

Virginia Soil and Water Conservation Board
Impounding Structure (Dam Safety) Regulations Regulatory Advisory Panel (RAP)
Tuesday, October 18, 2011
Association of Electric Cooperatives

Regulatory Advisory Panel Members or Designees Present

Edward Beadenkopf, URS Corporation
Connie Bennett, York County
Kelly Cole, Wiley and Wilson
Shannon Cotulla, Hurt & Proffit
Donald Demetrius, Fairfax County
Michael Flagg, Hanover County
Jeffrey Hancock, Williamsburg Environmental Group, Inc.
Robert Kline, Gannett Fleming
David Krisnitski, Froehling & Robertson, Inc.
Jonathan Pittman, Schnabel Engineering
Kelly Ramsey, Natural Resources Conservation Service
Don Rissmeyer, A. Morton Thomas & Associates
Steve Shenk, City of Lynchburg
Phil Walker, Private Dam Owner
Kaveh Zomorodi, Dewberry & Davis, LLC

DCR Staff Present

David Dowling, Director of Policy and Planning
Robert Bennett, Director, Division of Dam Safety and Floodplain Management
Amanda Pennington, Dam Safety Regional Engineer
Tom Roberts, Dam Safety Regional Engineer
Ken Turner, District Dam Safety Consultant
Steve Snell, Dam Safety Regional Engineer
Rob VanLier, Dam Safety Regional Engineer
Michael Wang, Dam Safety Regional Engineer
Michael Fletcher, Board and Constituent Services Liaison

Others Present

Peter Sevcik, Charlottesville
Brent Martin, GKY

Welcome and Introductions

Mr. Bennett called the meeting to order and welcomed attendees. He said that DCR recognized that their time was valuable. He thanked members for participating in the process to move the regulations forward.

Mr. Bennett said that the General Assembly had given some specific direction. He said that all three specific actions were designed to both help dam owners as well as to protect public safety. Mr. Bennett referred to Mr. Dowling for further explanation and introduction.

Review of legislation and Board motion/RAP charge

Mr. Dowling reviewed legislation and the specific charge for the RAP.

On May 24, 2011, the Virginia Soil and Water Conservation Board authorized the Department to initiate three fast-track regulatory actions to amend the Board's Impounding Structure Regulations and directed the Department to assemble a Regulatory Advisory Panel (RAP) to make recommendations to the Director and the Board on the contents of the draft final regulations.

The three regulatory actions that the RAP's deliberations will be focused on and limited to are outlined in the Board's motion. Each of these actions is being taken in response to specific legislative actions and the final regulations must be reflective of the Code authority and direction provided.

Board's Motion

VIRGINIA SOIL AND WATER CONSERVATION BOARD

May 24, 2011 Meeting

In Senate Room A in the General Assembly Building

Richmond, Virginia

Motion to authorize and direct the development of three separate fast-track regulatory amendment actions to the Board's Virginia Impounding Structure Regulations (§ 4VAC50-20):

The Board authorizes the Director of the Department of Conservation and Recreation and the Departmental Regulatory Coordinator to develop three separate draft final fast-track regulatory actions for the Board's consideration. As part of the regulation development process, the Board directs that a Regulatory Advisory Panel(s) be assembled to make recommendations to the Director and the Board on the contents of the draft final regulations.

The three fast-track actions are as follows:

1. Develop regulations that consider the impact of downstream limited-use or private roadways with low traffic volume and low public safety risk on the determination of the hazard potential classification of an impounding structure;
2. Develop regulations that provide a method to conduct a simplified dam break inundation zone analysis; and

3. Develop regulations that set out the necessary requirements to obtain a general permit for a low hazard impounding structure.

The Board recognizes that these actions are predicated on the following legislation and information and directs the Department to consider the following in the development of the regulations:

For Action 1:

- Chapter 270 of the 2010 Virginia Acts of Assembly (HB438 – Delegate David J. Toscano) amended § 10.1-605 C. of the Code of Virginia to direct that “[t]he Board shall consider the impact of limited-use or private roadways with low traffic volume and low public safety risk that are down stream from or across an impounding structure in the determination of the hazard potential classification of an impounding structure”.
- Chapter 41 of the 2010 Virginia Acts of Assembly (SB244 – Senator John C. Watkins) resulted in the Codification of § 10.1-605.2 of the Code of Virginia that stipulates “[t]hat the Virginia Soil and Water Conservation Board shall, in accordance with the Administrative Process Act (§ 2.2-400 et seq.), adopt regulations that consider the impact of downstream limited-use or private roadways with low traffic volume and low public safety risk on the determination of the hazard potential classification of an impounding structure under the Dam Safety Act (§ 10.1-604 et seq.)”.
- During 2010, in partial response to these legislative directives, the Director of the Department approved on November 30, 2010 a “Guidance Document on Roadways On or Below Impounding Structures”. Such guidance shall be strongly considered in the construct of the regulations.

For Action 2:

- Chapter 637 of the 2011 Virginia Acts of Assembly (SB1060 – Senator Ryan T. McDougle) created a § 10.1-604.1 titled “Determination of hazard potential class” with a subsection C. that specifies that “[t]he Board may adopt regulations in accordance with § 10.1-605 to establish a simplified methodology for dam break inundation zone analysis”.

For Action 3:

- Chapter 637 of the 2011 Virginia Acts of Assembly (SB1060 – Senator Ryan T. McDougle) created a § 10.1-605.3 titled “General permit for certain impounding structures” with a subsection A that specifies that “[t]he Board shall develop a general permit for the regulation of low hazard potential impounding structures in accordance with § 10.1-605.”.

The Department shall follow and conduct these actions in accordance with: the fast-track processes within the Administrative Process Act, the Virginia Register Act, the Board’s Regulatory Public Participation Procedures, the Governor’s Executive Order 14 (2010)

on the Development and Review of Regulations Proposed by State Agencies”, and other applicable technical rulemaking protocols.

Further the Board recognizes that following the completion of these actions, that the entire body of the Virginia Impounding Structure Regulations (§ 4VAC5-20) may benefit from a reorganization of sections in order to increase the readability of the document. The Board will entertain a future motion at the appropriate time to authorize this action.

The Board requests that the Director or the Regulatory Coordinator report to the Board on these actions at subsequent Board meetings and will consider the adoption of these regulations at a future meeting(s) following their development.

Fast-track Regulatory Process

Mr. Dowling reviewed the Fast-track Regulatory Process.

- The Fast-track Process is appropriate when an action is expected to be noncontroversial. A rulemaking is deemed noncontroversial if no objections are received from (1) certain members of the General Assembly or (2) ten or more members of the public.
- After approval of the draft final language by the Board and subsequent review by the Administration (DPB, SNR, and the Governor), a notice of a proposed fast-track rulemaking will be published in the *Virginia Register of Regulations* and will appear on the Virginia Regulatory Town Hall. This will be followed by a public comment period of at least 30 days.
- If, during the public comment period, an objection to the fast-track regulation is received from:
 - Any member of the applicable standing committee of the Senate.
 - Any member of the applicable standing committee of the House of Delegates,
 - Any member of the Joint Commission on Administrative Rules (JCAR),
 - or
 - 10 or more members of the public,then publication of the fast-track regulation will serve as the Notice of Intended Regulatory Action (NOIRA) and standard rulemaking process is followed to promulgate the regulation.
- If there are no objections as described above, the regulation will become effective 15 days after the close of the public comment period, unless the regulation is withdrawn or a later effective date is specified by the Board.

Mr. Dowling said that the full APA process would be at least a two-year process. He said that the hope is to benefit dam owners and public safety through the fast-track process.

Mr. Dowling reviewed the legislation. Copies of the legislation as passed (and distributed) are available from DCR.

Mr. Dowling asked if there were questions.

A member asked if dams already had a pre-designated class why they would participate.

Mr. Bennett said that a number of dams do not yet have a class assigned. He said the number could be as many as 1,000 dams. He said that this simplified method which acts as a screening process would take the burden away from the dam owner and help to keep low hazard dams classified as such. He noted that if a dam is low hazard the owner would be eligible to receive coverage under the general permit which has fairly minimal requirements.

Mr. Dowling said that procedurally the Department's recommendation would be based on the best information available. He said that the owner and his engineer would still have to agree with the certification.

A member said that there was other legislation in the 2011 Session that would significantly increase the threshold for a regulated structure. While the legislation did not pass the understanding is that this would be brought forward again. The member asked if the RAP would look at those changes.

Mr. Dowling said that the task before the RAP was to address the legislation that had already passed.

Discussion of Draft General Permit language for regulation for low hazard potential dams

Mr. Dowling said that members were provided with two versions of the regulations. The first was a full set, while the second set contained only the amended section with recommendations.

Mr. Bennett referred to the document showing just the amended sections of the regulations and noted that on the bottom of page 8 the text highlighted in green covered what the legislation directed in terms of a general permit. He said that this section (4VAC50-20-101) captured the language that was set out in the legislation.

Mr. Bennett said that the category for special low hazard already existed in the regulations. He said that if the only potential damage from a dam failure was damage only to the dam owner's property, that dam would be eligible for that special low hazard permit. He said that was different from the new general permit which is a new category.

Mr. Bennett said that the remainder of the language in this section included the format and requirements of the general permit. He noted that it is a six-year permit and that the permit states "[t]he owner shall ensure that the impounding structure is engineered to pass a flood resulting from a 100-year flood."

A member raised a question regarding the types of failures contemplated in the first paragraph preceding the general permit. He said that depending on the nature of the failure there could be different consequences as it applies to loss of human life or economic damage.

Mr. Bennett said that what was being referred to in the first paragraph was the opportunity for the dam owner to not necessarily pursue a general permit but apply the special low hazard classification. If the only thing that would be damaged is the owner's property, the owner is eligible for the special low hazard classification. This is already addressed in the regulation.

Mr. Dowling said that in everything that Mr. Bennett covered, the language can be clarified further, but this language is directly from the legislation.

A member asked why the terminology was changed from certificate to general permit.

Mr. Bennett said that the legislature wanted to address this in a different manner for low hazard dams to make it easier to get through the process and so created a new requirement and process.

Mr. Dowling said that the term general permit is not unique in terms of regulations. He said that it indicates a more simplified process.

A member said that he did not find a reference requiring the maintenance of the dam.

Mr. Dowling said that on line 437 there was a requirement that the dam "be maintained and operated in accordance with the general permit." In the registration statement the owner would certify that the dam would be maintained. Mr. Dowling noted that this requirement could also be moved into the general permit.

A member asked if a house was owned by a dam owner, but that the property was rented out, if that could still qualify as a special low hazard.

Mr. Dowling said that staff would look at that option.

A member noted the reference to economic damage on line 368 of the shorter version. He said that there will always be some form of economic damage and asked if there would be guidance regarding the amount or extent of damage.

Mr. Bennett said that there may be a need to provide guidance in that regard. Mr. Dowling said that there was much discussion of dollar values in the previous TAC. He also said that could be addressed with guidance if needed.

A member said that it had already been mentioned that there were thousands of dams that should be regulated but are not. He said that in the regulatory sphere self policing had

been in place for forty years. He said there must be some dependency upon regulated persons doing what they need to do.

It was also noted that the general permit is issued for a set period. At some point the dam owner must come back and show that there have been no changes.

A member asked if owners would have to go through the simplified inundation analysis every six years.

Mr. Dowling said that staff would take a look at how frequently DCR would need to perform the simplified analysis.

Mr. Dowling reviewed the changes/suggestions for this section.

- Line 368 – Consider further definition of economic damage
- Line 367 – what kind of failure? Consider more descriptive terminology
- Line 383 – Question regarding use of the term “engineered” where designs do not exist
- Line 383 – Consider adding the term “safely” in front of “pass”
- Line 402 – Is immediately enforceable?
- Line 427 – Remove “a”
- Include in the section requirements that speak to maintenance and structural integrity.

Mr. Dowling said that DCR wanted to hear from members and encouraged them to submit their suggested changes and questions.

A member said that on lines 384-386 he would urge DCR to clarify that the Department is not doing the IDA as a part of the simplified dam break analysis.

Discussion of simplified dam break inundation zone analysis

Methodologies utilized by other states

Mr. VanLier distributed a handout and gave an overview of methodologies used by other states for dam break inundation zone analysis.

SB 1060 Impounding structure; determination of hazard potential classification, development of permit.

Chief patron: McDougle

Summary as passed Senate:

Dam safety; regulation of impoundment structures. Allows the Director of the

Department of Conservation and Recreation to provide financial assistance for the determination of the hazard classification for impounding structures, dam break analysis, the mapping and digitization of dam break inundation zones, incremental damage analysis, and other engineering requirements such as emergency action plan development. Dam owners whose impounding structure is not classified, or whose impounding structure is already classified but the owner believes that conditions indicate that the hazard potential classification should be reduced, may request that the Department conduct a simplified dam break inundation zone analysis to determine whether the impounding structure has a low hazard potential classification. Dam owners shall pay a fee not to exceed 50 percent of the costs for such services. If the Department finds that the impounding structure has a low hazard potential classification, the owner shall be eligible for coverage under a general permit.

Alaska

Uses a 3 page questionnaire to determine hazard class.

Suggests the following: Simplified DAMBRK model, DAMBRK model, NWS FLDWAV model, HEC-1 model, or Other. Attach calculations.

http://dnr.alaska.gov/mlw/forms/dams/hazclass_jurisdic_review8.pdf

Kansas

Recommends HEC-GeoRAS with ArcGIS and the HECRAS model using a two meter digital elevation model developed from the LiDAR data.

http://www.ksda.gov/includes/document_center/structures/Structures/BreachInundationMaps.pdf

Montana

Allows simplified inundation mapping for EAPs.

HEC-HMS is recommended over HEC-RAS or FLDWAV.

Dictates breach characteristics, starting reservoir elevation, etc.

http://dnrc.mt.gov/wrd/water_op/dam_safety/technical_ref/technical%20note%203.pdf

North Carolina

Uses a simplified graphical procedure which can be prepared by hand using detailed photo-based maps. Break assumes starts with water elevation $\frac{1}{2}$ dam height and wave height is halved every 10 miles downstream (linear reduction).

This method is used for low hazard dams EAPs, only.

<http://www.dlr.enr.state.nc.us/pages/Dams%20-%20EAP20101217/North%20Carolina%20SIMS%20Methodology%2020101214.pdf>

Texas

Very specific in the choice of model parameters. Computer models accepted include: HEC-HMS, HEC-1, SITES, WIN TR20, WIN TR55, HEC-RAS, NWS

DAMBRK, DWOPER, FLDWA, Others. Simplified Breach Method for small dams using:

$QB = 3.1 B H^{3/2}$, where

QB = peak total discharge from the breach, in cfs

B = bottom width of breach, assumed to be $3 \times H$ for embankments or $1/2$ the width of a structural spillway or concrete structure, in ft

H = maximum height of the dam, in ft

The total release discharge (QT) would then be:

Eq. 8.2 $QT = QB + Qs$, where

QS = peak discharge capacity from the spillway(s) with the reservoir at the top of the dam, in cfs

Followed by hand mapping.

http://www.tceq.texas.gov/publications/gi/gi-364.html/at_download/file

Washington

Uses SIMs table (Bedslope vs. Velocity for grassland, gravel/cobble with brush or gravel/cobbles wooded using the following eq.

$A=QV$ to determine depths.

<http://www.ecy.wa.gov/biblio/9255e.html>

ASDSO SIMS

Similar to Montana. Recommended for EAPs, only.

<http://www.damsafety.org/media/Documents/EAP/EAPWG%20Final%20SIMS.pdf>

Mr. Beadenkopf referenced a handout in member packets that addressed the FEMA Simplified Dam Breach Toolset and semi-automated EAP. A copy of that handout is available from DCR.

Mr. Beadenkopf said that URS and Dewberry JV were working on this project for a FEMA release by May, 2012. He said that the project is to provide a new updated guidance document for dam break inundation analysis. It will be up to states to decide whether or not to use this guidance. He said that FEMA also wants to encourage states to attain 100% compliance on emergency action plans.

A member said that the goal of the legislation was to allow the Department to focus on high hazard dams and dispense with the smaller low hazard dams. He said that he would encourage the Department to keep all options open.

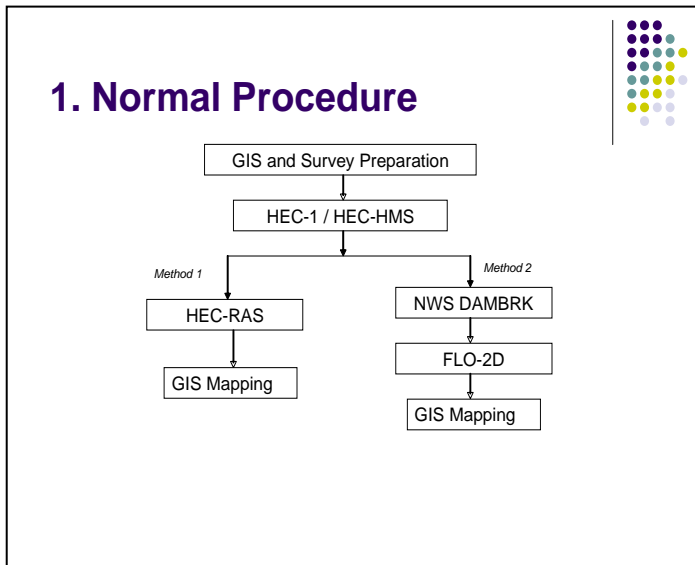

Mr. Dowling said that the hope was to make the process as simplified and flexible as possible.

Mr. Bennett introduced Dr. Michael Wang, regional dam safety engineer based in Warrenton.

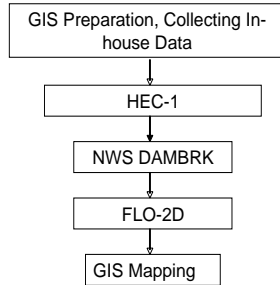
Dr. Wang gave the following presentation.

**A Simplified Method
for Developing Dam-break
Inundation Maps for Low-
hazard Dams**

By Zhengang (Michael) Wang, *Ph.D., P.E., CFM*
Virginia Dept. of Conservation and Recreation
Division of Dam Safety and Floodplain Management
10/18/2011



2. Proposed Procedure



2.1. GIS Preparation, Collecting In-house Data

Lots of work are to be done through GIS, including:

- Find and clip the LIDAR / USGS DEM data that is at the correct size and includes the upstream reservoir drainage area, downstream inundation zone, and downstream watershed that drains to the inundation zone. FLO-2D cannot read the entire USGS DEM for a county – it is too big and will make FLO-2D run out of memories.
- Prepare input data for FLO-2D model, at the same projection, vertical and horizontal datum as localities use in their floodplain management.
- Find the background aerial photos
- Calculate the reservoir stage – surface area relationship
- Get the key parameters for HEC-1 and NWS DAMBRK models, including but not limited to reservoir area at top of dam, maximum drop and area slope of the reservoir that are used to calculate the lag time, get 2-3 cross sections downstream of the dam to run NWS DAMBRK model.
- Turn FLO-2D results into GIS (shape) files that can be given to localities

Some data can be collected in-house, by reading files and/or database

2.2. Calculate the required hydrograph using HEC-1



A simplified HEC-1 analysis is proposed:

- Use only one drainage basin to calculate PMF inflow in the HEC-1 model.
- Use only 6-hour PMP rainfall and assume that 6-hour PMP is the worst case.
- Calculate the lag time carefully, and keep all the input data for lag time calculation.
- Use HEC-1's built-in rainfall distribution and unit hydrograph
- Ignore the principle spillway

Projected time for an experienced engineer: 8 hours / dam

2.3. Calculate the PMF failure and non-failure hydrograph in NWS DAMBRK



A simplified DAMBRK analysis is proposed:

- Generate breach parameters using Froehlich's method
- Use only 2~3 cross sections downstream of the dam.
- Calculate PMF failure and PMF non failure hydrograph

Projected time for an experienced engineer: 8 hours / dam

2.4. Route the PMF failure & non failure hydrographs through FLO-2D



A simplified FLO-2D analysis is proposed:

- No river cross section will be used in FLO-2D.
- Use grid size 50-200 ft and limit the total grid number to be no more than 20,000 ~ 30,000.
- Put the PMF failure or no failure hydrograph at the dam location, and route it to the downstream.
- In order to meet DCR's requirement, either put 100-year rainfall with the same distribution as the used PMP at entire downstream watershed in FLO-2D, or put the 100-year flow peaks that are estimated by USGS regression equation in the downstream channel.
- Compare the PMF failure and no failure inundation zone, and discard the inundation zone downstream of the 1-ft convergence location. Make sure the FLO-2D calculation area is big enough to include the 1-ft convergence location.

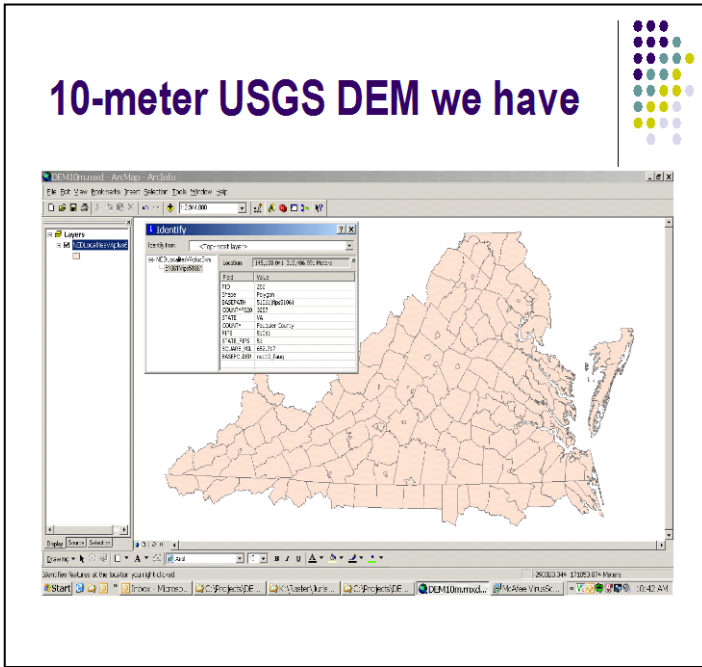
Projected time for an experienced engineer: 24 hours / dam (not including the running time of FLO-2D that can be a few hours)

2.5. GIS Mapping

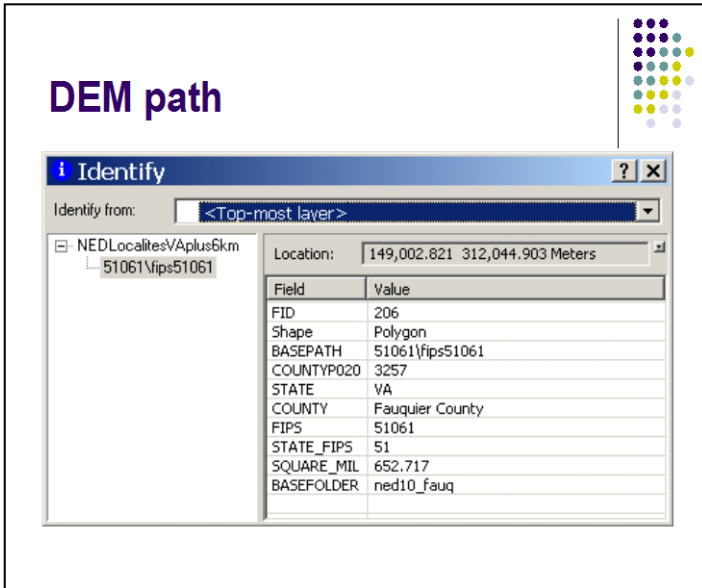


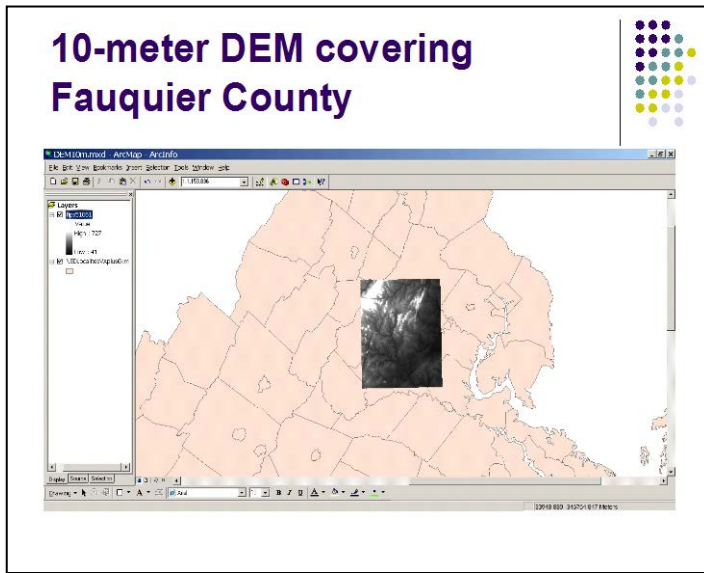
- FLO-2D analysis results can be easily turn into GIS (shape) files as the same format as floodplain maps that are used by localities. I know this on the base of my experience at Michael Baker, even though I don't know how to do that – GIS specialist should know how to do that.
- GIS results can include: the water surface elevations, maximum water depth, PMF failure inundation zone, etc.
- If GIS specialist cannot do that, I can write a small VC++ program to transfer FLO-2D results into GIS ASCII grid files.

10-meter USGS DEM we have



DEM path





A member asked if the regulations required that all events be considered.

Mr. Bennett said there are four scenarios:

- Sunny day break
- Spillway design flood with break
- Spillway design flood without break
- PMF with break

Mr. Dowling said that the dam break inundation zone mapping section started on page 7, line 298 and that on the top of page 8 the four scenarios were listed. He said that the legislation addressed analysis under flood and non flood conditions.

Mr. Dowling said that Mr. Beadenkopf had a presentation to share with members. He suggested the RAP break for lunch and that Mr. Beadenkopf could give his presentation as members ate their lunch.

Mr. Beadenkopf said that he would give a very brief presentation on one of the activities that FEMA is working on. It's being done under the development of guidelines to give to the states on how to do dam break inundation mapping.

Mr. Beadenkopf said that FEMA wanted to have more information and emergency managers doing mitigation plans and doing economic loss studies. So they wanted to produce a guidance document to get more consistent mapping in the states.

Mr. Beadenkopf said this had been in the works for a few years. The goal was to produce a document that will be out in May of next year.

The National Dam Safety Review Board had a workgroup that they commissioned to look at why only 50% of high hazard dams in the country had EAPs. They came to the conclusion that it was very expensive to do a hydrologic model for dam breaks.

The work group came out with a recommendation for simplified methods ranging from a photo based method through the use of simplified methods. One of the methods they acknowledged was the National Weather Service's simplified dam break model. This was developed in the early 1980s. The National Weather Service took this offline. But the Weather Service continued to use it but converted it to something called GEO simplified dam break.

The goal of this plan is within 20 minutes of an emergency to present a dam break plan. That led to the idea of a semi-automated emergency action plan tool set.

This is not regulatory but FEMA will start using this in their flood insurance studies.

Mr. Beadenkopf said that basically FEMA is attempting to take the modeling results of flood insurance studies and put the information into databases to do the hazard determination. The goal is to make this a PC based tool so that dam owners and their engineers would use it. This would link to the mapping standards in the new guidance document.

Mr. Bennett thanked Mr. Beadenkopf and continued with the review of the draft.

Mr. Bennett said that he wanted to go through the language proposed for the simplified methodology. He referred to the draft with the amended sections, Page 4 at the bottom. Mr. Bennett read the highlighted section.

Mr. Dowling noted that on lines 193 and 203 that subsection "D" should be subsection "C".

A member asked if staff would separately review changes to other sections.

Mr. Bennett said that there would be an opportunity to review all highlighted changes.

A member inquired about the source of the grant assistance fund.

Mr. Bennett said that the General Assembly set aside funds to be administered by the VRA.

Mr. Dowling said that it would be important to ensure that owners know these funds may be available to them and that we could add a Code reference.

Mr. Bennett moved to the bottom of page 6 and top of page 7 to the section regarding incremental damage analysis.

A member asked how the hazard classifications were adjusted based on the incremental damage assessment.

Mr. Bennett said that the intent is that if a house has 20 ft. of water on it and is destroyed from the flood (but is not in the sunny day break zone), and the dam fails in addition to the flood, that the dam owner would not be responsible for a higher classification and spillway if the house is already gone.

Mr. Dowling said that the sentences regarding adjustments to hazard classifications by IDA were directly from the Code. He said that under Mr. Bennett's example there would be a hazard potential reduction.

Mr. VanLier noted that if a dam was designated as low hazard, that the house would not be evacuated because it would not be in the EAP.

A member said that even if the classification was lowered, that the PMF floodplain should still be a component of the EAP.

Mr. Dowling said that he recognized members were not fully comfortable with this section and that staff would endeavor to improve the language while still meeting the intent of the law.

Mr. Bennett moved to section 54, Dam Break Inundation Mapping. He reviewed the changes to this section.

Members stressed that the department should retain flexibility as to what method will be utilized to conduct the simplified dam break inundation zone analysis.

Mr. Dowling said that the intent was to allow some flexibility.

Discussion of low volume roadways

Mr. Bennett addressed the section regarding low volume roadways. He said that the definitions define annual average daily traffic.

Mr. Dowling said that DCR had a guidance document regarding roadways. A copy was distributed in member materials.

Mr. Bennett noted that language on page 4 allowed for the option of a road with a traffic volume of 400 vehicles or less to be classified as a low hazard potential.

A member noted that FEMA only allows one-way traffic for counting but that the numbers suggested in the draft addressed two-way traffic.

Staff said that the intent was not for the same vehicle to be counted twice, however if there were multiple crossings below the dam that each crossing would be counted separately.

Several editorial suggestions were made to be considered in refinements to 4VAC50-20-45.

General discussion of the regulations

Mr. Dowling said that the purpose of the meeting was to present a draft for consideration as a starting point. He said that he had written down several items that need to be addressed based on member comments.

Mr. Dowling asked if there was general consensus around the draft with the caveat that refinements would be made based on the comments received. Members generally concurred with that statement.

Mr. Dowling said that he would like all members to have time to reflect on the document. He requested that members forward to him comments and suggestions by Tuesday, October 25.

Mr. Dowling said that the next meeting would be held on Thursday, November 10. Meeting details will be forwarded to members.

Public Comment

Mr. Dowling gave an opportunity for comments from the public. There was none.

The meeting was adjourned.