

**Oregon Solutions Team**  
**Technical Advisory Committee**  
**Columbia River Levee Repair and Accreditation Project**  
**Draft Meeting Notes**

Oregon Solutions Project Website  
<http://orsolutions.org/osproject/MCDD>

September 15, 2014 – Portland State University

**Meeting Objectives**

1. Substantive objectives:
  - a. To review information about the history and status of the railroad embankment.
  - b. To preview the scope, methodology and initial findings of the Levee Engineering Assessment.
2. Administrative objectives:
  - a. Provide TAC with draft operating protocol for review and comment.
  - b. Determine future meeting dates.

**Summary of TAC Assignments from the Oregon Solutions Team meeting held September 26:**

- The Oregon Solutions Team (OST) met on September 26 to receive a briefing from Mike Meyer (Cornforth Consultants) on the PEN 1 and PEN 2 Levee Engineering Assessments. This briefing was an abbreviated version of the one delivered to the TAC on September 15. Mike stressed that the levee assessment is based on the hydrology of a 1% annual chance event (100 year) per FEMA criteria. Mike also explained the unsuitability of the railway embankment for levee protection.
- Lance Helwig (USACE) noted that the standards for the USACE Rehabilitation and Inspection Program (RIP) are based on different design water surface elevations, not solely 1% ACE. This led to a discussion as to what additional flood events should be modeled to inform OST decision-making.
- The OST requested that the TAC provide recommendations on the following items:
  - Whether or not to continue pursuing drilling the railroad embankment.
  - If additional water surface elevations should be modeled, and if so, which elevations.
- The OST requested the TAC provide their recommendations via email communication prior to the OST meeting scheduled for November 14.

**TAC Next Steps:**

- Vet methodology and findings of the Levee Engineering Assessments upon release of final report (see Executive Summary: Levee Engineering Assessments, dated September 26, 2014).
- Send Julia Babcock, [jjb@pdx.edu](mailto:jjb@pdx.edu) the contact information of the primary and alternate representative from your organization.
- October 20, 2014 TAC meeting draft agenda items:
  - Receive overview of the USACE RIP requirements
  - Report back on the methodology and findings of the Levee Engineering Assessments
  - Address whether or not additional water surface elevations need to be modeled
  - Recommend whether or not to continue pursuing the railroad embankment and next steps
  - Finalize and adopt TAC operating protocols

**Brief Meeting Summary**

Welcome and Introductions

*Rick Mogren, Center for Public Service*

- Thank you to the steering committee for assisting in the development of the agenda for today's meeting.
- 8/20 TAC meeting notes have been distributed, if no changes by end of this meeting, we'll consider notes final.

## Railroad Embankment

*Byron Woltersdorf, MCDD*

- 1952 Flood Act: required USACE to create a flood manual memorandum for this area which characterizes what happened in 1948 and includes information on the railroad embankment, as well as the system as a whole.
- For more information, please see the Railroad Embankment Memo on the Oregon Solutions website: [http://orsolutions.org/wp-content/uploads/2014/09/PEN1\\_Railroad\\_Embankment\\_Overview\\_09.12.14.pdf](http://orsolutions.org/wp-content/uploads/2014/09/PEN1_Railroad_Embankment_Overview_09.12.14.pdf)

*Brock Nelson, Union Pacific*

- The embankment works well for supporting railroad tracks but was never built to perform as a levee. Still trying to understand what certification of the embankment as a levee would mean. Not open to taking boring samples as it would be disruptive to operations. The tracks in this area serve as a major North-South connector (the only route to Seattle) and include 8 passenger trains and 20-30 freight trains on average per day.
- Strong economic interest to avoid conflicts that would disrupt railroad operations today, as well as impede track expansion in the future.
- Within 25 feet of railroad track centerline is considered a safety “red zone” where workers must have federal authorization to access area. Work within 10 feet of the centerline requires rail movements to stop pending completion of the work.
- Railroad has an application in for a TIGER VI to upgrade the section of track to realign it for increased speed. Need to be able to continue to make improvements and have the potential to add other tracks. Don’t want certification to jeopardize the physical structure of the existing railroad track.
- Flag liability issues for legal subcommittee. If the railroad embankment were certified as a levee, what are UP’s legal obligations? If the railroad embankment does not serve as a levee what are the liability implications? If considering certification, operations and maintenance agreements would have to be negotiated in order to receive accreditation.
- Open to working with neighboring landowners and communities. Will continue to share national policy considerations with the TAC.
- See UP policy statement and the memo from the Burlington Northern Sante Fe provided at the meeting for additional information.

## Levee Engineering Assessment Methodology and Initial Findings

*Mike Meyer, Cornforth Consultants*

*Disclaimer: If there are any discrepancies between these notes and the final levee assessment report, the final levee assessment shall govern.*

- Cornforth was hired by MCDD initially in 2013 to privately certify PEN 1 and 2 levee systems. Further evaluation work done is being funded through the \$1.4M IFA loan.
- Reviewed as-built drawings, system, and its health in comparison with a 1% Annual Chance Event (ACE), which is FEMA’s minimum standard.
- Overall message, levee in good condition. There are only a few areas of concern.
  - See report and briefing slides for technical findings.

### **PEN 1**

- 57 borings.
- Falling head tests measure permeability.
- Standard penetration test: sturdy metal tube attached to drill rod and use a hammer to drive sampler into the ground. Collected undisturbed samples through Shelby tubes.
- For railroad embankment, not able to drill on crest of railroad embankment; made assumptions based on records. Did obtain borings on the toe of the embankment.

### **PEN 2**

- 74 borings.
- Dense gravel around 90 feet making drillers unable to test as deep as in PEN 1.
- Offshore drilling with barge, site geology and lab testing program.

## Aerial Handouts Review

- Aerial photo, see bore hole locations - that's how cross sections are created. Levee system is broken into reaches in order to manage the study area. Reach is defined as the stretch of levee trapezoid with similar shape on top of subsurface conditions; if you can cluster it helps to streamline analysis.
- Only place where slope stability is an issue is the railroad embankment—had to make a guess about soil parameters. Assumed low soil parameters due to historical documents that indicate that the embankment was constructed on top of a wooden trestle. Old archives from trial: original track built on a wooden trestle and the railroad later deposited soil around the trestle. Note, the original wooden trestle is still within embankment (except portion washed away in the 1948 flood). See report and briefing material for technical assessment of this material. Bottom line—embankment does not meet FEMA or USACE requirements. See briefing slides and report for technical findings.

## Freeboard and Scour Protection Analysis

*James Heyen, WEST Consultants*

- First component of freeboard, comparing the levee crest elevation as determined by as-built survey data as well as lidar , to the USACE design sections.
- See briefing slides and report for technical findings.

### PEN 1

- Assumed 1% ACE water elevation in PEN 2. There are sections of the Interstate 5 cross-section that do not meet the freeboard requirements.
- Two areas with freeboard issues near the cross-levee. There are sections that are about 1.3 feet shy of required freeboard. There is also a small area on private commercial property that are not meeting the required freeboard.
- See report and briefing slides for technical findings.

### PEN 2

- Analysis for 15 reaches.
- Slope stability and seepage met everywhere except along Peninsula Drainage Canal along eastern side of PEN 2.
- The western side of the Peninsula Drainage Canal was decommissioned, now PEN 2 relies on the eastern side of the Peninsula Drainage Canal as the cross levee.
- See report and briefing slides for technical findings.

### Freeboard PEN 2

- Identical analysis as PEN 1 for freeboard and erosion protection.
- Freeboard is more than 6 feet everywhere, except NE corner of Marine Drive. This is area does not meet FEMA criteria for freeboard.
- See report and briefing slides for technical findings.

### Discussion

- Large portions of the levee alignment are beneath private property. There are a lot of docks, permanent wharfs that will help in regards to erosion. Haven't quantified mitigation but will slow down water.
- Encroachments were not found to impact the seepage and stability of the levee. The majority of the encroachments in the district are located on the overbuild and not on the critical design section of the levee. The consultants did not find that encroachments compromised the integrity of the levee systems.
- Floating homes: chance that water flow could be problematic to those structures. Difficult to model, need to know individual evacuation plans and how many are anchored. Myriad of variables. Recognize floating homes will be there.

Levee Engineering Assessment Release Information

*Julia Babcock, Oregon Solutions*

The OST Outreach Subcommittee met September 9th to develop talking points to accompany the release of the Levee Engineering Assessments to ensure that interested parties were all getting clear, consistent information about the process, the scope of the assessment and the findings. John Donovan of Metropolitan Group will be the lead point of contact for all media inquiries. His contact information is:

*John Donovan, Vice President Metropolitan Group  
jdonovan@metgroup.com  
503.223.3299 - telephone*

Closing Thoughts

- 1948 Vanport Flood: long flood above the 1% ACE. There may be a benefit to look at 0.2% standard (200 year event). As a TAC, are we satisfied with meeting the minimum FEMA criteria? Or shall we raise standards to a 200 year event? Future discussion needs to occur.
- Both districts are active in the USACE RIP program, when is the appropriate time to bring the RIP requirements into the discussion? The RIP uses a different design water surface elevation – should this be modeled? Future discussion needs to occur.
- Interest in understanding Endangered Species Act and NEPA requirements that may be part of levee repairs.
- Will send utility stakeholders as-built drawings to check for locational accuracy and whether or not there is proprietary information before the Levee Engineering Assessments go public.
- Draft operating protocols were developed, please review and submit comments for us to work through and adopt at October meeting.
  - Received feedback, difficult to commit to 100% attendance without schedule information.
  - Thursday mornings and Monday afternoons work best.
  - Send Julia [jjb@pdx.edu](mailto:jjb@pdx.edu) alternates from your organization.

<b>Organization</b>	<b>Contact</b>
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Multnomah County	Brian Vincent
Union Pacific	Brock Nelson
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