisor from Pittsburgh District and a RMC Senior Advisor from Lakewood, Colorado. Adam Kays, Mike Nield, and Darin White of the Great Lakes & Ohio River Dam Safety Production Center and Rodney Cremeans, Gus Drum and Aaron Smith from Huntington District also helped support and assemble the background information required for the Baseline Risk Assessment.

Aaron Smith emphasized that typically a Baseline Risk Assessment is not presented to the QCC panel or the DSOG until the Dam Safety Modification Study is in draft form. Typically, an Issue Evaluation Study (IES) is completed prior to a Dam Safety Modification Study being initiated. The IES includes a form of a risk assessment and helps confirm the Dam Safety Action Classification (DSAC) rating for the project. However, as the Zoar Levee & Diversion Dam, Dam Safety Modification Study was started prior to this process being finalized and DSAC I projects do not require an IES. Therefore, the DSOG requested that the Baseline Risk Assessment be presented to them for their review prior to proceeding to Step 3 in the study process.

Holly Thouvenin asked whether there could be changes in the Baseline Risk Assessment during the various review (DQC/ATR/QCC/DSOG).

Aaron Smith responded that the goal of these reviews were to assure technical accuracy, policy and legal compliance, as well as quality and consistency. Therefore, the goal is to resolve any comments made during these review and that could include making changes to portions the Baseline Risk Assessment.

Rodney Cremeans clarified that the reviews spanned a full range goals: from a detailed technical review by the DQC and ATR teams assuring that the analysis supports the recommendations; to higher level

perspective reviews by the Quality Control Committee (QCC) to ensure the Baseline Risk Assessment was consistent with other dam safety risk assessments be conducted nationally.

Aaron Smith handed out a schedule that was developed with Section 106 of the National Historic Preservation Act consulting parties meant to help call out how USACE plans to comply with this act throughout the DSMS. Section 106 of the National Historic Preservation Act requires the federal agencies take into account the effect actions may have on historic properties. The consultative process for doing so is laid out is codified in 36 CFR 800.

The Section 106 schedule lists all the Dam Safety Modification Study activities, but also includes milestone activities in the Section 106 process. The Section 106 schedule also added activities not in the Dam Safety Modification Study schedule to help consulting parties identify their involvement during the planning process. However, these activities do not add any additional time to the project schedule.

Aaron Smith then gave a brief overview of how significant failure modes and the total project risk a project presents to the public is plotted on what is called an fN chart (Figure 1). The “f” is the annual probability of failure and represented by the Y axis. The “N” is the average incremental life loss and is represented by the X axis.

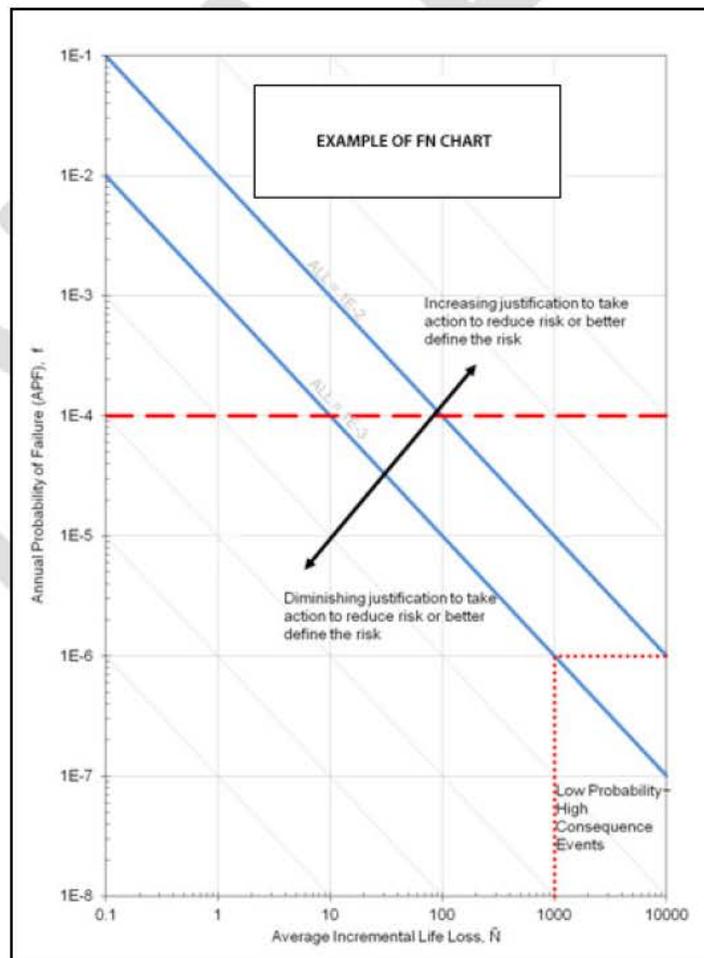


Figure 1. Example of an fN Chart.

In general, projects that have risk plots closer to upper right hand corner of the fN chart have increased justification to take action to reduce risk or better define the risk. Those projects that have risk plots closer to lower left hand corner of the fN chart have a diminished justification to take action or better define the risk.

Adam Kays clarified, that project risks are considered “tolerable” for those projects that plot on the lower left hand corner of the fN chart only if all actions to reduce the risk as low as reasonably possible have been taken.

Aaron Smith added that these charts are used to help USACE prioritize study actions in a risk informed way; the logic being those projects with a higher annual probability of failure and larger potential for life loss should generally be prioritized.

Adam Kays added that the fN chart is not used as the sole measure of assigning risks to a project, and other factors, including individual incremental life loss or the chance that even one person could perish due to a dam failure, were also considered.

Aaron Smith provided a brief overview of how the annual risks of incremental life loss were calculated. In general, incremental life loss is generally an estimate of difference between the numbers of persons likely to perish if a dam were to fail as opposed to not fail. For this analysis various Dover Dam impoundment elevations and day versus nighttime population in Zoar Village were considered.

It is anticipated that the estimate of incremental life loss for the Zoar Levee & Diversion Dam, Dam Safety Modification Study was likely to be low. For the Zoar project, warning time is especially a critical factor. Zoar Levee is loaded by a man-made impoundment and earthen-embankment projects generally provide evidence of distress in advance of breach. When combined, these two factors reduce the probability that the levee would fail without warning.

Scott Gordon mentioned that a maximum potential for life loss in Zoar Village would be during a festival like the Civil War Days event, when thousands of individuals could be in town.

Aaron Smith responded that those types of factors were considered. However, when Dover and Bolivar Dams are impounding water, many of the roads surrounding Zoar Village would be inundated by rising impoundment(s) which would limit and/or discourage access into Zoar Village. It was also possible that local evacuations would be recommended by Tuscarawas County to avoid stranding people without access to emergency services due to inundated roads. Therefore, the convergence of a large crowd being in Zoar Village for a festival event when water was being impounded behind Dover Dam is unlikely.

Jon Elsasser agreed that if events like 2005 or 2008 occurred, it was likely that the Zoar State Memorial Site would be closed to the public and any planned festivals or events would be postponed or canceled.

Aaron Smith added that when considering incremental life loss, many qualitative assumptions similar to these lines of thinking were considered. All assumptions used to make this estimate should be made clear in the Baseline Risk Assessment.

Adam Kays and Mike Nield went on to explain how the various statistical probabilities were elicited for each significant potential failure mode. In general, when eliciting probabilities that a potential failure mode may lead to breach, a basic event tree made up of the following nodes is considered:

- 1) Probability that a flaw exists;
- 2) Probability that a flaw will initiate;
- 3) Probability that a flaw will continue;
- 4) Probability that a flaw will progress
- 5) Probability that intervention could stop progression
- 6) Probability that the flaw will lead to a breach.

Mike Nield and Adam Kays added that these event trees can create different branches at different junctions, depending on the failure mode being considered.

Adam Kays clarified that the Risk Cadre's opinions of the probabilities attached to each step in the failure process were based on existing data, previous research and case histories on past dam and levee failures, as well as the personal expertise and experience of each cadre member.

Adam Kays reiterated that analysis of annual probabilities of failure and annual incremental life loss projections were one tool utilized to assess and understand the risk each project presents to the public, but other projections and consequences were also considered.

Chuck Knaack asked for clarification on how the probabilities assigned by the Risk Cadre were then turned into plots on the fN chart and how did the failure modes get determined.

Adam Kays clarified that once the probabilities had been assigned they were summed and run through a program called DAMRAE that combines the incremental life loss estimates with the annual probabilities of failures and the probability of various impoundments to occur.

Rodney Cremeans added that failure modes were brainstormed during an initial session by the Risk Cadre and then screened down to those that were considered to be credible and significant.

Adam Kays and Mike Nield noted that upwards of 30+ failure modes were initially brainstormed for the Zoar project, but that ultimately 6-7 were considered both credible and significant.

Gus Drum then explained the processes now ongoing regarding development of the Small Groups Workshops Delivery Plan and review of the proposed Other Social Effects (OSE) questions by the Great Lakes and Ohio River Division Office (LRD), the USACE Headquarters Office (HQ) and the Office of Management and Budget (OMB).

These are the OSE questions that would be asked of the Zoar population as a means of finalizing the Baseline Community Impacts Study and securing key information that would be used to prepare the Estimate Existing & Without Action Risk Condition narratives and to inform the Formulation (Step 3), Evaluation (Step 4), Comparison (Step 5), and Selection (Step 6) process.

Gus Drum indicated that the entire package had been submitted and that we were in the process of discussing the questions and the delivery methods with LRD and HQ before they were sent to OMB for final approval.

Gus Drum, described that the delivery process would occur in small group workshops (12-15 people) and that the community population would be separated into three general groups for the workshops.

The three groups identified in the delivery plan were: 1) private residents of Zoar, 2) Zoar business owners and associations and 3) Governmental officials and public organizations.

Each group would be invited into separate meetings and asked different questions (between 5 and 12) relating to their roles in the community and how they interconnected socially and economically with one another.

Aaron Smith stressed that answering any of the questions was voluntary and a participant could chose to sit through the workshop and not respond to the questions, but participate in the discussion of potential measures to be considered at the Risk Management Measures Identification Meeting (discussed below).

Gus Drum indicated that the responses to the questions presented at the Small Group Workshops would be collected by a stenographer and identified as Personally Identifiable Information (PII). This designation would help keep the respondents' answers protected from Freedom of Information Act (FOIA) requests by media or those who may choose to publish the individual responses of participants.

Gus Drum mentioned that there would be at least four workshops; two for residents and one each for the business owners/associations and governmental offices/public organizations.

Gus Drum indicated that there could be more than two workshops for the residents group depending upon how people were interested in participating and since the number of participants would be limited in each workshop to 12-15 people.

Gus Drum and Aaron Smith indicated that they would work with the Zoar leadership to identify appropriate meeting places in Zoar Village and dates and times (tentatively scheduled for July 2013) for the workshops.

Aaron Smith added that attendance at these meetings would be critical and the best opportunity to date for the public to provide input on how they feel about their community and also concerns about any brainstormed measures considered to date.

Scott Gordon asked how USACE plans to advertise these meetings to ensure people understood their importance and suggested USACE personnel go door to door.

Holley Thouvenin agreed and was concerned that there would be low attendance, citing the recent low rates of participation in the Community Advisory Committee meetings.

Aaron Smith responded that USACE would have to rely on assistance from the Community Advisory Committee and Village leadership to help stress the importance of these meetings.

Gus Drum also indicated that the questioning of the participants would be the first part of the workshop and that the second part of each workshop would entail USACE presenting brainstormed measures with the workshop participants and soliciting feedback from the participants on each measure regarding the perceived pros and cons of each measure from individual viewpoints.

This is meant to be an open conversation about each measure and everyone's comments would be collected by a stenographer for use by USACE in formulating the various risk reduction alternatives. This information as opposed to the responses to the questions would not be protected as Personally Identifiable Information (PII) being collected for the OSE feedback.

Aaron Smith stressed, that measures would be presented in a list form and discussed in general terms, as no formal alternatives will be formulated until Step 3 of the Dam Safety Modification Study process. Once formulated, potential alternatives will also be shared with the public and all stakeholders for feedback.

Aaron Smith clarified that measures can be considered as a stand-alone alternative and/or combined in any number of ways to form alternative plans.

Aaron Smith emphasized that the list of measures would include all the brainstormed ideas received by stakeholders and the public to date. Brainstormed lists are generated without critique to encourage creativity. However, inclusion on a list of measures will not imply that a potential measure is appropriate for addressing any identified dam safety risks. It is possible that other potential measures will be considered and that some of the measures discussed during the meetings will be dropped from consideration for any number of reasons.

Aaron Smith asked for the Committee members' input into the process so that we could make the process more effective.

Scott Gordon suggested that the workshop participants respond to the questions as written responses rather than verbally in front of other participants to enable everyone to express their feelings openly and to avoid people not speaking up in the small group environment.

Holly Thouvenin and Chuck Knaack agreed with Mr. Gordon's idea of workshop participants responding in written form.

Gus Drum indicated that those who wished to could provide their responses in writing on a response card rather than responding verbally.

Gus Drum indicated that this method of response recovery could be discussed with LRD, HQ and OMB as part of the current review process to avoid any complications associated with written materials not being protected from the FOIA process or being harder to store securely. The open group delivery and response process was selected initially to avoid developing a specific survey instrument form that may take much longer to get approved by the reviewing agencies and would be harder to secure.

Scott Gordon asked if the questions could be provided in advance of the meetings to help residents formulate the best responses

Gus Drum replied that the questions would not be made available prior to the meetings to protect the integrity of the process. However, USACE would work with OMB to see if written responses could be supplied as well to the questions presented at the Small Group Workshops

The meeting was adjourned around 9:15pm and the next meeting of the CAC was scheduled for Thursday August 22, 2013. If available, this meeting would be held in the Zoar school house.

Prepared By:

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Aaron Smith, Lead Planner, USACE

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