MEMORANDUM

April 15, 2010

TO: Forest Practices Board

FROM: Donelle Mahan, Policy Advisor
Forest Practices Division

D.M.

SUBJECT: Watershed Analysis Board Manual

On May 10, 2011, I will request the Board's approval of the enclosed revised Board Manual Section 11, *Standard Methodology for Conducting Watershed Analysis*, Part 8, *Review and Reanalysis.* Part 9, *Appendix K. Mass Wasting Reanalysis* will be sent out at a later date for the Board to review. When the Board directed staff to develop watershed analysis rule language it became necessary to amend Board Manual Section 11 to reflect the changes to the Watershed Analysis rules regarding the review and reanalysis of approved watershed analysis prescriptions.

Throughout the drafting process, DNR staff requested and received input from forest practices stakeholders and DNR division and regional staff. We referred to the current version of the *Standard Methodology for Conducting Watershed Analysis* to inform our process. We also revised the current version of the *Standard Methodology for Conducting Watershed Analysis* with clarifications such as updating phone numbers and formatting the document so that it is consistent with other Forest Practices Board Manual Sections (see attached Table of Contents).

This revised manual has the support of Forests and Fish Policy.

I will be available at the Forest Practices Board meeting to answer questions or feel free to call me with any questions at (360) 902-1396.

DM/
Enclosure

Section 11
Standard Methodology
for Conducting Watershed Analysis

The *Standard Methodology for Conducting Watershed Analysis*, also known as the Watershed Analysis Manual, is a technical publication required by chapter 222-22 WAC. It is used by qualified scientists and experts to determine, at the watershed administrative unit (WAU) scale, conditions of selected public resources and cultural resources. Forest managers then develop site-specific prescriptions that further regulate forest practices to protect public resources and voluntary management strategies to protect cultural resources. The latest version of the Watershed Analysis Manual is available at www.dnr.wa.gov/ResearchScience/Topics/WatershedAnalysis/Pages/fp_watershed_analysis_manual.aspx manual~~ and most Washington public libraries~~.

Questions regarding the manual should be directed to:
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Watershed Analysis Manual

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Part 8
Review and Reanalysis of Watershed Analysis

Flooding and landslides associated with the 2007 storm events in western Washington led the Forest Practices Board (Board) to request a review of watershed analysis rules . The Board questioned the effectiveness of watershed analyses (WAS) prescriptions associated with approved watershed analyses (WSA) and their ability to provide necessary protection to public resources. Consequently, the Board directed the Adaptive Management Program to develop recommendations for change if needed. This led to the Department of Natural Resources (DNR) developing a watershed analysis review and a revised WSA mass wasting prescription reanalysis process (see Appendix K).

This part of the Watershed Analysis Board Manual contains guidance for completing a review and reanalysis on an approved watershed analysis. The guidance supplements chapter 222-22 WAC, which regulate forest practices on forest lands with approved watershed analyses.

8.1 Review Overview

DNR will perform a review on approved watershed analyses (WSA) to determine if a reanalysis is necessary in order to maintain current prescriptions. The WSA reviews occur when specific criteria are met and specific steps must be followed during performance of the reviews. The criteria and steps are outlined below.

1. Periodic WSA review is required and is based on WAC 222-22-090 which provides the following criteria:
   - A review will take place five years after the date the watershed analysis is final, and every five years thereafter; or
   - The occurrence of a natural disaster; or
   - Deterioration in the condition or no improvement of a resource characteristic in the watershed administrative unit (WAU).

2. DNR will notify forest landowner(s) in the WAU when a review is conducted on their approved watershed analysis and DNR has determined that reanalysis is necessary.

3. For any approved watershed analysis, the DNR will determine which WSA prescriptions and modules will be reanalyzed, if applicable.

- DNR will provide opportunities for stakeholder input regarding prescriptions for reanalyzed WSAs.

4. Forest landowners must either accept the reanalysis or give up existing WAU prescriptions.

5. If the landowner chooses not to conduct a reanalysis DNR will initiate a nonproject State Environmental Policy Act (SEPA) checklist to eliminate the identified WSA prescriptions.

Forest landowners with habitat conservation plans (HCP) are exempt from DNR watershed analysis reviews per WAC 222-12-041, if watershed analysis prescriptions have been incorporated into their HCP. Review of privately-sponsored watershed analysis associated with an approved federal HCP are on schedules established through their HCP agreement. All reanalysis of WSA prescriptions on HCP covered lands will continue to be reviewed in cooperation with DNR.

8.2 Reanalysis Overview

When a DNR review determines that a reanalysis is necessary and landowners in the WAU decide they would like to retain their approved watershed analysis prescriptions the subsequent steps will be followed:

1. DNR will solicit forest landowners with 10% or greater forest land ownership within a WSA area to determine who may be willing to sponsor, co-sponsor, or assist in a reanalysis. A schedule for reanalysis will be established once the landowner(s) responds. This schedule will incorporate input from the forest landowners regarding their level of participation.

2. Once the landowner commits their resources to completing a reanalysis, DNR in consultation with the departments of ecology and fish and wildlife, affected Indian tribes, forest landowners, and the public shall establish a timeline for the reanalysis. DNR will work with individual forest landowners who are sponsoring or participating in reanalyses to consider appropriate schedules.

3. DNR may request a meeting to gather new information and concerns from interested parties pertaining to the specific module(s) included within the reanalysis.

4. DNR will notify the forest landowner(s) they have the following options:
   a. Sponsor or co-sponsor a reanalysis, or
   b. At anytime during the reanalysis process, DNR, in consultation with the forest landowner(s), can rescind the WSA prescriptions and use the

applicable forest practices rules for the module being reanalyzed (i.e., target module).

8.3 Reanalysis Start-up

1. DNR notifies the landowner, the departments of ecology and fish and wildlife, affected Indian tribes, relevant federal agencies and local governmental entities, and the public that a reanalysis is necessary.

2. DNR will provide the specific prescription(s) and target module(s) needing reanalysis.

3. DNR will determine the degree of expertise required to conduct the reanalysis.

4. DNR will provide necessary training for module(s) being reanalyzed.

5. DNR will determine the geographic area(s) being reanalyzed.

6. DNR in consultation with the departments of ecology and fish and wildlife, affected Indian tribes, forest landowners, and the public will develop a reanalysis timeline.

7. Supportive Documentation
   DNR with the landowner's assistance will provide the required start-up maps and supportive documentation. Reference Table 2 located in Start-up, Appendix A located at http://www.dnr.wa.gov/Publications/fp_wsa_manual_section02.pdf.
   - Map of previous years forest activities prior to initial watershed analysis.
   - Map of Forest Practices Applications (FPAs) completed in the WAU in the past five years - include all applicable FPA numbers.
   - Map of known restoration projects completed in the WAU in the past five years.
   - Any reports about the area written since the last review.
   - Any monitoring data collected since the last review.
   - There are established maps, tables, and report requirements that are standard WSA products, and many of these should be included in a reanalysis document.
   - Aerial photos, LiDAR, and other appropriate tools are encouraged to be used.

8. Critical Questions
   The objective of each watershed analysis module is to guide development of information necessary to address questions critical to understanding the natural and anthropogenic processes in a watershed.

- DNR in consultation with stakeholders will develop critical questions for the reanalysis based on an assessment of the questions from the current approved watershed analysis, taking into account any changes that have occurred in the watershed. Pertinent involvement by stakeholder groups will be encouraged while developing these critical questions.
- Mass Wasting Reanalysis Critical Questions (Appendix K).

9. Assumptions
   - A number of fundamental assumptions are outlined in each current approved watershed analysis module. It is important to review these assumptions and determine if they remain valid in relation to current scientific knowledge, new rules that may render them obsolete, and/or innovative field or assessment methods.
   - New assumptions can be established by the landowner if they are supported by new data and/or science, documented and shared with stakeholders, and approved by DNR before the reanalysis begins.

10. Qualifications
    - DNR, per WAC 222-22-030, will determine the qualifications for participation in both the resource assessments and prescription teams for reanalyses. DNR will provide training to explain the resource assessment and reanalysis process to prescription teams.
    - The State of Washington requires an Engineering Geologist license for assessing and making recommendations for forest practices activities associated with potential unstable slopes and landforms (Appendices A and K). DNR established that Qualified Experts for FPA review of unstable slopes requires 3 years of experience evaluating unstable slopes in the forested environment (WAC 222-10-030(5)).
    - Modules other than mass wasting may require different qualifications. DNR will determine the qualifications for participants in reanalysis of these modules and prescriptions for these modules.

8.4 Reanalysis Process

1. Flow chart for the reanalysis process
   - The sponsors of the reanalysis are encouraged to create a flow chart of the assessment process and assign tasks. DNR in consultation with forest landowner(s), and analysts will determine timelines and milestones such as field work and report writing. DNR will identify reviewers and a schedule for the completion of the reanalysis will be outlined.

2. Maps
   - DNR will provide background maps for the reanalysis of the target module(s). Many of these resources are available to download from DNR's spatial GIS layers at http://www.dnr.wa.gov.
   - Forest landowner(s) assessment maps will follow map standards provided by DNR. Reanalysis maps pertinent to each target module(s) and resource assessment(s) will maintain the current approved watershed analysis maps' naming conventions and include new dates.

3. Resource Inventory
   - The target module(s) will drive the assessment requirements for the reanalysis. Maps or tables from the current approved analyses will be updated by the sponsor(s). Attribute requirements should follow the current approved WSA in order to be comparable and show changes in the condition of the watershed. Use the same numbering, classifying, and protocols outlined in the current approved analyses. DNR recommends using the current approved WSA mapping standards for reanalysis maps. Modern techniques such as LiDAR or higher resolution aerial photography, if available, should be used.

4. Field reconnaissance
   - The current board manual process for the target module(s) in Parts 2 and 3 will guide the appropriate level of field and or office review. Procedures and field protocols should be comparable with the current approved WSA and current version of the WSA Board Manual.

5. Review of historic and present conditions
   - The reanalysis should include a thorough review of the background information in the current approved module data. This data should inform the analyst on how to supplement that information for the period of time since the last current approved watershed analysis was completed. Analysts should review the entire WSA Report to gain an understanding of the watershed overall.

6. Tables and Matrices to update
   - The reanalysis of a module will update existing data sheets, attribute and summary tables, and any other scientific monitoring or collection records used in the current approved module assessments.

7. New Scientific Considerations
   - Generally use literature published since the approval date of the current approved watershed analysis (DNR has the approval date of all of the approved watersheds). The reference sections for each current approved module are a starting point for literature searches.

- Consider pertinent literature relevant to critical questions.
- Consider relationships to other Resource Modules (see causal mechanism reports within each current approved WSA).

8.5 Synthesis

Evaluate and compare the approved watershed analysis causal mechanism reports to the reanalysis modules to determine the reanalysis prescription's relationship to other modules.

1. Hazards, Resources, and "Triggers"
   a. Triggers, in the context of watershed analysis, are the cause for resource degradation. Look at the relationships between the new hazard assessments, resource sensitivities and triggers (i.e. synthesis report).
   b. Within the target module, complete the necessary reanalysis products (e.g., for mass wasting reanalysis, complete an updated landslide inventory; for riparian conditions, complete an updated shade hazard report using current stream typing information, etc.)
   c. For each necessary resource sensitivity reanalysis, compare current conditions to previous conditions (e.g., has fish habitat changed or have public works changed?).

2. Results
   a. Answer key questions pertaining to resource conditions, forest practices, and synthesis per Part 4 *Synthesis* within the current watershed analysis board manual.
   b. Map Products used during assessment (i.e. current landslide inventory, Mass Wasting Map Units, Riparian Shade Units, RMAP accomplishments, monitoring station locations, updated Timber Age Classes, etc.) should be consistent with the current approved WSA products for comparison.

8.6 Evaluate and Compare

Evaluate and compare the current approved watershed analysis prescriptions. Ask what worked and what did not work within the WSA.

1. Does the assessment incorporate the current science and methods?
   - Would new methods substantially change results of the assessment?
   - Would the new results likely affect prescriptions?

2. Was the resource assessment sound?
   - Did the assessment correctly identify and map problems related to forest practices, agricultural practices, and other human influences?

- Did the assessment correctly identify cause-and-effect linkages related to identified problems?
- Did the module correctly interpret effects of the situations identified?
- Was there a cause-and-effect relationship between extreme natural events and observed resource affects?

3. Causal Mechanisms
   - Should causal mechanism reports (CMRs) be created or significantly altered as a result of this new assessment?

4. Have there been FPAs within the current approved WSA mapped units?
   - Were prescriptions or standard rules implemented?
   - Were prescriptions or standard rules effective at protecting public resources?

5. Prescription Modifications Needed?
   - Do prescriptions incorporate current science?
   - Is there new information challenging the adequacy of prescriptions?
   - Are there new causal mechanisms that result in new prescriptions or can they be incorporated into existing prescriptions?
   - Do the resource sensitivity maps need to be updated?

8.7 Reanalysis Prescription Modifications

If prescription amendments or new prescriptions are needed, a prescription team will be convened. Prescriptions will be written and submitted to DNR for review. DNR will approve or disapprove the prescriptions to include in the final report.

1. Completion of Final Report
   a. Watershed analysis for the WAU is completed when the team produces the watershed analysis report, including associated causal mechanism reports, and prescriptions, if applicable.
   b. Prescriptions are attached to each target module(s) assessment.
   c. The final reanalysis report will require the sponsors to complete a SEPA nonproject environmental checklist and submit it to DNR.
   d. The proposed monitoring plan (if required) will also be attached.

2. Criteria for determining the completeness of reanalysis are:
   a. All critical questions were answered.
   b. Causal mechanism reports and statements on triggering mechanisms have been completed, if applicable.
   c. Final prescriptions were developed for each area of resource sensitivity, if applicable.

- If final prescriptions were not developed, an explanatory statement discussing this decision will be added to the final report.

d. Required maps have been finalized.
e. Completion of the target module report.

3. SEPA and Approval Process
   a. When DNR determines that the reanalysis is complete, they will accept or disapprove the watershed analysis within thirty days of receipt.
   b. DNR makes a threshold determination of the nonproject SEPA checklist, submits it to the SEPA center, and the SEPA checklist will be distributed for stakeholder review.
   c. SEPA comments will be accepted and evaluated for 30 days. DNR will issue a final threshold determination.
   d. The final watershed analysis will be distributed to landowners and implemented per WAC 222-22-090.