

**CHAPTER 11-56 APPENDIX B**

NONPOINT SOURCE POLLUTION CONTROL REQUIREMENTS FOR  
FORESTRY

**1. General Applicability**

(a) Requirements defined in this chapter shall be implemented by persons identified in section 11-56-3, as follows:

- (1) The requirements of this Appendix apply to all publicly-owned forest lands comprising more than 5 contiguous acres where silvicultural or commercial forestry operations are planned or conducted or, regardless of acreage, any road construction or reconstruction conducted as part of silvicultural or forestry activities, any road maintenance conducted as part of silvicultural or forestry activities, any revegetation of areas disturbed by harvesting operations or road construction as part of silvicultural or forestry activities, any streamside management zone within lands where silvicultural operations are planned or conducted, or any area where chemicals (fertilizers and pesticides) are used as part of silvicultural or commercial forestry operations.
- (2) Other forest lands where silvicultural or commercial forestry operations are planned or conducted may be subject to the requirements of this Appendix at the discretion of the director based on risk of harm to human or environmental health, as determined by the director. Forest lands determined by the director to be subject to the requirements of this Appendix will be provided written notice by the director.

(b) For forest lands that do not fall under the applicability of this Appendix, the director encourages voluntary development of a Water Pollution Prevention Plan to facilitate the implementation of the management measures contained in this Appendix.

## **2. Incorporation of Management Measures into Water Pollution Prevention Plans**

(a) The owner or operator of a silvicultural or commercial forestry operation subject to regulation shall incorporate water pollution reducing management measures into a Water Pollution Prevention Plan. At a minimum, Water Pollution Prevention Plans shall incorporate all appropriate management measures to prevent and control the specific sources of pollution identified in Section 4 of this Appendix.

(b) The owner or operator of a silvicultural or commercial forestry operation subject to this Appendix shall identify which management measures in Section 4 are required based upon the specific applicability of each management measure and its subparts. Each management measure identified as being applicable shall be implemented as detailed in the Water Pollution Prevention Plan developed pursuant to this chapter.

(c) Authorized management practices that satisfy management measure requirements shall be identified in the Water Pollution Prevention Plan.

(d) For discharges identified in section 11-56-3 that result from activities identified in this Appendix, where such discharges or activities are subject to an alternative regulatory mechanism that accomplishes the objectives of one or more of the management measures in section 4 of this Appendix, the Water Pollution Prevention Plan may include a

reference to the alternative regulatory mechanism in lieu of the specified management measure.

(e) The following documents may be submitted in lieu of a Water Pollution Prevention Plan provided that they address all applicable management measures in section 4:

- (1) Any BLNR- or DLNR-approved plan or permit which adopts, incorporates, or requires implementation of relevant BMPs from DOFAW's "Best Management Practices for Maintaining Water Quality in Hawaii" (February 1996); or
- (2) A forest management plan developed by a certified United States Department of Agriculture Natural Resources and Conservation Service (NRCS) Technical Service Provider and approved by the NRCS.

**3. Water Pollution Prevention Plan Exemptions.** Water Pollution Prevention Plans for publicly-owned forest lands managed by DOFAW are not required for as long as DOFAW's policy to implement relevant BMPs from DOFAW's *Best Management Practices for Maintaining Water Quality in Hawaii* (February 1996) on publicly-owned, DOFAW-managed lands is in effect.

**4. Management Measures Required for Specific Sources of Pollution**

(a) Preharvest Planning Management Measure

(1) Specific Applicability

(A) This management measure applies to commercial harvesting on areas greater

than five (5) acres and any associated road system construction or reconstruction conducted as part of normal silvicultural activities.

(B) This management measure does not apply to harvesting conducted for precommercial thinnings or noncommercial firewood cutting.

(2) Purpose. The objective of this management measure is to ensure that silvicultural activities, including timber harvesting, site preparation, and associated road construction, are conducted without significant nonpoint source pollutant delivery to streams and coastal areas.

(3) General Requirements

(A) Perform advance planning for forest harvesting that includes the following elements, where appropriate:

- (i) Identify the area to be harvested including location of waterbodies and sensitive areas such as wetlands, threatened or endangered aquatic species habitats, or high erosion hazard areas (landslide-prone areas) within the harvest unit.
- (ii) Time the activity for the season or moisture conditions when the least impact occurs.
- (iii) Consider potential water quality impacts and erosion and sedimentation control in the selection of silvicultural and regeneration systems, especially

for harvesting and site preparation.

- (iv) Reduce the risk of occurrence of landslides and severe erosion by identifying high erosion-hazard areas and avoiding harvesting in such areas to the extent practicable.
  - (v) Consider additional contributions from harvesting or roads to any known existing water quality impairments or problems in watersheds of concern.
- (B) Perform advance planning for forest road systems that includes the following elements, where appropriate:
- (i) Locate and design road systems to minimize, to the extent practicable, potential sediment generation and delivery to surface waters. Key components are: locate roads, landings, and skid trails to avoid, to the extent practicable, steep grades and steep hillslope areas, and to decrease the number of stream crossings; avoid, to the extent practicable, locating new roads and landings in Streamside Management Zones; and determine road usage and select the appropriate road standard.
  - (ii) Locate and design temporary and permanent stream crossings to prevent failure and control impacts from the road system. Key components are: size and site crossing structures to prevent

failure and, for fish-bearing streams, design crossings to facilitate fish passage.

- (iii) Ensure that the design of road prism and the road surface drainage are appropriate to the terrain and that road surface design is consistent with the road drainage structures.
- (iv) Use suitable materials to surface roads planned for all-weather use to support intended vehicle use.
- (v) Design road systems to avoid high erosion or landslide hazard areas. Identify these areas and consult a qualified specialist for design of any roads that must be constructed through these areas.

(4) Authorized Management Practices. Authorized management practices include but are not limited to:

- (A) Best management practices for pre-harvest planning and forest roads identified in *Best Management Practices for Maintaining Water Quality in Hawaii* (DOFAW, February 1996); and
- (B) Best management practices for preharvest planning identified in *National Management Measures to Control Nonpoint Source Pollution from Forestry* (EPA, EPA-841-B-05-001, April 2005).

(b) Streamside Management Zones (SMZs) Management Measure

- (1) Specific Applicability

- (A) This management measure applies to surface waters bordering or within the area of the silvicultural or commercial forestry operation.
  - (B) Manmade structures that may function as streams and other natural waterbodies, such as livestock ponds, swales, and water distribution systems, are not considered perennial waterbodies or streams.
- (2) Purpose. This management measure is intended to preserve SMZ integrity to protect water quality.
- (3) General Requirements
- (A) Establish and maintain a SMZ along surface waters that is sufficiently wide and includes a sufficient number of canopy species to buffer against detrimental changes in the temperature regime of the waterbody, to provide bank stability, and to withstand wind damage.
  - (B) Protect against soil disturbance in the SMZ and against delivery to the stream of sediments and nutrients generated by silvicultural or forestry activities, including harvesting.
  - (C) Manage the SMZ canopy species to provide a sustainable source of large woody debris needed for instream channel structure and aquatic species habitat.
- (4) Authorized Management Practices. Authorized management practices include but are not limited to:

Chapter 11-56

- (A) Streamside management zone BMPs identified in *Best Management Practices for Maintaining Water Quality in Hawaii* (DOFAW, February 1996); and
  - (B) Best management practices for streamside management areas identified in *National Management Measures to Control Nonpoint Source Pollution from Forestry* (EPA, EPA-841-B-05-001, April 2005).
- (c) Road Construction/Reconstruction Management Measure
- (1) Specific Applicability. This management measure applies to road construction and reconstruction operations for silvicultural purposes, including:
    - (A) The clearing phase: clearing to remove trees and woody vegetation from the road right-of-way;
    - (B) The pioneering phase: excavating and filling the slope to establish the road centerline and approximate grade;
    - (C) The construction phase: final grade and road prism construction and bridge, culvert, and road drainage installation; and
    - (D) The surfacing phase: placement and compaction of roadbed, road fill compaction, and surface placement and compaction (if applicable).
  - (2) Purpose. The goal of this management measure is to minimize delivery of sediment to surface waters during road construction and road reconstruction on forest lands.



- (3) General Requirements
  - (A) Follow preharvest planning requirements as described in subsection 0(a) of this Appendix when constructing or reconstructing the roadway.
  - (B) Follow design requirements for road surfacing and shaping as described in subsection 0(a) of this Appendix.
  - (C) Install road drainage structures according to designs planned under subsection 0(a) of this Appendix and regional storm return period and installation specifications. Match these drainage structures with terrain features and with road surface and prism designs.
  - (D) Guard against the production of sediment when installing stream crossings.
  - (E) Protect surface waters from slash and debris material from roadway clearing.
  - (F) Use straw bales, silt fences, mulching, or other favorable practices on disturbed soils on unstable cuts and fills.
  - (G) Avoid constructing new roads in SMZs, to the extent practicable.
- (4) Authorized Management Practices. Authorized management practices include but are not limited to:
  - (A) Best management practices for forest roads identified in *Best Management*

*Practices for Maintaining Water Quality in Hawaii* (DOFAW, February 1996); and

- (B) Best management practices for road construction/reconstruction identified in *National Management Measures to Control Nonpoint Source Pollution from Forestry* (EPA, EPA-841-B-05-001, April 2005).
  
- (d) Road Maintenance Management Measure
  - (1) Specific Applicability. This management measure applies to active and inactive roads constructed or used for silvicultural activities.
  
  - (2) Purpose. The objective of this management measure is to manage existing roads to maintain stability and utility and to minimize sedimentation and pollution from runoff-transported materials.
  
  - (3) General Requirements
    - (A) Avoid using roads, where possible, for timber hauling or heavy traffic during wet periods on roads not designed and constructed for these conditions.
  
    - (B) Evaluate the future need for a road and close roads that will not be needed. Leave closed roads and drainage channels in a stable condition to withstand storms.
  
    - (C) Remove drainage crossings and culverts if there is a reasonable risk of plugging or failure from lack of maintenance.

- (D) Following completion of harvesting, close and stabilize temporary spur roads and seasonal roads to control and direct water away from the roadway. Remove all temporary stream crossings.
  - (E) Inspect roads to determine the need for structural maintenance. Conduct maintenance practices, when conditions warrant, including cleaning and replacement of deteriorated structures and erosion controls, grading or seeding of road surfaces, and, in extreme cases, slope stabilization or removal of road fills, where necessary to maintain structural integrity.
  - (F) Conduct maintenance activities, such as dust abatement, so that chemical contaminants or pollutants are not introduced into surface waters, to the extent practicable.
  - (G) Properly maintain permanent stream crossings and associated fills and approaches to reduce the likelihood that stream overflow will divert onto roads and that fill erosion will occur if the drainage structures become obstructed.
- (4) Authorized Management Practices. Authorized management practices include but are not limited to:
- (A) Best management practices for forest roads identified in *Best Management Practices for Maintaining Water Quality in Hawaii* (DOFAW, February 1996); and
  - (B) Best management practices for road management identified in *National*

*Management Measures to Control Nonpoint  
Source Pollution from Forestry (EPA,  
EPA-841-B-05-001, April 2005).*

- (e) Timber Harvesting Management Measure
  - (1) Specific Applicability
    - (A) This management measure applies to all harvesting, yarding, and hauling conducted as part of normal silvicultural activities on harvest units larger than five (5) acres.
    - (B) This management measure does not apply to harvesting conducted for precommercial thinnings or noncommercial firewood cutting.
  - (2) Purpose. The purpose of this management measure is to minimize sedimentation resulting from the siting and operation of timber harvesting, and to manage petroleum products properly.
  - (3) General Requirements
    - (A) The timber harvesting management measure consists of implementing the following:
      - (i) Timber harvesting operations with skid trails or cable yarding shall follow layouts determined under subsection 0(a) of this Appendix.
      - (ii) Install landing drainage structures to avoid sedimentation, to the extent practicable. Disperse landing drainage over side slopes.

- (iii) Construct landings away from steep slopes and reduce the likelihood of fill slope failures. Protect landing surfaces used during wet periods. Locate landings outside of SMZs. Minimize the size of landing areas.
  - (iv) Protect stream channels and significant ephemeral drainages from logging debris and slash material.
  - (v) Use appropriate areas for petroleum storage, draining, and dispensing. Establish procedures to contain and treat spills. Recycle or properly dispose of all waste materials in accordance with State law.
- (B) For cable yarding:
- (i) Limit yarding corridor gouge or soil plowing by properly locating cable yarding landings.
  - (ii) Locate corridors for SMZs in accordance with subsection 0(b) of this Appendix.
  - (iii) Cable yarding shall not be done across perennial or intermittent streams, except at improved stream crossings.
- (C) For groundskidding:
- (i) Within SMZs, operate groundskidding equipment only at stream crossings, to the extent practicable. In SMZs, fell and

endline trees to avoid sedimentation.

- (ii) Use improved stream crossings for skid trails which cross flowing drainages. Construct skid trails with adequate drainage structures to disperse runoff.
- (iii) On steep slopes, use cable systems rather than groundskidding where groundskidding may cause excessive sedimentation.
- (iv) Groundskidding shall not be done across perennial or intermittent streams, except at improved stream crossings.

(4) Authorized Management Practices. Authorized management practices include but are not limited to:

- (A) Best management practices for timber harvesting and forest roads (temporary access roads and landings) identified in *Best Management Practices for Maintaining Water Quality in Hawaii* (DOFAW, February 1996); and
- (B) Best management practices for timber harvesting identified in *National Management Measures to Control Nonpoint Source Pollution from Forestry* (EPA, EPA-841-B-05-001, April 2005).

(f) Site Preparation and Forest Regeneration Management Measure

- (1) Specific Applicability. This management measure applies to all site preparation and regeneration activities conducted as part of

normal silvicultural activities on harvested units larger than five (5) acres.

- (2) Purpose. This management measure is intended to confine on-site potential nonpoint source pollution and erosion resulting from site preparation and the regeneration of forest stands.
- (3) General Requirements
  - (A) Select a method of site preparation and regeneration suitable for the site conditions.
  - (B) Conduct mechanical tree planting and ground-disturbing site preparation activities on the contour of erodible terrain.
  - (C) Do not conduct mechanical site preparation and mechanical tree planting in SMZs.
  - (D) Protect surface waters from logging debris and slash material.
  - (E) Suspend operations during wet periods if equipment used begins to cause excessive soil disturbance that will increase erosion.
  - (F) Locate windrows at a safe distance from drainages and SMZs to control movement of the material during high runoff conditions.
  - (G) Conduct bedding operations in high water-table areas during dry periods of the year. Conduct bedding in erodible areas on the contour.

- (H) Protect small ephemeral drainages when conducting mechanical tree planting.
- (4) Authorized Management Practices. Authorized management practices include but are not limited to:
  - (A) Best management practices for reforestation and timber harvesting (mechanical site preparation) identified in "Best Management Practices for Maintaining Water Quality in Hawaii" (DOFAW, February 1996); and
  - (B) Best management practices for site preparation and forest regeneration identified in *National Management Measures to Control Nonpoint Source Pollution from Forestry* (EPA, EPA-841-B-05-001, April 2005).
- (g) Fire Management Measure
  - (1) Specific Applicability. This management measure applies to all prescribed burning conducted as part of normal silvicultural activities on all harvested units larger than five (5) acres for wildfire suppression and rehabilitation on forest lands.
  - (2) Purpose. The purpose of this management measure is to minimize potential nonpoint source pollution and erosion resulting from prescribed fire for site preparation and from the methods used for wildfire control or suppression on forest lands.
  - (3) General Requirements. Prescribe fire or suppress wildfire in a manner which reduces potential nonpoint source pollution of surface waters:



- (A) Prescribed fire shall not cause excessive sedimentation due to the combined effect of removal of canopy species and the loss of soil-binding ability of subcanopy and herbaceous vegetation roots.
  - (B) Prescriptions for fire shall protect against excessive erosion or sedimentation, to the extent practicable.
  - (C) All bladed firelines, for prescribed fire and wildfire, shall be plowed on contour or stabilized with water bars and/or other appropriate techniques if needed to control excessive sedimentation or erosion of the fireline.
  - (D) Wildfire suppression and rehabilitation shall consider possible nonpoint source pollution of watercourses, while recognizing the safety and operational priorities of fighting wildfires.
- (4) Authorized Management Practices. Authorized management practices include but are not limited to:
- (A) Best management practices for wildfire damage control and reclamation/prescribed burn, fireline construction and maintenance, and prescribed burn identified in *Best Management Practices for Maintaining Water Quality in Hawaii* (DOFAW, February 1996); and
  - (B) Best management practices for fire management identified in *National Management Measures to Control Nonpoint*

*Source Pollution from Forestry* (EPA, EPA-841-B-05-001, April 2005).

(h) Revegetation of Disturbed Areas Management Measure

- (1) Specific Applicability. This management measure applies to all disturbed areas resulting from harvesting, road building, and site preparation conducted as part of normal silvicultural activities. Disturbed areas are those localized areas within harvest units or road systems where mineral soil is exposed or agitated (e.g., road cuts, fill slopes, landing surfaces, cable corridors, or skid trail ruts).
- (2) Purpose. The purpose of this management measure is to prevent sediment and other pollutants from harvested, burned, or other disturbed areas from entering State waters. Revegetating disturbed areas stabilizes the soil in these areas, reduces erosion, and helps to prevent sediment and pollutants associated with sediment from entering nearby surface waters.
- (3) General Requirements
  - (A) Using seeding or planting, revegetate areas disturbed by harvesting operations or road construction promptly after completion of the earth-disturbing activity. Local growing conditions should dictate the timing for establishment of vegetative cover.
  - (B) Use mixes of species and treatments developed and tailored for successful vegetation establishment for the region or area.

- (C) Prioritize initial revegetation efforts in disturbed areas in SMZs or the steepest areas of disturbance near drainages.
- (4) Authorized Management Practices. Authorized management practices include but are not limited to:
  - (A) Best management practices for reforestation, wildfire damage control and reclamation/prescribed burn, and timber harvesting (skidding) in *Best Management Practices for Maintaining Water Quality in Hawaii* (DOFAW, February 1996); and
  - (B) Best management practices for revegetation of disturbed areas identified in *National Management Measures to Control Nonpoint Source Pollution from Forestry* (EPA, EPA-841-B-05-001, April 2005).
- (i) Forest Chemical Management Measure
  - (1) Specific Applicability
    - (A) This management measure applies to all fertilizer and pesticide applications (including biological agents) conducted as part of normal silvicultural or commercial forestry activities.
    - (B) This management measure applies to the transportation, storage, mixing, loading, application, cleanup, and disposal of chemicals used in silvicultural and commercial forestry operations.

Chapter 11-56

- (2) Purpose. The purpose of this management measure is to prevent pesticides and fertilizers used in forest management from entering State waters.
- (3) General Requirements. Use chemicals only when necessary for forest management and in accordance with the following activities to reduce the movement of forest chemicals off-site during and after application:
  - (A) Conduct applications by skilled and, where required, licensed applicators according to the registered use, with special consideration given to impacts to nearby surface waters and groundwater.
  - (B) Carefully prescribe the type and amount of pesticides appropriate for the insect, fungus, or herbaceous species.
  - (C) Establish and identify buffer areas for surface waters for applications, including aerial applications.
  - (D) Prior to applications of pesticides and fertilizers, inspect the mixing and loading process and the calibration of equipment and identify the appropriate weather conditions, the spray area, and buffer areas for surface waters.
  - (E) Immediately report accidental spills of pesticides or fertilizers into surface waters to the appropriate State and local agencies. Develop an effective spill contingency plan to contain spills.

- (4) Authorized Management Practices. Authorized management practices include but are not limited to:
- (A) Best management practices for silvicultural chemical management identified in *Best Management Practices for Maintaining Water Quality in Hawaii* (DOFAW, February 1996); and
  - (B) Best management practices for forest chemical management identified in *National Management Measures to Control Nonpoint Source Pollution from Forestry* (EPA, EPA-841-B-05-001, April 2005).

