

From: [Miller, Ed](#)
To: [NTTF Rec 2.1 Flooding](#)
Subject: NEI flowchart
Date: Wednesday, August 29, 2012 7:57:00 AM
Attachments: [JLD.pdf](#)

Attached is the flowchart presented by NEI at the public meeting yesterday.

Ed

1A

1B

Guidance for Performance of Integrated Assessment

Information Collection

Assemble Peer Team

Define Flood Parameter Scenario(s) (1)

Identify Flood Protection Systems

Simple Systems Evaluation

(Permanent, Passive)

(Temporary, Active)

Complex Systems Evaluation

Define Failure/Success Criteria

Water Allowed to Enter Category Class 1 Equipment

Define Failure/Success Criteria

Define Associated Features

Define Associated Features/Actions

Quantitative Integrity Evaluation
Exterior and Incorporated
Passive Features (2)

Sensitivity
Study If
Applicable

Criteria Outlined in ISG

Determine Physical Margin

? Margin Criteria ?

Have Integrity and Margin?

Yes

No

Limitation

Mitigation

For Permanent Passive
Features: See Simple Systems

Temporary
Barriers

Active Protection
Features, TBD

Complex Flood System
Dependencies Evaluation

Document
Barrier
Placement
Trigger(s)

Conservative,
Qualitative
Operator Actions
HRA Evaluation

? Criteria ?

Quantitative
Load and
Associated
Effects
Evaluation
Comparison
to Codes,
Standards,
Best Practices

OK

Qualitative
Evaluation
of Operational
Requirements
(Maintenance,
Inspection, --)

OK

Report

Not
OK

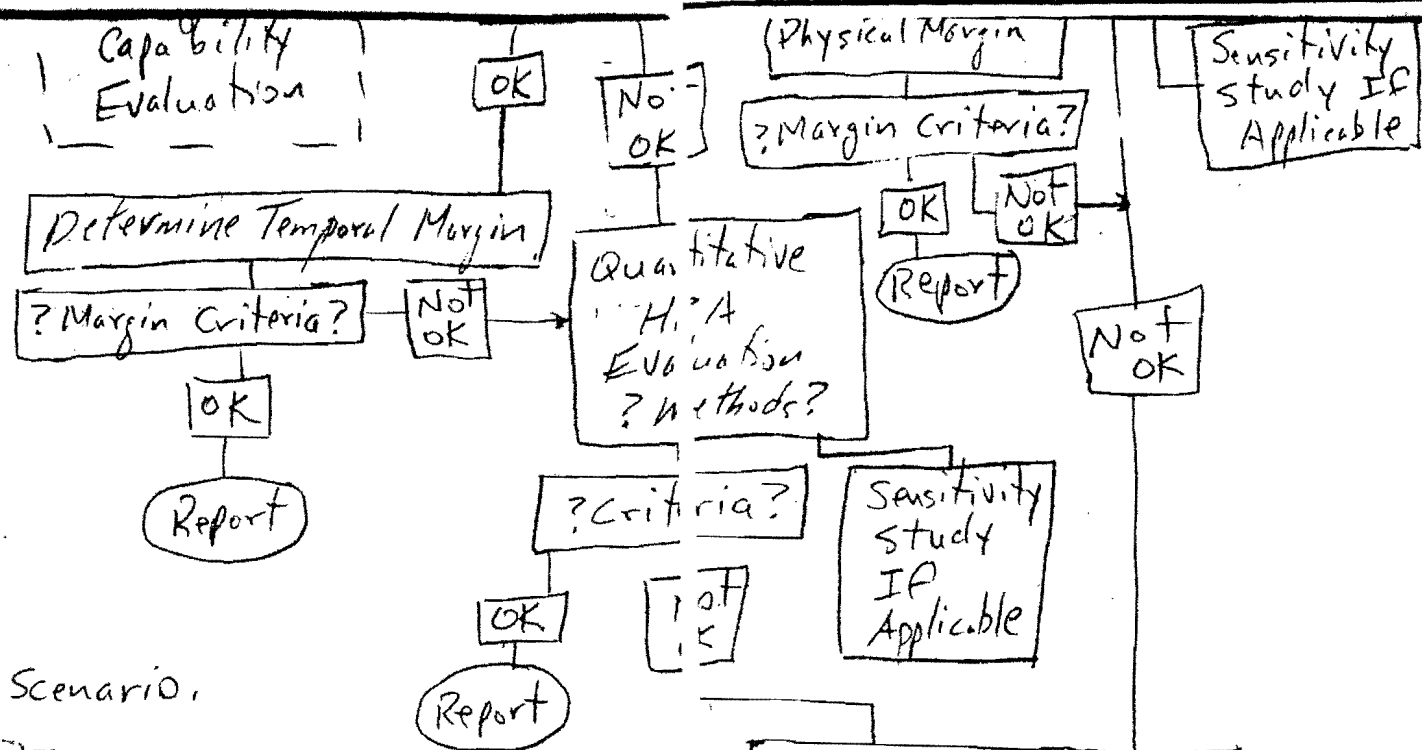
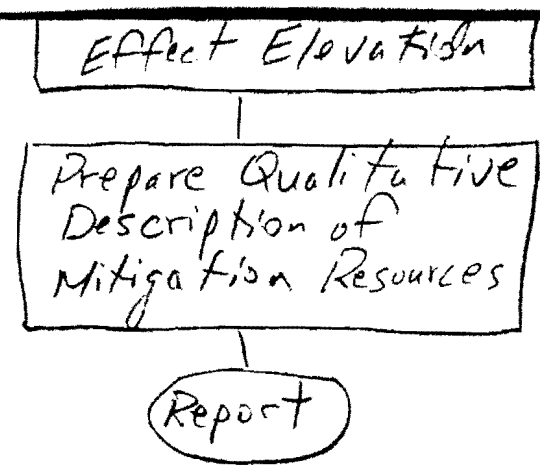
Make
Adjustments

System Logic
Model (or
equivalent)

Identification
of Feature/
Action
Dependencies

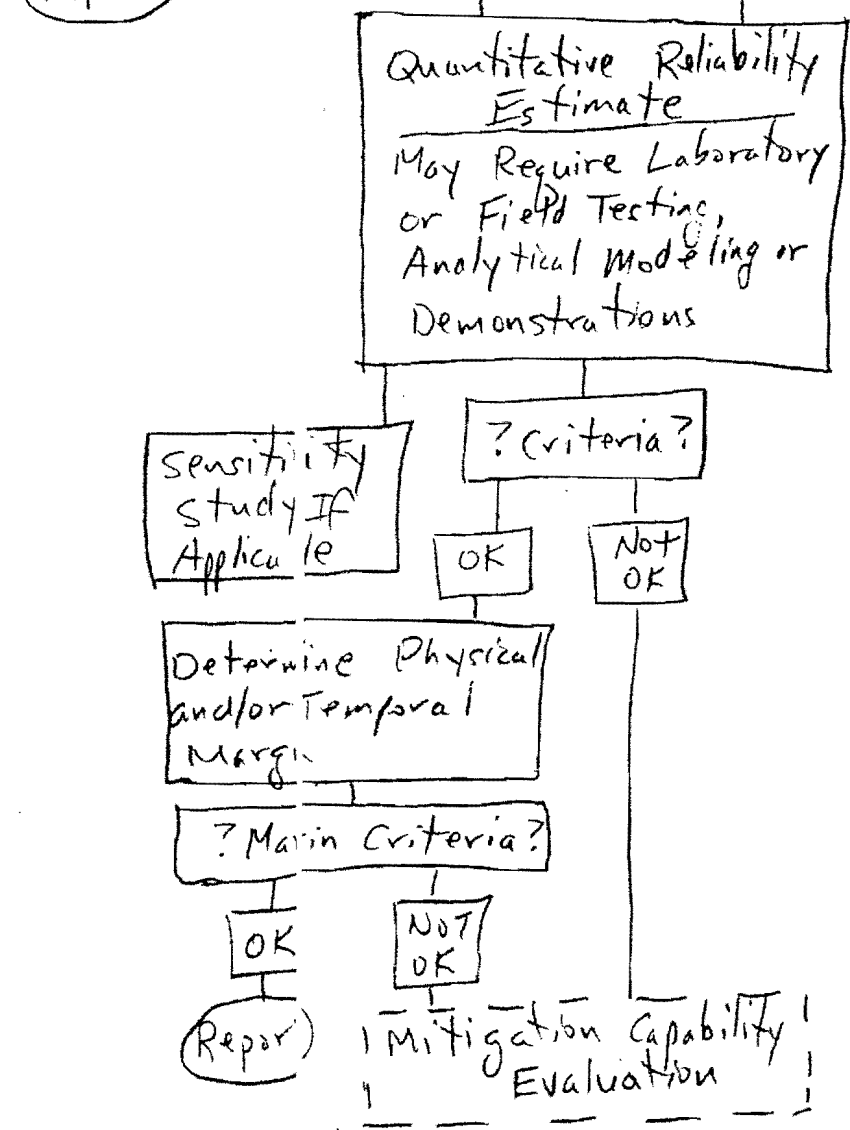
Use In
Other
Evaluations

? Report



(1) Process repeated for each Flood Scenario.

(2) Incorporated Passive Features under development, treatment of hatches, water-tight doors, etc. (Simple vs. complex) TBD.

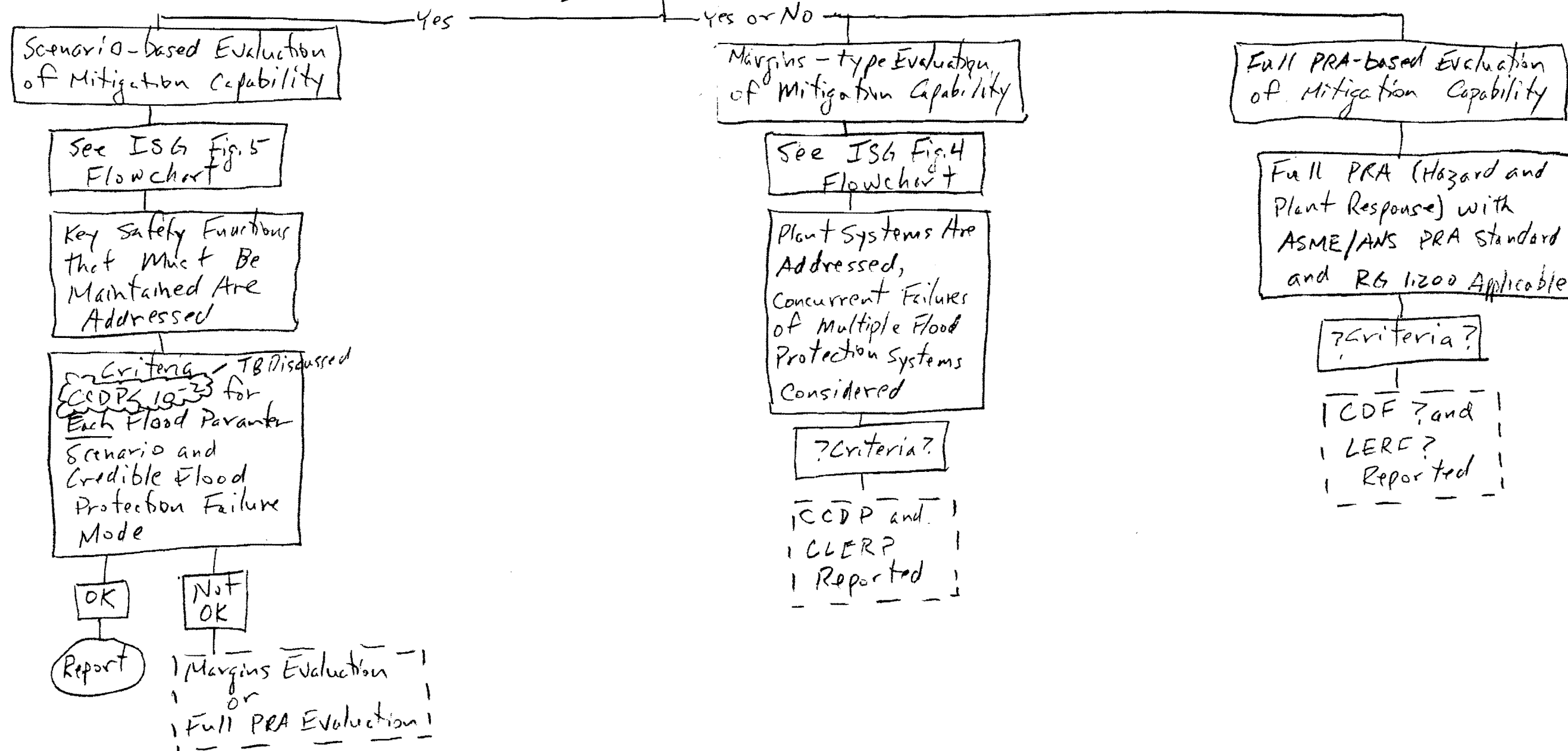


Mitigation Capability Evaluation

Mitigation Characteristics:

1. No complex interactions, interdependencies
2. No significant reliance on operator actions
3. Mitigation capability $CcDP < 10^{-2}$ TB Discussed

? Criteria for 1+2



Documentation of Evaluations

1. Procedure and methodologies
2. Flood mechanisms and Flood Parameter Scenarios)
3. Site condition with Flood Parameter Scenarios) and risk-significant SSCs affected,
4. Effectiveness of current licensing basis protection.
5. Effectiveness of current licensing basis mitigation.
6. Effectiveness of in-place and planned protection and mitigation.

Results

* Supplements basic flood protection system and mitigation evaluations.

- * 1. Evaluation of Available Margin
 - Available margin after reevaluation
 - Additional flood hazard required to eliminate margin.
 - Effects of exceeding margin on key safety functions.
- * 2. Identification of Vulnerabilities
 - Identify vulnerabilities
 - Safety functions affected.
 - Combined effect of vulnerabilities on key safety functions
 - Elevation at which each SSC has been compromised
 - 2,3 Walkdown deficiencies not yet resolved.
- * 3. Cliff-edge Effects
 - Elevation cliff-edge effect occurs.
 - Safety consequences of exceeding cliff-edge elevation
 - Effect of all available resources on reducing consequences.
 - "Qualitative" description of mitigation resources at site (sites with acceptable simple protection systems)
- * 4. Risk Insights and Defense-in-Depth (DID)
 - Flood protective features if unavailable significantly increase risk
 - Substantial safety consequences or risk increases below the maximum water for Flood Parameter Scenarios.
 - Risk-significant SSCs affected by reevaluated flood (were "dry" and now are "wet")
 - Document if and how DID considerations are used to address unknown and unforeseen failure mechanisms and phenomena.