

**HAWAII'S MANAGEMENT MEASURES**  
**FOR THE**  
**COASTAL NONPOINT POLLUTION CONTROL**  
**PROGRAM**

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For

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Hawaii's Management Measures (MMs) form the core of Hawaii's Coastal Nonpoint Source Pollution Control Program and provide goals for the management of NPS pollution to which various management practices are applied. MMs are defined in CZARA section 6217(g)(5) as "economically achievable measures for the control of the addition of pollutants from existing and new categories and classes of nonpoint sources of pollution, which reflect the greatest degree of pollutant reduction achievable through the application of the best available nonpoint pollution control practices, technologies, processes, siting criteria, operating methods, or other alternatives."

The measures are organized into six categories or sectors,

1. Agriculture;
2. Forestry (Silviculture);
3. Urban Areas;
4. Marinas and Recreational Boating;
5. Hydromodification Activities; and
6. Wetlands, Riparian Areas, and Vegetated Treatment Systems.

These measures are based on the federal guidance and will apply to the land use activities known to be major causes of NPS pollution. Not all of the identified MMs may be needed to address the NPSs at a specific site. For example, forestry and construction operations that do not use chemicals would not need to implement chemical-control MMs. Similarly, farms or other agriculture enterprises that do not have animals as part of the enterprise would not need to implement the MMs that address confined animal facilities or grazing. Other operations that have more than one source to address may need to employ two or more measures to address the multiple sources. Application of the measures should be coordinated to produce an overall system that adequately addresses all sources for the site in a cost-effective manner. The overall goal of implementing these measures is to protect or restore water quality and habitat.

# AGRICULTURE

## **A. Introduction**

There are six management measures that apply to agriculture. These management measures address the management of polluted runoff from all types of agricultural operations in Hawaii.

1. Erosion and Sediment Control
2. Wastewater and Runoff from Confined Facility
3. Nutrients
4. Pesticide
5. Grazing
6. Irrigation Water

The following table provides a summary of authorities that apply to the agriculture management measures. A written description of the specific authorities and implementation tools are provided under each management measure in Section B. Appendix A contains tables providing the relevant language for each regulatory and non-regulatory mechanism for each management measure.

Authority		Responsible Agency	Erosion & Sed. Control	Confined Animals	Nutrient Mgt.	Pesticides Mgt.	Grazing Mgt.	Irrigation Mgt.
<b>Local</b>	Chapter 22-7, KCC, Grading, Grubbing and Stockpiling	Kauai County DPW	X					
	Chapter 10 HCC, Soil Erosion and Sediment Control	Hawaii County DPW	X					
	Chapter 20.08, MCC, Soil Erosion and Sedimentation Control	Maui County DPW	X					
	Chapter 14-13 to 14-16, ROH, Grading, Soil Erosion and Sediment Control	City and County of Honolulu	X					
<b>State</b>	Chapter 149A, HRS Hawaii Pesticides Law	DOA				X		X
	Chapter 171, HRS Mgt and Disposition of Public Lands	DLNR	X	X	X	X	X	X
	Chapter 180, HRS Soil and Water Conservation Districts	local SWCDs	X	X	X	X	X	X
	Chapter 342D, HRS Water Pollution	DOH	X	X	X	X	X	X
	Chapter 340E, HRS Safe Drinking Water	DOH		X	X	X		X
	Chapter 342H, HRS Solid Waste Pollution	DOH		X	X			
	Chapter 4-66, HAR Pesticides	DOA				X		X
	Chapter 11-21, HAR Cross Connection and Back-Flow Control	DOH		X	X	X		X
	Chapter 11-23, HAR Underground Injection Control	DOH		X	X	X		X
<b>State</b>	Chapter 11-26, HAR Vector Control	DOH		X				
	Chapter 11-62, HAR Wastewater Systems	DOH		X				
	Farm*A*Syst Program, University of Hawaii Cooperative Extension Svc.	Univ. of Hawaii CES	X	X	X	X	X	X
	<i>DOH Guidelines for Livestock Waste Management (1996)</i>	DOH		X				
	<i>Plant Nutrient Management in Hawaii's Soils: Approaches for Tropical and Subtropical Agriculture (2000)</i>	Univ. of Hawaii CES			X			
<b>Federal</b>	NRCS's <i>Hawaii Field Office Technical Guides (eFOTG)</i>	NRCS	X	X	X	X	X	X

## **B. Management Measures**

### **Erosion and Sediment Control Management Measure**

**Apply any combination of conservation structural and management practices based on U.S. Department of Agriculture – Natural Resources Conservation Service standards and specifications to minimize the delivery of sediment from agricultural lands to surface waters, or**

**Design and install a combination of management and structural practices to settle the settleable solids and associated pollutants in runoff delivered from the contributing area for storms of up to and including a 10-year, 24-hour frequency.**

**Applicability:** This management measure applies to activities that cause erosion on agricultural land and on land that is converted from other land uses to agriculture. Agricultural lands include:

- Cropland;
- Irrigated cropland;
- Range and pasture;
- Orchards;
- Permanent hayland;
- Managed forests;
- Specialty crop production; and
- Nursery crop production.

The intent of the management measure is to protect surface and ground water quality. Some waterbodies, such as farm ponds, have been created to water livestock. Protecting the water quality of these artificial water storage areas does not have the same priority as protecting natural streams and waterbodies.

**Practices:** NRCS's *Hawaii Field Office Technical Guide* (eFOTG) contains many standards related to erosion and sediment control, among them: channel bank vegetation (322); deep tillage (324); conservation cover (327); conservation crop rotation (328); residue and tillage management (329); contour farming (330); cover crop (340); critical area planting (342); diversion (362); field border (386); filter strip (393); grade stabilization structure (410); grassed waterway (412); mulching (484); sediment basin (350); streambank and shoreline protection (580); strip-cropping (585); terrace (600); water and sediment control basin (638).

**See Appendix for Responsible Agencies and Authorities**

## Wastewater and Runoff from Confined Animal Facility Management Measure

Limit the discharge from the confined animal facility to surface waters by:

- (1) Containing both the wastewater *and* the contaminated runoff from confined animal facilities that is caused by storms up to and including a 25-year, 24-hour frequency storm event. Storage structures should be of adequate capacity to allow for proper wastewater utilization and constructed so they prevent seepage to groundwater; and
- (2) Managing stored contaminated runoff and accumulated solids from the facility through an appropriate waste utilization system.

**Applicability:** This management measure applies to all new confined animal facilities regardless of size and to all existing confined animal facilities that contain the following number of head or more:

	Head	Animal Units <sup>1</sup>
Beef Feedlots	50	50
Stables (horses)	100	200
Dairies	20	28
Layers	5,000	50 <sup>2</sup> 165 <sup>3</sup>
Broilers	5,000	50 165
Turkeys	5,000	900
Swine	100	40

Except those facilities that are required by Federal regulation 40 CFR 122.23 to apply for and receive discharge permits. That section applies to “concentrated animal feeding operations,” which are defined in 40 CFR Part 122, Appendix B. In addition, 40 CFR 122.23(c) provides that the Director of a National Pollutant Discharge Elimination System (NPDES) discharge permit program may designate any animal feeding operation as a concentrated animal feeding operation upon determining that it is a significant contributor of water pollution. This has the effect of subjecting the operation to the NPDES permit program requirements. If a confined animal facility has a NPDES permit, then it is exempt from this management measure.

Facilities containing fewer than the number of head listed above are not subject to the requirements of this management measure.

A *confined animal facility* is a lot or facility (other than an aquatic animal production facility) where the following conditions are met:

- Animals (other than aquatic animals) have been, are, or will be stabled or confined and fed or maintained for a total of 45 days or more in any 12-month period, and

<sup>1</sup> *Animal unit:* A unit of measurement for any animal feeding operation calculated by adding the following numbers: the number of slaughter and feeder cattle multiplied by 1.0, plus the number of mature dairy cattle multiplied by 1.4, plus the number of swine weighing over 25 kilograms (approximately 55 pounds) multiplied by 0.4, plus the number of sheep multiplied by 0.1, plus the number of horses multiplied by 2.0 (40 CFR Part 122, Appendix B).

<sup>2</sup> If facility has a liquid manure system, as used in 40 CFR Section 122, Appendix B.

<sup>3</sup> If facility has continuous overflow watering, as used in 40 CFR Section 122, Appendix B.

- Crops, vegetation forage growth, or post-harvest residues are not sustained in the normal growing season over any portion of the lot or facility.

Two or more animal facilities under common ownership are considered, for the purposes of these guidelines, to be a single animal facility if they adjoin each other or if they use a common area or system for the disposal of wastes.

Confined animal facilities, as defined above, include areas used to grow or house the animals, areas used for processing and storage of product, manure and runoff storage areas, and silage storage areas.

Wastewater and runoff from confined animal facilities are to be controlled under this management measure. Runoff includes any precipitation that comes into contact with any manure, litter, or bedding. Wastewater is water discharged in the operation of an animal facility as a result of any or all of the following: animal or poultry watering; washing, cleaning, or flushing pens, barns, manure pits, or other animal facilities; washing or spray cooling of animals; and dust control.

**Practices:** NRCS's *Hawaii Field Office Technical Guide* (eFOTG) contains many standards related to confined animal facilities, among them: waste storage facility (313); composting facility (317); waste treatment lagoon (359); waste facility cover (367); roof runoff structure (558); heavy use area protection (561); amendments for treatment of agricultural waste (591); waste treatment (629); solid/liquid waste separation facility (632); waste utilization (633); and manure transfer (634).

**See Appendix for Responsible Agencies and Authorities**

## Nutrient Management Measure

Develop, implement, and periodically update a nutrient management plan to: (1) apply nutrients at rates necessary to achieve realistic crop yields, (2) improve the timing of nutrient application, and (3) use agronomic crop production technology to increase nutrient use efficiency. When the source of the nutrients is other than commercial fertilizer, determine the nutrient value. Determine and credit the nitrogen contribution of any legume crop. Soil and/or plant tissue testing should be used at a suitable interval. Nutrient management plans contain the following core components:

- (1) Farm and field maps showing acreage, crops, soils, and waterbodies.
- (2) Realistic yield expectations for the crop(s) to be grown, based on achievable yields for the crop. Individual producer constraints and other producer's yields would be considered in determining achievable yields.
- (3) A summary of the soil condition and nutrient resources available to the producer, which at a minimum would include:
  - An appropriate mix of soil (pH, P, K) and/or plant tissue testing or historic yield response data for the particular crop;
  - Nutrient analysis of manure, sludge, mortality compost (birds, pigs, etc.), or effluent (if applicable);
  - Nitrogen contribution to the soil from legumes grown in the rotation (if applicable); and
  - Other significant nutrient sources (e.g., irrigation water).
- (4) An evaluation of field limitations based on environmental hazards or concerns, such as:
  - Lava tubes, shallow soils over fractured bedrock, and soils with high leaching or runoff potential,
  - Distance to surface water,
  - Highly erodible soils, and
  - Shallow aquifers.
- (5) Best available information is used in developing recommendations for the appropriate mix of nutrient sources and requirements for the crops.
- (6) Identification of timing and application methods for nutrients to: provide nutrients at rates necessary to achieve realistic crop yields; reduce losses to the environment; and avoid applications as much as possible during periods of leaching or runoff.
- (7) Methods and practices used to prevent soil erosion or sediment loss.
- (8) Provisions for the proper calibration and operation of nutrient application equipment.

**Applicability:** This management measure applies to activities associated with the application of nutrients, including both manures and commercial fertilizers, to agricultural lands.

**Practices:** NRCS's *Hawaii Field Office Technical Guide* (eFOTG) contains a standard related to nutrient management (590), intended to help operators manage the amount, source, placement, form and timing of the application of plant nutrients and soil amendments.

*Plant Nutrient Management in Hawaii's Soils: Approaches for Tropical and Subtropical Agriculture* (2000) also describes best management practices that can be used to assure proper management of nutrients.

**See Appendix for Responsible Agencies and Authorities**



## Pesticide Management Measure

To eliminate the unnecessary release of pesticides into the environment and to reduce contamination of surface water and ground water from pesticides:

- (1) Use integrated pest management strategies where available that minimize chemical uses for pest control.
- (2) Manage pesticides efficiently by:
  - (a) calibrating equipment;
  - (b) using appropriate pesticides for given situation and environment;
  - (c) using alternative methods of pest control; and
  - (d) minimizing the movement of pest control agents from target area.
- (3) Use anti-backflow devices on hoses used for filling tank mixtures.
- (4) Enhance degradation or retention by increasing organic matter content in the soil or manipulating soil pH.

**Applicability:** This management measure applies to activities associated with the application of pesticides to agricultural lands.

**Practices:** NRCS's *Hawaii Field Office Technical Guide* (eFOTG) contains several standards related to pesticides, including pest management (595). This standard outlines practices to utilize environmentally-sensitive prevention, avoidance, monitoring and suppression strategies to manage weeds, insects, diseases, animals and other organisms (including invasive and non-invasive species) that directly or indirectly cause damage or annoyance.

**See Appendix for Responsible Agencies and Authorities**

## Grazing Management Measure

### Protect range, pasture and other grazing lands:

- (1) By implementing one or more of the following to protect sensitive areas (such as streambanks, wetlands, estuaries, ponds, lake shores, near coastal waters/ shorelines, and riparian zones):
  - (a) Exclude livestock,
  - (b) Provide stream crossings or hardened watering access for drinking,
  - (c) Provide alternative drinking water locations,
  - (d) Locate salt and additional shade, if needed, away from sensitive areas, or
  - (e) Use improved grazing management (*e.g.*, herding) to reduce the physical disturbance and reduce direct loading of animal waste and sediment caused by livestock; and
- (2) By achieving either of the following on all range, pasture, and other grazing lands not addressed under (1):
  - (a) Implement range and pasture conservation and management practices that apply the progressive planning approach of USDA-NRCS following the standards and specifications contained in the FOTG that achieve an acceptable level of treatment to reduce erosion, and/or
  - (b) Maintain range, pasture, and other grazing lands in accordance with activity plans established by the Division of Land Management of DLNR, federal agencies managing grazing land, or other designated land management agencies.

**Applicability:** The management measure applies to activities on range, irrigated and non-irrigated pasture, and other grazing lands used by domestic livestock. Range is those lands on which the native vegetation (climax or natural potential plant community) is predominantly grasses, grasslike plants, forbs, or shrubs suitable for grazing or browsing use. Range includes natural grassland, savannas, many wetlands, some deserts, tundra, and certain forb and shrub communities. Pastures are those lands that are primarily used for the production of adapted, domesticated forage plants for livestock. Other grazing lands include woodlands, native pastures, and croplands producing forages.

The major differences between range and pasture are the kind of vegetation and level of management that each land area receives. In most cases, range supports native vegetation that is extensively managed through the control of livestock rather than by agronomy practices, such as fertilization, mowing, irrigation, etc. Range also includes areas that have been seeded with introduced species, but which are extensively managed like native range. Pastures are represented by those lands that have been seeded, usually with introduced species or in some cases with native plants, and which are intensively managed using agronomy practices and control of livestock.

The intent of the management measure is to protect surface and ground water quality. Some waterbodies, such as farm ponds, have been created to water livestock. Protecting the water quality of these artificial water storage areas does not have the same priority as protecting natural streams and waterbodies.

**Practices:** Of particular interest to the implementation of this management measure is NRCS's standard and specifications for Prescribed Grazing (528). This specification provides guidance for developing a grazing plan that conforms to all applicable federal, state, and local laws. It seeks measures to avoid adverse effects to endangered, threatened, and candidate species and their habitats; and identifies periods of grazing, resting, and other treatment activities for each management

unit. It also recommends developing a (1) contingency plan that details potential problems (*e.g.*, severe drought, flooding, wildfire) and serves as a guide for adjusting the grazing prescription to ensure resource management and economic feasibility without resource degradation and (2) monitoring plan with appropriate records to assess whether the grazing strategy is meeting objectives.

**See Appendix for Responsible Agencies and Authorities**

## Irrigation Water Management Measure

To reduce nonpoint source pollution of surface waters caused by irrigation:

- (1) Operate the irrigation system so that the timing and amount of irrigation water applied match crop water needs. This will require, as a minimum: (a) the measurement of soil-water depletion volume and the volume of irrigation water applied; (b) uniform application of water; and (c) application rate which does not exceed infiltration rate in the field.
- (2) When chemigation is used, include backflow preventers for wells, minimize the harmful amounts of chemigated waters that discharge from the edge of the field, and control deep percolation. In cases where chemigation is performed with furrow irrigation systems, a tailwater management system may be needed.

The following limitations and special conditions apply:

- (1) In some locations, irrigation return flows are subject to other water rights or are required to maintain stream flow. In these special cases, on-site reuse could be precluded and would not be considered part of the management measure for such locations.
- (2) By increasing the water use efficiency, the discharge volume from the system will usually be reduced. While the total pollutant load may be reduced somewhat, there is the potential for an increase in the concentration of pollutants in the discharge. In these special cases, where living resources or human health may be adversely affected and where other management measures (nutrients and pesticides) do not reduce concentrations in the discharge, increasing water use efficiency would not be considered part of the management measure.
- (3) The time interval between the order for and the delivery of irrigation water to the farm may limit the irrigator's ability to achieve the maximum on-farm application efficiencies that are otherwise possible.
- (4) In some locations, leaching is necessary to control salt in the soil profile. Leaching for salt control should be limited to the leaching requirement for the root zone.
- (5) Where leakage from delivery systems or return flows supports wetlands or wildlife refuges, it may be preferable to modify the system to achieve a high level of efficiency and then divert the "saved water" to the wetland or wildlife refuge. This will improve the quality of water delivered to wetlands or wildlife refuges by preventing the introduction of pollutants from irrigated lands to such diverted water.
- (6) In some locations, sprinkler irrigation is used for crop cooling or other benefits (*e.g.*, watercress). In these special cases, applications should be limited to the amount necessary for crop protection, and applied water should not contribute to erosion or pollution.

**Applicability:** This management measure applies to activities on irrigated lands, including agricultural crop and pasture land (except for isolated fields of less than 10 acres in size that are not contiguous to other irrigated lands); orchard land; specialty cropland; and nursery cropland. Those land users already practicing effective irrigation management in conformity with the irrigation water management measure may not need to purchase additional devices to measure soil-water depletion or the volume of irrigation water applied, and may not need to expend additional labor resources to manage the irrigation system.

**Practices:** NRCS's *Hawaii Field Office Technical Guide* (eFOTG) contains many standards related to irrigation water management, among them: irrigation water conveyance, high pressure (430DD); irrigation water conveyance, low pressure (430EE); irrigation water conveyance, steel pipeline (430FF); irrigation storage reservoir (436); irrigation system, micro-irrigation (441); irrigation system, sprinkler (442); irrigation system, surface and subsurface (443); irrigation water management (449); irrigation land leveling (464); irrigation regulating reservoirs (552); spring development (574); structure for water control (587); and water harvesting catchment (636).

**See Appendix for Responsible Agencies and Authorities**

## FORESTRY

### A. Introduction

There are ten management measures that apply to forestry. These management measures address the management of polluted runoff from all types of forestry operations in Hawaii.

1. Preharvest Planning
2. Streamside Management Zone
3. Road Construction/Reconstruction
4. Road Management
5. Timber Harvesting
6. Site Preparation and Forest Regeneration
7. Fire management
8. Re-vegetation of Disturbed Areas
9. Forest Chemical Management
10. Wetlands Forest Management

Hawaii's forestry program is a voluntary, incentive-driven program which uses a manual of forestry best management practices (BMPs). Forestry generally occurs on agricultural lands and conservation lands designed for commercial forest use.

All commercial forestry activities conducted on public (State) leased lands or undertaken on private lands as part of a cooperative Forest Stewardship project or Tree Farm plan must implement relevant BMPs contained in *Best Management Practices for Maintaining Water Quality in Hawaii* (June 1998). The manual was adopted by the Board of Land and Natural Resources (BLNR) at its October 10, 1997 meeting. The manual addresses the (g) guidance management measures and encourages implementation of appropriate best management practices.

While forestry operations are allowed within the "Resource" subzone of the State Conservation District, they are required to have a Conservation District Use Permit (CDUP) under Chapter 13-5, HAR, and implement an approved management plan. Forestry-related management activities (*e.g.*, salvage logging) on State forest reserve lands also require a permit.

A significant portion of potential forestry operations in Hawaii will likely occur on private lands within the Agricultural District, which are outside the purview of DLNR. However, forestry activities involving earth movement would require a County grading and grubbing permit unless otherwise exempted from these requirements. In most cases, the landowner agrees to work with the local soil and water conservation district (SWCD) to develop and implement an approved conservation plan in order to be exempted from the requirements of the respective county grading ordinances.

#### Hawaii Forest Stewardship Program

Hawaii's Forest Stewardship Program (FSP) was established under Chapter 195F, HRS, and is administered by DLNR's Department of Forestry and Wildlife (DOFAW) under Chapter 13-109, HAR. It provides technical and financial assistance to owners of non-industrial private forest land. To be eligible for the program, applicants must own or lease at least 5 contiguous acres of forested or formerly forest land and intend to actively manage the land to enhance forest resource values for both private and public benefit. The State will provide cost-share assistance to land manager to develop and/or implement a management plan under contract agreement. Environmental assessments are required if the management plan includes the establishment of timber with the intent of eventual harvesting or the construction of fences. Grant management objectives eligible for cost-share assistance are: forest stewardship management plan development; growth and management of forests for non-industrial timber and other forest products; native species restoration; agroforestry (the forestry component only); windbreaks (to protect forestry project areas); watershed, riparian, and/or wetland protection and improvement; forest recreation

enhancement; native wildlife habitat enhancement; and native forest conservation. *A Forest Stewardship Handbook* (DLNR 2007) describes the program and project proposal and forest stewardship management plan formats. The program contains a penalty payback provision to be applied in the event that a landowner terminates any approved practice required under the forest stewardship management plan.

### Tree Farm Plans

Chapter 186, HRS, "Tree Farms" provides a designation for lands engaged in sustained production of forest products in quantities sufficient to establish a business. Eligible lands are private or leased (20 years or more) lands within the agricultural district or on degraded forest and pasture lands within the permitted State conservation district subzone designated for forest use. DLNR administered the program under Chapter 13-106, HAR, "Rules for Establishing Tree Farms." Under these rules, land owners agree to manage land in accordance with a forest management plan approved by DLNR, which addresses the establishment, maintenance, and harvest of forest products in a sustained manner while exercising sound conservation prescriptions, in exchange for designation as a Tree Farm property. The statute also provides a "right to harvest" as an incentive. As an additional incentive, when a forestry operation has received approval of its management plan, it can petition the respective county to qualify for the lower property tax rate for tree farms. Failure to comply with the management plan and agreement with DLNR can result in the cancellation of the Tree Farm designation, which can have negative tax consequences.

### Education and Outreach

Hawaii's Pollution Prevention Information Project (HAPPI) has been developed by the Water Quality program of the University of Hawaii Cooperative Extension Service (CES) to make the Farm\*A\*Syst and Home\*A\*Syst materials effective and useful in Hawaii. It is an assessment and educational tool that addresses specific pollution risks in Hawaii. The materials consist of fact sheets and worksheets. Their development was funded by CWA 319(h) funds through DOH's Polluted Runoff Control Program.

One of the publications developed under the HAPPI program is entitled *Minimizing Pollution Risk from Forest and Streamside Areas Management* (HAPPI-Farm 10; December 2000). The four-page publication is a combination of factual materials and suggestions, risk assessment table, and action plan table to be completed after the self-assessment is done. The text covers both forests and riparian areas and is intended for "owners and managers of properties with tree farms, forests, or large riparian areas of 1/2 acre or more." It points out that sediment is the most important NPS pollutant derived from these areas, advocates development of an operation-specific management plan, and refers to the BMP manual developed by DLNR.

CES also has a forestry extension specialist based out of the University of Hawaii at Hilo since 1998. The forestry extension program has been focusing on planting and growing activities, not on harvesting, since few local landowners are at the harvest stage yet.

The following table provides a summary of authorities that apply to the forestry management measures. A written description of the specific authorities and implementation tools are provided under each management measure in Section B. Appendix A contains tables providing the relevant language for each regulatory and non-regulatory mechanism for each management measure.

Authority		Responsible Agency	Pre-harvest Planning	SMZs	Road Constr	Road Mgt	Timber Harvest	Site Prep & Forest Regen	Fire Mgt.	Reveg of Disturbed Areas.	Forest Chemical Mgt.	Wetland Forest Mgt.
<b>Local</b>	Chapter 22-7, KCC, Grading, Grubbing and Stockpiling	Kauai County DPW			X			X		X		
	Chapter 10 HCC, Soil Erosion and Sediment Control	Hawaii County DPW			X			X		X		
	Chapter 20.08, MCC, Soil Erosion and Sedimentation Control	Maui County DPW			X			X		X		
	Chapter 14-13 to 14-16, ROH, Grading, Soil Erosion and Sediment Control	City and County of Honolulu			X			X		X		
<b>State</b>	Chapter 149A, HRS Hawaii Pesticides Law	DOA									X	
	Chapter 171, HRS Mgt and Disposition of Public Lands	DLNR	X	X	X							
	Chapter 174C, HRS Hawaii Water Code	DLNR		X	X	X	X	X		X	X	X
	Chapter 180, HRS Soil and Water Conservation Districts	local SWCDs	X	X	X	X	X	X	X	X	X	X
	Chapter 183, HRS Forest Reserves, Water Development, Zoning	DLNR	X	X	X	X	X	X	X	X	X	X
	Chapter 183C, HRS Conservation District	DLNR	X	X	X	X	X	X	X	X	X	X
	Chapter 185, HRS Land Fire Protection Law	DLNR							X			
	Chapter 186, HRS Tree Farms	DLNR	X	X	X	X	X	X	X	X	X	X
	Chapter 195F, HRS Forest Stewardship	DLNR	X	X	X	X	X	X	X	X	X	X
	Chapter 342D, HRS Water Pollution	DOH	X	X	X	X	X	X	X	X	X	X
	Chapter 340E, HRS Safe Drinking Water	DOH									X	



Authority		Responsible Agency	Pre-harvest Planning	SMZs	Road Constr	Road Mgt	Timber Harvest	Site Prep & Forest Regen	Fire Mgt.	Reveg of Disturbed Areas.	Forest Chemical Mgt.	Wetland Forest Mgt.
State	Chapter 342H, HRS Solid Waste Pollution	DOH					X					
	Chapter 342J, HRS Hazardous Waste	DOH					X					
	Chapter 4-66, HAR Pesticides	DOA									X	
	Chapter 11-21, HAR Cross Connection and Back-Flow Control	DOH									X	
	Chapter 11-60.1, HAR Air Pollution Control	DOH							X			
	Chapter 13-5, HAR Conservation Districts	DLNR	X	X	X	X	X	X	X	X	X	X
	Chapter 13-104, HAR Regulating Activities within Forest Reserves	DLNR	X	X	X	X	X	X	X	X	X	X
	Chapter 13-106, HAR Rules for Establishing Tree Farms	DLNR	X	X	X	X	X	X	X	X	X	X
	Chapter 13-109, HAR Rules for Establishing Forest Stewardship	DLNR	X	X	X	X	X	X	X	X	X	X
	Chapter 13-169, HAR Protection of Instream Uses of Water	DLNR		X	X	X	X	X		X	X	X
	Farm*A*Syst Program, University of Hawaii Cooperative Extension Svc.	Univ. of Hawaii CES		X								
	<i>Best Management Practices for Maintaining Water Quality in Hawaii</i> (June 1998)	DLNR	X	X	X	X	X	X	X	X	X	X
Federal	Section 404, CWA, permit	USACOE										X

## **B. Management Measures**

### **Preharvest Planning Management Measure**

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

- (1) 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.
- (2) Time the activity for the season or moisture conditions when the least impact occurs.
- (3) Consider potential water quality impacts and erosion and sedimentation control in the selection of silvicultural and regeneration systems, especially for harvesting and site preparation.
- (4) 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.
- (5) Consider additional contributions from harvesting or roads to any known existing water quality impairments or problems in watersheds of concern.

Perform advance planning for forest road systems that includes the following elements, where appropriate:

- (1) 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 (SMZs); and
  - determine road usage and select the appropriate road standard.
- (2) 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;
  - for fish-bearing streams, design crossings to facilitate fish passage.
- (3) 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.
- (4) Use suitable materials to surface roads planned for all-weather use to support truck traffic.
- (5) 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.

Each State should develop a process (or utilize an existing process) that ensures that the management measures in this chapter are implemented. Such a process should include appropriate notification, compliance audits, or other mechanisms for forestry activities with the potential for significant adverse nonpoint source effects based on the type and size of operation and the presence of stream crossings or SMZs.

**Applicability:** This management measures pertains to lands where silvicultural or forestry operations are planned or conducted. The planning process components of this management measure apply to commercial harvesting on areas greater than 5 acres and any associated road system construction or reconstruction conducted as part of normal silvicultural activities. The component for ensuring

implementation of this management measure applies to harvesting and road construction activities that are determined to be of a sufficient size to potentially impact the receiving water or that involve SMZs or stream crossings. This measure does not apply to harvesting conducted for pre-commercial thinning or noncommercial firewood cutting.

**Practices:** The *Best Management Practices for Maintaining Water Quality in Hawaii* (June 1998), which was adopted by the BLNR for implementation through its relevant programs and permit processes, contains the following specific language about pre-harvest planning:

“An effective pre-harvest plan will take into consideration all aspects of the timber harvest which may lead to water quality degradation and plan for the implementation of BMPs which will minimize or avoid the adverse effects of the operation. The objective of pre-harvest planning from the perspective of non-point source pollution is to determine which BMPs are necessary to protect water quality and how those BMPs will be implemented. The following is recommended:

(1) A pre-harvest plan should include the following information:

A. Physical and administrative description

- Property boundaries & administrative boundaries (zoning, etc.)
- Topography
- Location of streams and drainages
- Location of SMZs and buffer strips
- Forest types
- Soil types
- Areas of ecological and/or archaeological concerns

B. Management Activities

- Design and construction techniques for all new roads, skid trails, and landings or modification of existing roads, skid trails and landings.
- Felling and bucking techniques
- Yarding systems and layout
- Planned stream crossings
- Disposal of waste materials (machine lubricants)
- Post-harvest site preparation
- Reforestation activities

(2) The use of topographic maps, road maps, aerial photos, forest type maps, and soil surveys in combination with field reconnaissance is essential to determine site conditions and plan operations.

(3) Field reconnaissance with a trained forester or one who is knowledgeable about the specific area is highly recommended.

(4) Preliminary planning should consider the maintenance of existing drainage patterns and the location of environmentally sensitive areas such as streams, wet areas, and high erosion hazard areas.

(5) The design of roads, skid trails, and landings shall be integrated to minimize their impact.

(6) The grade of logging roads and skid trails should be less than 10% when possible, with 3-5% being the norm. Long, straight, unbroken grades are to be avoided. Adequate surface drainage shall be provided.

(7) Time the harvesting activity for the season or moisture conditions when the least impact occurs.

(8) A final pre-harvest site review shall be conducted by management so that road alignments and other considerations can be visually checked prior to road construction. The reconnaissance plan shall be modified as necessary to make desirable adjustments based on the final site review.”

The BMP manual also includes the following language specifically about the planning, design and location of access roads within forestry operations:

“A well planned access system is a sound method of reducing erosion and sedimentation in areas requiring frequent or temporary access. Proper location and construction of roads will provide for safety, longer operating periods, lower maintenance and operating costs, and minimal impacts to water quality. The value of the resource served and site characteristics will influence the choice of road construction standards and maintenance activities. The following practices are recommended:

(1) Use a design to minimize damage to soil and water quality.

(2) Roads should be designed no wider than necessary to accommodate the immediate anticipated use.

(3) Design cut and fill slopes to minimize mass soil movement.

(4) Provide culverts, dips, water bars, and cross drainages to minimize road bed erosion.

(5) Design bridge and culvert installations using stream flow data, with a margin of safety proportional to the importance of the road and the protected resources.

(6) Provide drainage where surface and groundwater cause slope instability.

(7) Avoid diverting water from natural drainage ways. Dips, water bars, and cross drainage culverts should be placed above stream crossings so that water can be filtered through vegetative buffers before entering streams.

(8) Locate roads to fit the topography and minimize alterations to the natural features.

(9) Avoid marshes and wetlands.

(10) Minimize the number of stream crossings.

(11) Cross streams at right angles to the stream channel.

(12) A road may not be located in a Streamside Management Zone (SMZ) except where access is needed to a water crossing, or where there is no feasible alternative. A road in any SMZ must be designed and located to minimize adverse effects on fish habitat and water quality.”

**See Appendix for Responsible Agencies and Authorities**

## Streamside Management Zones (SMZs)

Establish and maintain a streamside management zone along surface waters, which is sufficiently wide and which 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. Manage the SMZ in such a way as to protect against soil disturbance in the SMZ and delivery to the stream of sediments and nutrients generated by forestry activities, including harvesting. Manage the SMZ canopy species to provide a sustainable source of large woody debris needed for instream channel structure and aquatic species habitat.

**Applicability:** This management measure pertains to lands where silvicultural or forestry operations are planned or conducted. It applies to surface waters bordering or within the area of operation. SMZs should be established for perennial waterbodies as well as for intermittent streams that are flowing during the time of operation. Manmade structures that may function as streams and other natural waterbodies, such as livestock ponds, swales, and water distribution systems (*i.e.*, irrigation), are not considered perennial waterbodies or streams.

**Practices:** The *Best Management Practices for Maintaining Water Quality in Hawaii* (June 1998), which was adopted by the BLNR for implementation through its relevant programs and permit processes, contains the following specific language about streamside management zones (SMZs):

“SMZs should be maintained along all perennial streams or where forest disturbances occur and surface runoff will carry sediment loads. SMZs should be maintained around streams, ponds, perennial flowing natural springs, and all springs and reservoirs serving as domestic water supplies. The following best management practices are recommended:

- (1) The width of SMZs should be determined depending on the following conditions: slope of land adjacent to stream, soil erodibility, precipitation, knowledge of particular area, sensitivity of stream, etc. These factors can be obtained from soil maps, on-the-ground evaluation and measurements, weather data, etc.
- (2) SMZs should be designed on a case-by-case basis. Most important is that SMZs be consistent with stream characteristics and wide enough to protect water quality.

Soil Type	Percent Slope	SMZ Width (each side)
Slightly erodible	0-5 %	35 ft.
Slightly erodible	5-20 %	35-50 ft.
Slightly erodible	20%+	50-160 ft.
Erodible	0-5 %	35-50 ft.
Erodible	5-20 %	80 ft. minimum
Erodible	20%+	160' minimum

Table 1. Recommended Widths for Streamside Management Zone

**[NOTE: Please contact your local Natural Resources Conservation Service office to determine the erodibility factor of the soil before determining the proper width of the SMZ.]**

- (3) On relatively flat terrain (0-5%) on slightly erodible soils, the width of an SMZ should be at least 35 feet wide on each side of a stream.
- (4) On relative flat terrain (0-5%) on erodible soils, the SMZ width should range between 35 to 50 feet on each side of a stream.
- (5) On slightly erodible soils with slopes ranging between 5 and 20 percent, the SMZ width should range between 35 to 50 feet wide on each side of a stream.
- (6) On erodible soils with slopes ranging between 5 and 20 percent, the SMZ width should range between 50 to 160 feet on each side of a stream.
- (7) On slightly erodible soils with slopes exceeding 20 percent, the SMZ width should be at least 80 feet on each side of a stream.
- (8) On erodible soils with slopes exceeding 20 percent, the SMZ width should be a minimum of 160 feet on each side of a stream.
- (9) Partial harvesting is acceptable. A minimum of 50% of the original crown cover or 50 square feet of basal area per acre, evenly distributed, should be retained in the SMZ. This may be adjusted to meet on-site conditions.
- (10) Clearcutting is always prohibited within the SMZ.
- (11) Designate SMZs to provide stream shading, soil stabilization, sediment and water filtering effects, and wildlife habitat.
- (12) Strive to protect the forest floor and understory vegetation from unnecessary damage. Do not remove (harvest) trees from banks, beds or slopes if it will destabilize the soil. Trees on the south and west banks provide the most critical shading of water.
- (13) Access roads should cross perennial or intermittent streams at or near a right angle.
- (14) Drainage structures such as ditches, cross drain culverts, water bars, rolling dips, and broad-based dips should be used on all roads prior to their entrance into an SMZ to intercept and properly discharge runoff waters.
- (15) SMZs may be desirable on intermittent streams for large drainage areas where wildlife is a major landowner concern or for other reasons.”

**See Appendix for Responsible Agencies and Authorities**

## Road Construction/Reconstruction Management Measure

- (1) Follow preharvest planning (as described under Management Measure A) when constructing or reconstructing the roadway.
- (2) Follow designs planned under Management Measure A for road surfacing and shaping.
- (3) Install road drainage structures according to designs planned under Management Measure A and regional storm return period and installation specifications. Match these drainage structures with terrain features and with road surface and prism designs.
- (4) Guard against the production of sediment when installing stream crossings.
- (5) Protect surface waters from slash and debris material from roadway clearing.
- (6) Use straw bales, silt fences, mulching, or other favorable practices on disturbed soils on unstable cuts, fills, etc.
- (7) Avoid constructing new roads in SMZs, to the extent practicable.

**Applicability:** This management measure pertains to lands where silvicultural or forestry operations are planned or conducted. It applies to road construction/ reconstruction operations for silvicultural purposes, including:

- *Clearing phase* - clearing to remove trees and woody vegetation from road right-of-way;
- *Pioneering phase* - excavating and filling the slope to establish road centerline and approximate grade;
- *Construction phase* - final grade and road prism construction and bridge, culvert, and road drainage installation; and
- *Surfacing phase* - placement and compaction of roadbed, road fill compaction, and surface placement and compaction (if applicable).

**Practices:** The *Best Management Practices for Maintaining Water Quality in Hawaii* (June 1998), which was adopted by the BLNR for implementation through its relevant programs and permit processes, contains the following specific language about road construction/reconstruction:

“Once the road's location and design is staked out, road construction begins. Timber is out, logs and vegetation are removed and piled along the lower side of the right-of-way.

Most forest roads are built by excavating a road surface. Road design and layout on-the-ground show machine operators the proper cut slopes and indicate cut slope steepness. The bulldozer starts at the top of the cut slope, excavating and sidecasting material until the desired road grade and width is obtained. Material from cuts is often pushed in front of the blade to areas where fill is needed. Road fill is used to cover culverts and build up flat areas. Since fill must support traffic, it needs to be spread and compacted in layers to develop strength. The following practices are recommended:

- (1) Construct roads when moisture and soil conditions are not likely to result in excessive erosion or soil movement.
- (2) The boundaries of all SMZs shall be defined on the ground prior to the beginning of any earth-moving activity.
- (3) Construct a road sufficient to carry the anticipated traffic load with reasonable safety and with minimum environmental impact.

(4) When using existing roads, reconstruct only to the extent necessary to provide adequate drainage and safety.

(5) Avoid construction during wet periods, when possible, to minimize unnecessary soil disturbance and compaction.

(6) Road grades should be kept at less than 10%, except where terrain requires short, steep grades.

(7) Minimize the number of stream crossings. Stream crossing construction should minimize disturbance of the area in which the crossing is being constructed.

(8) As slope increases, additional diversion ditches should be constructed to reduce the damages caused by soil erosion; ditches, adequate culverts, cross drains, etc., should be installed concurrent with construction.

(9) To control erosion, cut and fill slopes should conform to a design appropriate for the particular soil type and topography.

(10) Stumps, logs, and slash should be disposed of outside of the road prism; in no cases should they be covered with fill material and incorporated into road beds.

(11) Stabilize the side banks of a road during construction to aid in the control of erosion and road deterioration; this may require mesh or other stabilizing material in addition to planting and/or seeding and other structural measures.

(12) Water bars should be located to take advantage of existing wing ditches and cross drainage. Water bars should be constructed at an angle of 30 to 45 degrees to the road. Water bars should be periodically inspected and damage or breeches should be promptly corrected. Install water bars at recommended intervals to provide the drainage. Water bar spacing recommendations are as follows:

<b>Grade of Road</b>	<b>Distance Between Water Bars</b>
<b>2%</b>	<b>250 ft.</b>
<b>5%</b>	<b>135 ft.</b>
<b>10%</b>	<b>80 ft.</b>
<b>15%</b>	<b>60 ft.</b>
<b>20%</b>	<b>45 ft.</b>
<b>25%</b>	<b>40 ft.</b>
<b>30%</b>	<b>35 ft.</b>
<b>40%</b>	<b>30 ft.</b>

(13) Water bars may need to be spaced closer together depending on soil type and rainfall.

(14) Bridges and overflow culverts should be constructed to minimize changes in natural stream beds during high water.

(15) Culverts on perennial streams should be installed low enough to allow passage of aquatic life during low water.”

**See Appendix for Responsible Agencies and Authorities**



## Road Management

- (1) Avoid using roads, where possible, for timber hauling or heavy traffic during wet periods on roads not designed and constructed for these conditions.
- (2) 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.
- (3) Remove drainage crossings and culverts if there is a reasonable risk of plugging or failure from lack of maintenance.
- (4) 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.
- (5) 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.
- (6) Conduct maintenance activities, such as dust abatement, so that chemical contaminants or pollutants are not introduced into surface waters, to the extent practicable.
- (7) Properly maintain permanent stream crossings and associated fills and approaches to reduce the likelihood that (a) stream overflow will divert onto roads, and (b) fill erosion will occur if the drainage structures become obstructed.

**Applicability:** This management measure pertains to lands where silvicultural or forestry operations are planned or conducted. It applies to active and inactive roads constructed or used for silvicultural activities.

**Practices:** The *Best Management Practices for Maintaining Water Quality in Hawaii* (June 1998), which was adopted by the BLNR for implementation through its relevant programs and permit processes, contains the following specific language about road management:

“Maintenance of active and inactive roads shall be sufficient to maintain a stable surface, keep the drainage system operating, and protect the quality of streams. The following are recommended:

(1) Maintenance should include cleaning dips and crossdrains, repairing ditches, marking culverts inlets to aid in location, and clearing debris from culverts.

(2) Keep culverts, flumes, and ditches functional before and during the rainy season to diminish danger of clogging and the possibility of washouts. This can be done by clearing away any sediment or vegetation that could cause a problem. Provide for practical and scheduled preventative maintenance programs for high risk sites that will address the problems associated with high intensity rainfall events.

(3) Conduct road surface maintenance as necessary to minimize erosion of the surface and subgrade.

(4) During operations, keep the road surface crowned or outsloped, and keep the downhill side of the road free from berms except those intentionally constructed for protection of fill.

(5) Avoid using roads during wet periods if such use would likely damage the road drainage features.

(6) Water bars should be inspected after major rain storms and damage or breaches should be promptly corrected.”

**See Appendix for Responsible Agencies and Authorities**

## Timber Harvesting

The timber harvesting management measure consists of implementing the following:

- (1) Timber harvesting operations with skid trails or cable yarding follow layouts determined under Management Measure A.
- (2) Install landing drainage structures to avoid sedimentation, to the extent practicable. Disperse landing drainage over sideslopes.
- (3) 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 size of landing areas.
- (4) Protect stream channels and significant ephemeral drainages from logging debris and slash material.
- (5) Use appropriate areas for petroleum storage, draining, dispensing. Establish procedures to contain and treat spills. Recycle or properly dispose of all waste materials in accordance with State law.

For cable yarding:

- (1) Limit yarding corridor gouge or soil plowing by properly locating cable yarding landings.
- (2) Locate corridors for SMZs following Management Measure B.
- (3) Cable yarding should not be done across perennial or intermittent streams, except at improved stream crossings.

For groundskidding:

- (1) Within SMZs, operate groundskidding equipment only at stream crossings, to the extent practicable. In SMZs, fell and endline trees to avoid sedimentation.
- (2) Use improved stream crossings for skid trails which cross flowing drainages. Construct skid trails to disperse runoff and with adequate drainage structures.
- (3) On steep slopes, use cable systems rather than groundskidding where groundskidding may cause excessive sedimentation.
- (4) Groundskidding should not be done across perennial or intermittent streams, except at improved stream crossings.

**Applicability:** This management measure pertains to lands where silvicultural or forestry operations are planned or conducted. It applies to all harvesting, yarding, and hauling conducted as part of normal silvicultural activities on harvest units larger than 5 acres. This measure does not apply to harvesting conducted for precommercial thinnings or noncommercial firewood cutting.

**Practices:** The *Best Management Practices for Maintaining Water Quality in Hawaii* (June 1998), which was adopted by the BLNR for implementation through its relevant programs and permit processes, contains the following specific language about timber harvesting:

“Timber harvesting is an integral part of most forest management programs. Harvesting operations cause a temporary disturbance in the forest as well as diminish water quality. However, it can be conducted in a manner where the impact to water quality is minimized and the re-establishment of vegetative cover is realized. Guidelines to help reduce the potential for nonpoint source pollution from harvesting trees are as follows:

### **Felling and Bucking**

- (1) Careful felling can minimize the impact of subsequent phases of the logging operation.
- (2) Trees should not be felled into streams, except where no safe alternative exists. In the latter case, such trees should be removed promptly.

### **Skidding**

- (1) Skidding should be done so as to avoid disrupting natural drainage and to prevent excessive soil displacement
- (2) Stream channels or road ditches should not be used as skid trails.
- (3) Skid trails on steep slopes should have occasional water bars.
- (4) Servicing of equipment involving fuel, lubricants, or coolants should be performed in places where these materials cannot enter streams. Spent oil should be collected for proper disposal, never poured on the ground.
- (5) Upon completion of logging, erosion-prone areas should be mulched or seeded.

### **Disposal of Debris and Litter**

- (1) Logging debris in streams should be removed immediately.
- (2) Debris from landings should not be pushed into drains, streams or Streamside Management Zones (SMZs)
- (3) All trash associated with the logging operation should be promptly removed (not buried) and hauled to a legal disposal site." (pages 10-11)

The *Best Management Practices for Maintaining Water Quality in Hawaii* (June 1998) also contains the following language about the proper storage and handling of oil products and fuel:

- “(1) Locate facilities away from streams and be prepared to clean up spills.
- (2) Know and comply with regulations governing the storage, handling, application (including licensing of applicators), and disposal of hazardous substances.
- (3) Do not transport, handle, store, load, apply or dispose of any hazardous substance or fertilizer in such a manner as to pollute water supplies or cause damage or injury to land, including humans, desirable plants and animals.
- (4) Do not store, mix, or rinse hazardous substances or fertilizers within the streamside management zone or where they might enter streams or waterways.
- (5) Develop a contingency plan for hazardous substance spills, including cleanup procedures.
- (6) Report all spills to the Department of Health, Environmental Health Administration”. (page 15)

Finally, the *Best Management Practices for Maintaining Water Quality in Hawaii* (June 1998) contains the following language about temporary access roads and landings during harvesting:

- “(1) The location of temporary access roads (logging roads) should be planned before operations begin.
- (2) Road construction should be kept to a minimum.

- (3) Landings should be located to minimize the adverse impact of skidding on the natural drainage pattern.
- (4) Logging roads and landings should be located on firm ground.
- (5) Landings should be kept as small an area as possible.
- (6) When operations are completed, provisions should be made to divert water run-off from the landings and roads." (page 8)

### **See Appendix for Responsible Agencies and Authorities**

#### **Site Preparation and Forest Regeneration Management Measure**

Confine on-site potential nonpoint source pollution and erosion resulting from site preparation and the regeneration of forest stands. The components of the management measure for site preparation and regeneration are:

- (1) Select a method of site preparation and regeneration suitable for the site conditions.
- (2) Conduct mechanical tree planting and ground-disturbing site preparation activities on the contour of erodible terrain.
- (3) Do not conduct mechanical site preparation and mechanical tree planting in SMZs.
- (4) Protect surface waters from logging debris and slash material.
- (5) Suspend operations during wet periods if equipment used begins to cause excessive soil disturbance that will increase erosion.
- (6) Locate windrows at a safe distance from drainages and SMZs to control movement of the material during high runoff conditions.
- (7) Conduct bedding operations in high water-table areas during dry periods of the year. Conduct bedding in erodible areas on the contour.
- (8) Protect small ephemeral drainages when conducting mechanical tree planting.

**Applicability:** This management measure pertains to lands where silvicultural or forestry operations are planned or conducted. It applies to all site preparation and regeneration activities conducted as part of normal silvicultural activities on harvested units larger than 5 acres.

**Practices:** The *Best Management Practices for Maintaining Water Quality in Hawaii* (June 1998), which was adopted by the BLNR for implementation through its relevant programs and permit processes, contains the following specific language about site preparation and forest regeneration:

#### **Mechanical Site Preparation**

- (1) Avoid excessive soil compaction.
- (2) Minimize erosion and the movement of sediment into waters.
- (3) Prevent accumulation of debris in ponds, streams, or rivers.
- (4) Windrows, disking, bedding, and planting with "furrow" type mechanical planters should follow contours.
- (5) Avoid complete disking of steep slopes with extremely erodible soil.
- (6) Plant trees on contour. (pages 10-11)

## Reforestation

Regeneration includes hand and machine planting and direct seeding. Since hand planting and direct seeding pose no water quality problems, BMPs are not necessary. Some mineral soil exposure does occur with machine planting and BMPs are offered:

- (1) Sites should receive the minimum preparation necessary to successfully control competing vegetation and establish a desirable timber stand. In general, the more intensive the treatment, the more concern for water quality.
- (2) When working on slopes, mechanical operations such as ripping, shearing, etc., should follow contours.

Hand planting, direct seeding or natural regeneration should be used on protected areas adjacent to streams or on slopes too steep to machine plant.” (pages 20-21)

## See Appendix for Responsible Agencies and Authorities

### Fire Management

**Prescribe fire or suppress wildfire in a manner which reduces potential nonpoint source pollution of surface waters:**

- (1) Prescribed fire should 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, especially in SMZs, in streamside vegetation for small ephemeral drainages, or on very steep slopes.
- (2) Prescriptions for fire should protect against excessive erosion or sedimentation, to the extent practicable.
- (3) All bladed firelines, for prescribed fire and wildfire, should 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.
- (4) Wildfire suppression and rehabilitation should consider possible nonpoint source pollution of watercourses, while recognizing the safety and operational priorities of fighting wildfires.

**Applicability:** This management measure pertains to lands where silvicultural or forestry operations are planned or conducted. It applies to all prescribed burning conducted as part of normal activities on all management units for wildfire suppression and rehabilitation on forest, brush, and watershed lands.

**Practices:** The *Best Management Practices for Maintaining Water Quality in Hawaii* (June 1998), which was adopted by the BLNR for implementation through its relevant programs and permit processes, contains the following specific language about fire management:

#### **“6.0 Wildfire Damage Control and Reclamation/Prescribed Burn**

The prevention, control, and extinguishment of all wildfires on grass, brush, and watershed lands and the implementation of a prescribed fire program is a desirable goal. Where wildfires

do occur, the first and foremost concern is to control the fire and limit the damage. Fire suppression activities can add to the problem of water quality protection.

The loss of vegetative cover, destruction of soil-holding feature of root masses, the exposure of bare mineral soil, is a combination that makes the area burned a highly erodible one. The effects of suppression efforts and equipment operations necessary to control and stop the fire can magnify the erosion problem.

The following are best management practices for wildfire control and reclamation:

- (1) The first and foremost concern in wildfire control is to prevent harm or damage to people and property. Fireline best management practices should incorporate minimum impact strategies, which meet land and resource management objectives.
- (2) Areas with bare mineral soils should be revegetated and areas where vegetative cover has been killed or severely degraded should be regenerated with plant species appropriate for the soil conditions.
- (3) First priority for revegetation/reforestation should be given to banks of surface water bodies so that the SMZ is reestablished.
- (4) Firelines should be stabilized and, if necessary, revegetated. Erodible areas altered by suppression equipment activities should be repaired and revegetated as necessary.
- (5) Access road surfaces should be repaired and stabilized as necessary.
- (6) Whenever possible, avoid using fire suppression chemicals over watercourses and prevent their runoff into watercourses. Do not clean application equipment in watercourses or locations that drain into watercourses.
- (7) Provide advance planning and training for firefighters that consider water quality impacts when fighting wildfires. This can include increasing awareness so direct application of fire suppression chemicals to waterbodies is avoided and firelines are appropriately placed.
- (8) Include rehabilitative practices as part of suppression and post-suppression tactics and strategies to mitigate non-point source pollution.

### **6.1 Fireline Construction and Maintenance**

Fireline construction and maintenance is an essential part of forest and other land management activities. It deals with site preparation burning, prescribed burning, and wildfire defense and control. A number of control practices can be implemented during fireline construction to prevent unnecessary erosion. Periodic inspection and proper maintenance can prevent potential erosion on established firelanes. The following are best management practices for fireline construction and maintenance:

(1) Firelines should be constructed on the perimeter of the burn area and along the boundary of the Streamside Management Zone. The purpose of protecting the Streamside Management Zone from fire is to safeguard the filtering effects of the litter and organic matter.

(2) Firelines should follow the guidelines established for logging trails and skid trails with respect to waterbars and wing ditches, and should be only as wide and as deep needed to permit safe prescribed burns or fire suppression needs.

(3) Firelines which would cross a drainage should be turned parallel to the stream or have a wing ditch or other structure allowing runoff in the line to be dispersed rather than channeled directly into the stream.

(4) All firelines should be assessed after the fire is controlled for appropriate stabilization, and if necessary, proper rehabilitation should be done while equipment and people are in place.

## **6.2 Prescribed Burn**

(1) Intense prescribed fire for site preparation shall be conducted only if it achieves desired results with minimum impacts to water quality.

(2) Burning on steep slopes or highly erodible soils should be conducted when they are absolutely necessary and should follow carefully planned prescriptions.

(3) Carefully plan burning to adhere to time of year, weather, topography, and fuel conditions that will help achieve the desired results and minimize impacts on water quality. With proper planning, prescribed fires should not cause excessive sedimentation due to the combined effect of removal of canopy species and the loss of soil-binding ability of the subcanopy and herbaceous vegetation roots, in streamside vegetation, small ephemeral drainages, or on very steep slopes.

(4) Site preparation burning creates the potential for soil movement. Burning in the SMZ reduces the filtering capacity of the litter. All efforts should be made to plan burns to minimize impacts on the SMZ.

(5) All bladed firelines, for prescribed fire and wildfire activities, should be built so as to minimize erosion. If necessary, the firelines should be stabilized with water bars and/or other appropriate techniques to control excessive sedimentation or erosion of the fireline. Include any erosion control practices in the construction of firelines.” (pages 18-20)

## **See Appendix for Responsible Agencies and Authorities**

## Revegetation of Disturbed Areas

Reduce erosion and sedimentation by rapid revegetation of areas disturbed by harvesting operations or road construction:

- (1) Revegetate disturbed areas (using seeding or planting) promptly after completion of the earth-disturbing activity. Local growing conditions will dictate the timing for establishment of vegetative cover.
- (2) Use mixes of species and treatments developed and tailored for successful vegetation establishment for the region or area.
- (3) Concentrate revegetation efforts initially on priority areas such as disturbed areas in SMZs or the steepest areas of disturbance near drainages.

**Applicability:** This management measure pertains to lands where silvicultural or forestry operations are planned or conducted. It 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).

**Practices:** The *Best Management Practices for Maintaining Water Quality in Hawaii* (June 1998), which was adopted by the BLNR for implementation through its relevant programs and permit processes, contains BMPs related to the revegetation of disturbed areas under the following headings:

### “Road Construction

- (11) Stabilize the side banks of a road during construction to aid in the control of erosion and road deterioration; this may require mesh or other stabilizing material in addition to planting and/or seeding and other structural measures. (page 7)

### Harvesting - Temporary Access Roads and Landings

- (1) When operations are completed, provisions should be made to divert water run-off from the landings and roads. (page 8)

### Timber Harvesting - Skidding

- (1) Upon completion of logging, erosion-prone areas should be mulched or seeded. (page 10)

### Wildfire Control and Reclamation

- (2) Areas with bare mineral soils should be revegetated and areas where vegetative cover has been killed or severely degraded should be regenerated with plant species appropriate for the soil conditions.
- (3) First priority for revegetation/reforestation should be given to banks of surface water bodies so that the SMZ is reestablished.
- (4) Firelines should be stabilized and, if necessary, revegetated. Erodible areas altered by suppression equipment activities should be repaired and revegetated as necessary.” (page 19)

### See Appendix for Responsible Agencies and Authorities



## Forest Chemical Management

Use chemicals when necessary for forest management in accordance with the following to reduce nonpoint source pollution impacts due to the movement of forest chemicals off-site during and after application:

- (1) Conduct applications by skilled and, where required, licensed applicators according to the registered use, with special consideration given to impacts to nearby surface and ground waters.
- (2) Carefully prescribe the type and amount of pesticides appropriate for the insect, fungus, or herbaceous species.
- (3) Establish and identify buffer areas for surface waters. (This is especially important for aerial applications.)
- (4) 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.
- (5) Immediately report accidental spills of pesticides or fertilizers into surface waters to the appropriate State agency. Develop an effective spill contingency plan to contain spills.

**Applicability:** This management measure pertains to lands where silvicultural or forestry operations are planned or conducted. It applies to all fertilizer and pesticide applications (including biological agents) conducted as part of normal silvicultural activities.

**Practices:** The *Best Management Practices for Maintaining Water Quality in Hawaii* (June 1998), which was adopted by the BLNR for implementation through its relevant programs and permit processes, contains the following specific language about forest chemical management:

### **“A) Transportation**

- (1) Inspect all containers prior to loading and ensure all caps, plugs and bungs are tightened
- (2) Handle containers carefully when loading them onto vehicles
- (3) Secure containers properly to prevent shifting during transport
- (4) Check containers periodically enroute
- (5) Limit access to containers during transport to prevent tampering
- (6) Educate and inform the driver of the proper transportation precautions
- (7) Never transport pesticides unless arrangements have been made to receive and store them properly

### **B) Storage**

- (1) Chemicals should be managed and stored in accordance with all applicable federal, state, or local regulations. These would include:
  - The EPA container registration label, as printed on the label
  - Label instruction for use as provided by the manufacturer
  - Requirements or the use, application, and registration of pesticides
  - Requirements relating to the licensing of applicators
- (2) All containers should be labeled in accordance with applicable federal, state and local regulations.
- (3) Store pesticides in their original containers with labels intact.
- (4) Do not store pesticides for extended periods in buildings that cannot contain a complete spill from the largest container being stored.
- (5) Check containers prior to storage and periodically during storage to ensure that they are properly sealed.

- (6) Locate pesticide storage facilities at sites that minimize the possibility of impacts of water quality in case accidents or fires occur.
- (7) Use storage buildings that have floors constructed of concrete or other impermeable materials so that spills are easy to clean up.
- (8) Ensure that storage facilities can be secured under lock and key.
- (9) Post storage areas with a list of chemicals and quantities stored and notify the fire department about storage.

### **C) Mixing/Loading**

- (1) Review the label before opening the container to ensure familiarity with current use directions.
- (2) Exercise care and caution during mixing and loading.
- (3) Replace pour caps and close bags or other containers immediately after use.
- (4) Mix chemicals and clean equipment only where possible spills would not enter streams, lakes or ponds.
- (5) Chemicals should not be applied where stream pollution is likely to occur through aerial drift.
- (6) Use a spray device capable of immediate shutoff.

### **D) Application**

- (1) Refer to label directions before making a pesticide application.
- (2) Check all application equipment carefully, particularly for leaking hoses and connections and plugged or worn nozzles. Calibrate spray equipment periodically to achieve uniform distribution and rate.
- (3) Apply pesticides under favorable weather conditions. Never apply a pesticide when there is a likelihood of significant drift.
- (4) Always use pesticides in accordance with label instruction, and adhere to all Federal and State policies and regulations governing pesticide use.

### **E) Cleanup and Disposal**

- (1) Before disposal, containers should be rinsed as described in equipment cleanup.
- (2) Cleanup should be in a location where chemicals will not enter any stream, pond, or where stream pollution might occur.
- (3) Rinse empty pesticide containers and mixing apparatus as many times as needed. This flushing should be applied in spray form to the treated area, NOT into the ground near streams.
- (4) Dispose of pesticide wastes and containers according to federal and state laws. Some pesticide wastes are specifically identified as hazardous wastes by law and must be handled and disposed of in accordance with hazardous waste regulations. For more information about proper management of waste pesticides, contact the Department of Health, Environmental Health Administration.”  
(pages 13-14)

**See Appendix for Responsible Agencies and Authorities**

## Wetland Forest Management

**Plan, operate, and manage normal, ongoing forestry activities (including harvesting, road design and construction, site preparation and regeneration, and chemical management) to adequately protect the aquatic functions of forested wetlands.**

**Applicability:** This management measure is intended for forested wetlands where silvicultural or forestry operations are planned or conducted. It applies specifically to forest management activities in forested wetlands and to supplement the previous management measures by addressing the operational circumstances and management practices appropriate for forested wetlands. This management measure applies specifically to forest management activities in forested wetlands, including those currently undertaken under the exemptions of Section 404(f) of the Federal Water Pollution Control Act (40 CFR, Part 232). Many normal, ongoing forestry activities are exempt under Section 404(f)(1) unless recaptured under the provisions of Section 404(f)(2). This management measure is not intended to prohibit these silvicultural activities but to reduce incidental or indirect effects on aquatic functions as a result of these activities.

**See Appendix for Responsible Agencies and Authorities**

## URBAN AREAS

### A. Introduction

There are twelve management measures which apply to urban areas. Some management measures are similar with the National Pollutant Discharge Elimination System (NPDES) regulations. These management measures address the management of polluted runoff from all types of urban activities in Hawaii.

1. New Development
2. Watershed Protection
3. Site Development
4. Existing Development
5. New Onsite Disposal Systems
6. Operating Onsite Disposal Systems
7. Pollution Prevention
8. Golf Course Management
9. Planning, Siting and Developing Roads and Highways
10. Bridges
11. Operation and Maintenance, Roads & Highways
12. Runoff Systems for Roads, Highways and Bridges

The following table provides a summary of authorities that apply to the urban management measures. A written description of the specific authorities and implementation tools are provided under each management measure in Section B. Appendix A contains tables providing the relevant language for each regulatory and non-regulatory mechanism for each management measure.

The documentation of the implementation of the management measures is critical if associations are to be drawn between the coastal nonpoint pollution control program implementation and water quality improvements. Indicators for tracking management measure implementation are identified below. Specific precautions will be taken to ensure that sensitive data, such as specific names and locations of practices, is maintained in full confidence. If detailed information is required due to violation of water quality standards, this information may be acquired by formal request in accordance with the Freedom of Information Act.

#### Land Use Management Authorities

The Hawaii Land Use Law, Chapter 205, HRS, places all lands in the State into four districts: Urban, Agricultural, Rural and Conservation. Lands in the Conservation District are managed by the State, and the jurisdiction over Rural and Agricultural Districts is shared by the State Land Use Commission (LUC) and counties. The responsibility for zoning within the Urban District is delegated to the counties. Currently, there are approximately 191,941 acres of land (4.7% of total land area) designated Urban, while 9,927 acres (0.2% of total land area) are classified Rural (small farms and low-density residential lots).<sup>4</sup> In the past, large-scale, urban-style developments have occurred in the Agricultural District, usually designed as a residential development and often surrounding a golf course. However, this use of agricultural lands has virtually halted as a result of the legal decision regarding the Hokulia development in South Kona on the Big Island of Hawaii.<sup>5</sup> As a result, landowners contemplating this type of development in the future will likely request LUC approval for a district boundary amendment to reclassify lands from Agricultural to Rural.

In urban areas, the counties have the lead in the control of erosion during site development, and ensuring proper site planning and stormwater management to protect sensitive natural features. The State Department of Health also regulates stormwater runoff through its NPDES permit process. The Hawaii Department of

<sup>4</sup> Hawaii DBEDT. 1996 Databook.

<sup>5</sup> Circuit Court Judge Ibarra ruled in 2003 that Hokulia was an urban project being built illegally on agriculturally-designated lands. He based this conclusion on his findings that the State Land Use Law (Chapter 205, HRS) requires that housing on agricultural lands be related to agricultural use and such agriculture must be economically viable.

Transportation requires best management practices during construction of State roads, highways, and bridges. Finally, the State has overall authority to ensure implementation of the management measures throughout the 6217 management area.

Generally, all development within the counties must conform to the policies outlined in the county general plans and specific community development plans. The county general plans provide a coordinated set of guidelines within each county for decision-making regarding future growth and development and protection of natural and cultural resources. The general plans also guide revisions and updates to the county codes. They are given the effect of law through adoption by the respective county councils. Generally, all the county general plans have policies related to protecting the county's natural resources and minimizing adverse effects resulting from the inappropriate location, use, or design of sites and structures; protecting wetlands and riparian areas; and designing drainage systems to minimize polluted runoff, retain streambank vegetation, and maintain habitat and aesthetic values.

County general plans are implemented through the specific community development plans, budgeting and capital improvement programs (CIP) guided by the goals, objectives and policies of the general plans and community development plans, county laws amended to be consistent with the intent of the general plan components, and approval or disapproval of developments seeking zoning and other development approvals based on how they support the visions expressed in the general plans. The county planning departments prepare annual reports to monitor progress towards achieving general plan goals, objectives and policies. The annual reports are submitted to the mayors and county councils for review. General plans are subject to periodic review and amendment, as specified by county procedures, with significant opportunities for input by the public.

When the coastal nonpoint pollution control program was first under development in Hawaii, there were very few watershed efforts taking place. Watershed planning and management was still in its infancy. Since the development of Hawaii's CNPCP management plan, many watershed and *ahupua`a* management efforts have been initiated by a wide range of governmental and non-governmental entities. Some of the more recent efforts, not including the watershed management projects funded under Section 319(h) of the Clean Water Act or the Local Action Strategy, are described below. Each of these efforts has its own goals and priorities with respect to water quality and quantity.

#### Watershed Partnerships

Watershed partnerships are voluntary alliances of public and private landowners committed to protecting large areas of forested watersheds to support multiple ecosystem services such as water production and filtration, native habitat/species protection, erosion/sedimentation control, mitigation of climate change, and education, recreation and economic opportunities. Currently, over 900,000 acres (approximately one-fourth of the land area of the State) have been placed within these partnerships, mostly within the Conservation District, protecting the headwaters of countless streams. There are watershed partnerships for West Maui Mountains (50,000 acres), East Maui (100,000+ acres), Koolau (Oahu) (97,100 acres), Kauai (142,000 acres), Lanai (~20,000 acres), East Molokai (25,000+ acres), Three Mountain Alliance (Hawaii) (1,116,300 acres), Leeward Haleakala (Maui) (43,175), and Kohala (Hawaii) (32,573 acres). While DLNR is a partner on each of the watershed partnerships, it is the partnership as a whole that develops the management plan and decides on management priorities and strategies.

#### Board of Water Supply Watershed Management Plans

The City and County of Honolulu Board of Water Supply (BWS) is developing watershed management plans for the eight General Plan land use districts. These plans are prepared in accordance with the requirements of the

State Water Code and Ordinance 90-62 of the City and County of Honolulu, which established the Oahu Water Management Plan. In 2006, BWS developed a draft watershed management plan for Waianae for public review and, in 2008, prepared a pre-final draft plan for Koolau Loa. The plans contain objectives to “Promote Sustainable Watershed” and “Protect and Enhance Water Quality and Quantity” and, in an implementation chapter, describe short (1-5 years), mid (6-15 years), and long-range (16-25 years or more) plans and programs for watershed management and water infrastructure development. The plans make reference to the CNPCP.

#### Water Resource Protection Plan

The *Water Resource Protection Plan* (WRPP) is one of five major plans that comprise the Hawaii Water Plan, established pursuant to Chapter 174C, HRS. The Commission of Water Resource Management (CWRM) is responsible for implementation of this plan. CWRM adopted the updated *Water Resource Protection Plan* on August 28, 2008. The plan describes the program to protect and conserve Hawaii’s water resources. The updated document includes policies, program directives, resource inventories, and recommendations across a broad spectrum of resource management issues, including watershed protection and water quality. Some of the plan’s recommendations include:

- Take a more active role in watershed protection, watershed partnerships, and the watershed partnership association.
- Support DOFAW’s watershed management activities and the division’s leadership role in watershed management.
- Study existing government and community efforts in watershed management and protection, and encourage sharing of information and experiences.
- Study other watershed planning approaches and lessons learned, including the EPA’s watershed approach and that of other state governments.
- Pursue appropriate funding to support watershed protection programs and objectives to protect water resources.
- Encourage the collaboration of federal, State, and county agencies with existing watershed partnerships and Conservation Districts to map the relationships between land management programs, land use regulations, economic and agricultural issues, and water quality and resource protection programs.
- Improve communication and encourage dialogue between watershed interests to result in the development of common goals and an integrated watershed management framework. A successful framework will acknowledge and build upon existing programs and organizations to maximize funding, staff, and volunteer resources through watershed-scale management and protection programs.
- Develop innovative public outreach methods and encourage communication between watershed entities. The development of a website devoted to Hawaii watershed projects, organized by geographic location, should facilitate this coordination.

#### Community-Based Resource Management (CBRM) Project

The Hawaii CZM Program has developed an integrated planning framework for managing natural and cultural resources. The framework consists of the vision, a set of principles, and implementation options that will guide the Hawaii CZM Program toward the vision of the ORMP, a place-based, culture-based, and community-based approach to natural and cultural resource management throughout Hawaii. Based on the ORMP vision, the Hawaii CZM Program and partners developed principles—guiding statements that define and describe the key concepts of the vision. The key concepts of these five principles are: (1) Community-based; (2) Collaborative; (3) Place-based; (4) Culture-based; and (5) Watershed/*Ahupua’a*-based. The original principles were refined by input provided through this Project. Implementation options, which are recommendations to strategically fulfill the guiding principles, were primarily drawn from community group input received from the survey and workshop process. Intended to cultivate both Native Hawaiian and Western-based management practices, this

integrated framework encourages an inclusive array of place-based, collaborative, community-based, culture-based, and watershed/*ahupua'a*-based management approaches.

Building on the experiences and lessons learned provided by community groups, this section identifies five principles to serve as an integrated planning framework for natural and cultural resource management in Hawai'i. These principles also help to further define and operationalize what is meant by the terms "integrated place-based, culture-based, and community-based approaches" contained in the ORMP. The five principles are:

- **Principle 1. (Community-Based)** Support community-based management of natural and cultural resources and build community capacity to engage in stewardship activities and network with other community groups.
- **Principle 2. (Collaborative)** Develop long-term collaborative relationships between government and communities to learn from local knowledge to more effectively manage natural and cultural resources.
- **Principle 3. (Place-Based)** Design management strategies and programs to consider the unique characteristics (resources, weather, demographics, etc.) of each place and in terms flexible enough for management to quickly adapt to changing conditions.
- **Principle 4. (Culture-Based)** Incorporate consideration of the host culture's (Native Hawaiian) traditional practices and knowledge in management strategies and programs.
- **Principle 5. (Watershed/Ahupua'a-Based)** Design management strategies and programs to recognize and incorporate the connection of land and sea.

The CZM Program recently published a request for proposals to develop a *Guidance Document on the Legal Framework for Natural and Cultural Resource Management in Hawaii*. The resulting products will include recommendations on changes to the statutes, administrative rules, and/or county ordinances that would encourage better support and implementation of an integrated planning approach.

Authority		Responsible Agency	New Dev't	Watershed Protection	Site Dev't	Existing Dev't	New OSDS	Operating OSDS	Pollution Prevention	Golf Course Mgt.	RHB Planning, Siting, Dev'g	Bridges	RHB O&M	RHB Runoff Systems
<b>Local</b>	Chapter 8, KCC Comprehensive Zoning Ordinance	Kauai County Planning Dept.		X	X						X			
	Chapter 9, KCC Subdivision	Kauai County Planning Dept.	X	X	X						X	X	X	
	Chapter 14, KCC	Kauai					X							
	Chapter 18, KCC Excavation and Repair of Streets & Sidewalks	Kauai County DPW											X	
	Chapter 20, KCC	Kauai County DPW							X					
	Chapter 22-7, KCC, Grading, Grubbing and Stockpiling	Kauai County DPW		X	X					X	X	X		
	Chapter 22-16, KCC Drainage	Kauai County DPW	X											
	SMA Rules and Regulations of the County of Kauai	Kauai County Planning Commission		X	X					X	X	X		
	<i>2000 Kauai General Plan</i>	Kauai County	X	X	X	X					X			
	<i>Interim Construction BMPs for Sediment and Erosion Control for the County of Kauai (April 2004)</i>	Kauai County DPW		X	X					X	X	X		
	<i>Kauai Storm Water Runoff Systems Manual (July 2001)</i>	Kauai County DPW	X											



Authority		Responsible Agency	New Dev't	Watershed Protection	Site Dev't	Existing Dev't	New OSDS	Operating OSDS	Pollution Prevention	Golf Course Mgt.	RHB Planning, Siting, Dev'g	Bridges	RHB O&M	RHB Runoff Systems
Local	Chapter 4, HCC Animals	Hawaii County							X					
	Chapter 10 HCC, Soil Erosion and Sediment Control	Hawaii County DPW		X	X					X	X	X		
	Chapter 17, HCC Plumbing	Hawaii County DPW					X							
	Chapter 20, HCC Refuse	Hawaii County DPW							X					
	Chapter 22, HCC County Streets	Hawaii County DPW									X		X	
	Chapter 23, HCC Subdivisions	Hawaii County Planning Dept.	X	X	X						X	X	X	
	Chapter 25, HCC Zoning	Hawaii County Planning Dept.	X	X	X						X			
	Chapter 27, HCC Floodplain Mgt	Hawaii County DPW	X	X	X		X				X	X		
	Rule 9, Hawaii County Planning Commission	Hawaii County Planning Commission		X	X					X	X	X		
	<i>County of Hawaii General Plan (2005)</i>	Hawaii County	X	X	X	X					X			
	Chapter 6.04, MCC Animal Control	Maui County							X					
	Chapter 12.04, MCC Street and Highway Excavation	Maui County DPW											X	

Authority		Responsible Agency	New Dev't	Watershed Protection	Site Dev't	Existing Dev't	New OSDS	Operating OSDS	Pollution Prevention	Golf Course Mgt.	RHB Planning, Siting, Dev'g	Bridges	RHB O&M	RHB Runoff Systems
Local	Chapter 12.50, MCC Maintenance of Old Gov't Roads	Maui County DPW											X	
	Chapter 16.20A, MCC Plumbing Code	Maui County DPW					X							
	Chapter 18, MCC Subdivisions	Maui County DPW		X	X						X	X	X	
	Chapter 19, MCC Zoning	Maui County Planning Dept.		X	X						X			
	Chapter 20.08, MCC, Soil Erosion and Sedimentation Control	Maui County DPW		X	X					X	X	X		
	Chapter 20.20, MCC Litter Control	Maui County							X					
	MC-12-202, SMA Rules for Maui Planning Commission	Maui Planning Commission		X	X					X	X	X		
	MC-12-302, SMA Rules for Molokai Planning Commission	Molokai Planning Commission		X	X					X	X	X		
	MC-12-402, SMA Rules for Lanai Planning Commission	Lanai Planning Commission		X	X					X	X	X		
	MC-15-4, Rules for the Design of Storm Drainage Facilities in the County of Maui	Maui County DPW		X	X						X	X		

Authority		Responsible Agency	New Dev't	Watershed Protection	Site Dev't	Existing Dev't	New OSDS	Operating OSDS	Pollution Prevention	Golf Course Mgt.	RHB Planning, Siting, Dev'g	Bridges	RHB O&M	RHB Runoff Systems
Local	MC-15-?? (draft) Rules for the Design of Stormwater Treatment BMPs	Maui County DPW	X	X	X						X	X		
	MC -15-107, Rules for Flexible Design Standards	Maui County DPW		X	X									
	<i>Construction BMPs for the County of Maui</i> (May 2001)	Maui County DPW		X	X					X	X	X		
	<i>Maui County 2030 General Plan Update: Countrywide Policy Plan</i> (January 2008)	Maui County	X	X	X	X					X			
	Chapter 14-12, ROH Drainage, Flood and Pollution Control	City and County of Honolulu		X	X						X	X		
	Chapter 14-13 to 14-16, ROH, Grading, Soil Erosion and Sediment Control	City and County of Honolulu		X	X					X	X	X		
	Chapter 14-17, ROH Excavation & Repairs of Streets & Sidewalks	CCH-DPW											X	
	Chapter 14-20, ROH Cleaning & Maintaining Sidewalks	CCH-DPW											X	
	Chapter 14-32, ROH Maintenance of Private Streets and Roads	CCH-DPW											X	

Authority		Responsible Agency	New Dev't	Watershed Protection	Site Dev't	Existing Dev't	New OSDS	Operating OSDS	Pollution Prevention	Golf Course Mgt.	RHB Planning, Siting, Dev'g	Bridges	RHB O&M	RHB Runoff Systems
<b>Local</b>	Chapter 21, ROH Land Use Ordinance	CCH Planning Dept.		X	X						X			
	Chapter 22, ROH Subdivision of Land	CCH Planning Dept.		X	X								X	
	Chapter 25, ROH Special Mgt Area	CCH Planning Dept.		X	X					X	X	X		
	Chapter 29-4, ROH Litter Control	CCH							X					
	Chapter 30-4, ROH Water Conservation Measures	CCH					X							
	various <i>Development Plans</i> and <i>Sustainable Communities Plans</i> for Oahu	City and County of Honolulu		X	X	X					X			
	various fact sheets and programs related to pollution prevention	CCH Dept. of Env'l Services							X					
<b>State</b>	Chapter 46, HRS County Organization and Administration	Counties											X	
	Chapter 149A, HRS Hawaii Pesticides Law	DOA								X			X	
	Chapter 174C, HRS Hawaii Water Code	DLNR		X	X	X						X		
	Chapter 183C, HRS Conservation District	DLNR		X	X					X				
	Chapter 205A, HRS Coastal Zone Mgt	OP-CZM		X	X					X	X	X		

Authority		Responsible Agency	New Dev't	Watershed Protection	Site Dev't	Existing Dev't	New OSDS	Operating OSDS	Pollution Prevention	Golf Course Mgt.	RHB Planning, Siting, Dev'g	Bridges	RHB O&M	RHB Runoff Systems
State	Chapter 264, HRS Highways	DOT									X	X	X	
	Chapter 339, HRS Litter Control	DOH, with county enforcement							X					
	Chapter 340E, HRS Safe Drinking Water	DOH								X				
	Chapter 342D, HRS Water Pollution	DOH	X	X	X	X	X	X	X	X	X	X	X	
	Chapter 342G, HRS Integrated Solid Waste Management	DOH							X					
	Chapter 342H, HRS Solid Waste Pollution	DOH							X					
	Chapter 342I, HRS Special Wastes Recycling	DOH							X				X	
	Chapter 342J, HRS Hazardous Waste	DOH							X				X	
	Chapter 343, HRS Environmental Impact Statements	OEQC		X	X					X	X	X		
	Chapter 4-66, HAR Pesticides	DOA								X			X	
	Chapter 11-21, HAR Cross Connection and Back-Flow Control	DOH								X				
	Chapter 11-23, HAR Underground Injection Control	DOH					X			X				

Authority		Responsible Agency	New Dev't	Watershed Protection	Site Dev't	Existing Dev't	New OSDS	Operating OSDS	Pollution Prevention	Golf Course Mgt.	RHB Planning, Siting, Dev'g	Bridges	RHB O&M	RHB Runoff Systems
State	Chapter 11-54, HAR Water Quality Standards	DOH	X	X	X					X	X	X		
	Chapter 11-55, HAR Water Pollution Control	DOH	X	X	X					X	X	X		
	Chapter 11-58.1, HAR Solid Waste Mgt Control	DOH							X					
	Chapter 11-62, HAR Wastewater Systems	DOH					X	X		X				
	Chapter 11-200, HAR Environmental Impact Statement Rules	OEQC		X	X					X	X	X		
	Chapter 13-5, HAR Conservation Districts	DLNR		X	X					X				
	Chapter 13-169, HAR Protection of Instream Uses of Water	DLNR		X	X	X						X		
	Chapter 15-150, HAR Special Mgt Areas/ Shoreline Areas	OP-CZM		X	X					X	X	X		
	Chapter 19-127.1, HAR Design, Construction, and Maintenance of Public Streets and Hwys	DOT									X	X	X	
	HAPPI Home Series, University of Hawaii Cooperative Extension Svc.	Univ. of Hawaii CES							X					

Authority		Responsible Agency	New Dev't	Watershed Protection	Site Dev't	Existing Dev't	New OSDS	Operating OSDS	Pollution Prevention	Golf Course Mgt.	RHB Planning, Siting, Dev'g	Bridges	RHB O&M	RHB Runoff Systems
State	<i>The Hawaii Guide to Alternatives &amp; Disposal of Household Hazardous Wasted (1996)</i>	DOH							X					
	various factsheets and bulletins	DOH							X					
	<i>Standard Specifications for Road and Bridge Construction (2005)</i>	DOT	X	X	X						X	X	X	
	<i>Construction BMPs Field Manual (January 2008)</i>				X						X	X	X	
	<i>Storm Water Permanent BMP Manual (2007)</i>	DOT	X										X	
	<i>Onsite Wastewater Treatment Survey and Assessment (March 2008)</i>	CZM Program, DOH					X	X						
	<i>Guidelines Applicable to Golf Courses in Hawaii (July 2002 – Version 6)</i>	DOH								X				
Federal	Section 404, CWA, permit	USACOE								X		X		
	Section 10, Rivers and Harbors Act of 1899	USACOE										X		

## **B. Management Measures**

### **Urban Runoff**

#### **New Development Management Measure**

- (1) By design or performance:**
  - a. After construction has been completed and the site is permanently stabilized, reduce the average annual total suspended solid (TSS) loadings by 80%. For the purposes of this measure, an 80% TSS reduction is to be determined on an average annual basis,\* or**
  - b. Reduce the postdevelopment loadings of TSS so that the average annual TSS loadings are no greater than predevelopment loadings, and**
- (2) To the extent practicable, maintain postdevelopment peak runoff rate and average volume at levels that are similar to predevelopment levels.**

Sound watershed management requires that both structural and nonstructural measures be employed to mitigate the adverse impacts of storm water. Nonstructural Management Measures II.B and II.C can be effectively used in conjunction with Management Measure II.A to reduce both the short- and long-term costs of meeting the treatment goals of this management measure.

**Applicability:** This management measure applies to control urban runoff and treat associated pollutants generated from new development, redevelopment, and new and relocated roads, highways, and bridges. For design purposes, post-development peak runoff rate and average volume should be based on the 2-year/24-hour storm. Watershed planning and implementation efforts considering new development issues should rely upon information found at:

<http://www.epa.gov/owow/NPS/MMGI/Chapter4/ch4-2a.html>

- (a)** This management measure is intended to accomplish the following: (1) decrease the erosive potential of increased runoff volumes and velocities associated with development-induced changes in hydrology; (2) remove suspended solids and associated pollutants entrained in runoff that result from activities occurring during and after development; (3) retain hydrological conditions to closely resemble those of the predisturbance condition; and (4) preserve natural systems including in-stream habitat. For the purposes of this management measure, "similar" is defined as "resembling though not completely identical."

**Practices:** Suggested New Development practices can be found at the following location:

[http://water.epa.gov/polwaste/nps/urban/upload/2005\\_12\\_08\\_NPS\\_urbanmm\\_urban\\_ch05.pdf](http://water.epa.gov/polwaste/nps/urban/upload/2005_12_08_NPS_urbanmm_urban_ch05.pdf)

**See Appendix for Responsible Agencies and Authorities**



## Watershed Protection Management Measure

Develop a watershed protection program to:

- (1) Avoid conversion, to the extent practicable, of areas that are particularly susceptible to erosion and sediment loss;
- (2) Preserve areas that provide important water quality benefits and/or are necessary to maintain riparian and aquatic biota; and
- (3) Site development, including roads, highways, and bridges, to protect to the extent practicable the natural integrity of waterbodies and natural drainage systems.

**Applicability:** This management measure applies to new development or redevelopment including construction of new and relocated roads, highways, and bridges that generate nonpoint source pollutants. Watershed planning and implementation efforts should rely upon information found at:

<http://www.epa.gov/owow/NPS/MMGI/Chapter4/ch4-2b.html>

- (b) The purpose of this management measure is to reduce the generation of nonpoint source pollutants and to mitigate the impacts of urban runoff and associated pollutants that result from new development or redevelopment, including the construction of new and relocated roads, highways, and bridges. The measure is intended to provide general goals for States and local governments to use in developing comprehensive programs for guiding future development and land use activities in a manner that will prevent and mitigate the effects of nonpoint source pollution.

A watershed is a geographic region where water drains into a particular receiving waterbody. As discussed in the introduction, comprehensive planning is an effective nonstructural tool available to control nonpoint source pollution. Where possible, growth should be directed toward areas where it can be sustained with a minimal impact on the natural environment (Meeks, 1990). Poorly planned growth and development have the potential to degrade and destroy entire natural drainage systems and surface waters (Mantel et al., 1990). Defined land use designations and zoning direct development away from areas where land disturbance activities or pollutant loadings from subsequent development would severely impact surface waters. Defined land use designations and zoning also protect environmentally sensitive areas such as riparian areas, wetlands, and vegetative buffers that serve as filters and trap sediments, nutrients, and chemical pollutants.

Areas such as streamside buffers and wetlands may also have the added benefit of providing long-term pollutant removal capabilities without the comparatively high costs usually associated with structural controls. Conservation or preservation of these areas is important to water quality protection. Land acquisition programs help to preserve areas critical to maintaining surface water quality. Buffer strips along streambanks provide protection for stream ecosystems and help to stabilize the stream and prevent streambank erosion (Holler, 1989). Buffer strips protect and maintain near-stream vegetation that attenuates the release of sediment into stream channels and prevent excessive loadings. Levels of suspended solids increase at a slower rate in stream channel sections with well-developed riparian vegetation (Holler, 1989).

**Practices:** Suggested Watershed Protection practices can be found at the following location:

[http://water.epa.gov/polwaste/nps/urban/upload/2005\\_12\\_08\\_NPS\\_urbanmm\\_urban\\_ch03.pdf](http://water.epa.gov/polwaste/nps/urban/upload/2005_12_08_NPS_urbanmm_urban_ch03.pdf)

### **See Appendix for Responsible Agencies and Authorities**

## Site Development Management Measure

Plan, design, and develop sites to:

- (1) Protect areas that provide important water quality benefits and/or are particularly susceptible to erosion and sediment loss;
- (2) Limit increases of impervious areas, except where necessary;
- (3) Limit land disturbance activities such as clearing and grading, and cut and fill to reduce erosion and sediment loss; and
- (4) Limit disturbance of natural drainage features and vegetation.

**Applicability:** This management measure applies to all site development activities including those associated with roads, highways, and bridges.

**Practices:** Suggested Site Development practices can be found at the following location:

[http://water.epa.gov/polwaste/nps/urban/upload/2005\\_12\\_08\\_NPS\\_urbanmm\\_urban\\_ch04.pdf](http://water.epa.gov/polwaste/nps/urban/upload/2005_12_08_NPS_urbanmm_urban_ch04.pdf)

**See Appendix for Responsible Agencies and Authorities**

## Existing Development

### Existing Development Management Measure

Develop and implement watershed management programs to reduce runoff pollutant concentrations and volumes from existing development:

- (1) Identify priority local and/or regional watershed pollutant reduction opportunities, e.g., improvements to existing urban runoff control structures;
- (2) Contain a schedule for implementing appropriate controls;
- (3) Limit destruction of natural conveyance systems; and
- (4) Where appropriate, preserve, enhance, or establish buffers along surface waterbodies and their tributaries.

**Applicability:** This management measure applies to all urban areas and existing development in order to reduce surface water runoff pollutant loadings from such areas. This management measures does not apply to the urbanized areas within the City and County of Honolulu due to overlap with the NPDES storm water regulations. Watershed planning and implementation efforts addressing existing development issues should rely upon information found at:

<http://www.epa.gov/owow/NPS/MMGI/Chapter4/ch4-4.html>

- (c) The purpose of this management measure is to protect or improve surface water quality by the development and implementation of watershed management programs that pursue the following objectives:

1. Reduce surface water runoff pollution loadings from areas where development has already occurred;
2. Limit surface water runoff volumes in order to minimize sediment loadings resulting from the erosion of streambanks and other natural conveyance systems; and
3. Preserve, enhance, or establish buffers that provide water quality benefits along waterbodies and their tributaries.

Maintenance of water quality becomes increasingly difficult as areas of impervious surface increase and urbanization occurs. For the purpose of this guidance, urbanized areas are those areas where the presence of "man-made" impervious surfaces results in increased peak runoff volumes and pollutant loadings that permanently alter one or more of the following: stream channels, natural drainageways, and in-stream and adjacent riparian habitat so that predevelopment aquatic flora and fauna are eliminated or reduced to unsustainable levels and predevelopment water quality has been degraded. Increased bank cutting, streambed scouring, siltation damaging to aquatic flora and fauna, increases in water temperature, decreases in dissolved oxygen, changes to the natural structure and flow of the stream or river, and the presence of anthropogenic pollutants that are not generated from agricultural activities, in general, are indications of urbanization.

**Practices:** Suggested Existing Development practices can be found at:

[http://water.epa.gov/polwaste/nps/urban/upload/2005\\_12\\_08\\_NPS\\_urbanmm\\_urban\\_ch10.pdf](http://water.epa.gov/polwaste/nps/urban/upload/2005_12_08_NPS_urbanmm_urban_ch10.pdf)

**See Appendix for Responsible Agencies and Authorities**

## **Onsite Disposal Systems**

### **New Onsite Disposal Systems Management Measure**

- (1) Ensure that new Onsite Disposal Systems (OSDS) are located, designed, installed, operated, inspected, and maintained to prevent the discharge of pollutants to the surface of the ground and to the extent practicable reduce the discharge of pollutants into ground waters that are closely hydrologically connected to surface waters. Where necessary to meet these objectives: (a) discourage the installation of garbage disposals to reduce hydraulic and nutrient loadings; and (b) where low-volume plumbing fixtures have not been installed in new developments or redevelopments, reduce total hydraulic loadings to the OSDS by 25%. Implement OSDS inspection schedules for preconstruction, construction, and post-construction;**
- (2) Direct placement of OSDS away from unsuitable areas. Where OSDS placement away from unsuitable areas is not practicable, ensure that the OSDS is designed or sited at a density so as not to adversely affect surface waters or ground water that is closely hydrologically connected to surface water. Unsuitable areas include, but are not limited to, areas with poorly or excessively drained soils; areas with shallow water tables or areas with high seasonal water tables; areas overlaying fractured bedrock that drain directly to ground water; areas within floodplains; or areas where nutrient and/or pathogen concentrations in the effluent cannot be sufficiently treated or reduced before the effluent reaches sensitive waterbodies;**
- (3) Establish protective setbacks from surface waters, wetlands, and floodplains for conventional as well as alternative OSDS. The lateral setbacks should be based on soil type, slope, hydrologic factors, and type of OSDS. Where uniform protective setbacks cannot be achieved, site development with OSDS so as not to adversely affect waterbodies and/or contribute to a public health nuisance;**
- (4) Establish protective separation distances between OSDS system components and groundwater which is closely hydrologically connected to surface waters. The separation distances should be based on soil type, distance to ground water, hydrologic factors, and type of OSDS;**
- (5) Where conditions indicate that nitrogen-limited surface waters may be adversely affected by excess nitrogen loadings from ground water, require the installation of OSDS that reduce total nitrogen loadings by 50% to groundwater that is closely hydrologically connected to surface water.**

**Applicability:** This management measure applies to all new OSDSs, including package plants and small-scale or regional treatment facilities not covered by NPDES regulations, in order to manage the siting, design, installation, and operation and maintenance of all such OSDSs. Watershed planning and implementation efforts addressing the use of denitrifying OSDSs should rely upon information found at: <http://www.epa.gov/owow/NPS/MMGI/Chapter4/ch4-5a.html>

- (d)** The purpose of this management measure is to protect waters from pollutants discharged by OSDS. The measure requires that OSDS be sited, designed, and installed so that impacts to waterbodies will be reduced, to the extent practicable. Factors such as soil type, soil depth, depth to water table, rate of sea level rise, and topography must be considered in siting and installing conventional OSDS.

The objective of the management measure is to prevent the installation of conventional OSDS in areas where soil absorption systems will not provide adequate treatment of effluents containing solids, phosphorus, pathogens, nitrogen, and nonconventional pollutants prior to entry into surface waters and ground water (e.g., highly permeable soils, areas with shallow water tables or confining layers, or poorly drained soils). In addition to soil criteria, setbacks, separation distances, and management and

maintenance requirements need to be established to fulfill the requirements of this management measure. Guidance on design factors to consider in the installation of OSDS is available in EPA's *Design Manual for Onsite Wastewater Treatment and Disposal Systems* (1980), currently under revision. This measure also requires that in areas experiencing pollution problems due to OSDS-generated nitrogen loadings, OSDS designs should employ denitrification systems or some other nitrogen removal process that reduces total nitrogen loadings by at least 50 percent. Additionally, hydraulic loadings to OSDS can be reduced by up to 25 percent by installing low-volume plumbing fixtures and enforcing water conservation measures. Garbage disposals are to be discouraged in all new development or redevelopment where conventional OSDS are employed as another means of reducing overloading and ensure proper operation of the OSDS. Regularly scheduled maintenance and pumpout of OSDS will prolong the life of the system and prevent degradation of surface waters.

**Practices:** Suggested New Onsite Sewage Disposal System practices can be found at: [http://water.epa.gov/polwaste/nps/urban/upload/2005\\_12\\_08\\_NPS\\_urbanmm\\_urban\\_ch06.pdf](http://water.epa.gov/polwaste/nps/urban/upload/2005_12_08_NPS_urbanmm_urban_ch06.pdf)

### **See Appendix for Responsible Agencies and Authorities**

#### **Operating Onsite Disposal Systems Management Measure**

- (1) Establish and implement policies and systems to ensure that existing OSDS are operated and maintained to prevent the discharge of pollutants to the surface of the ground and to the extent practicable reduce the discharge of pollutants into ground waters that are closely hydrologically connected to surface waters. Where necessary to meet these objectives, encourage the reduced use of garbage disposals, encourage the use of low-volume plumbing fixtures, and reduce total phosphorus loadings to the OSDS by 15% (if the use of low-level phosphate detergents has not been required or widely adopted by OSDS users). Establish and implement policies that require an OSDS to be repaired, replaced, or modified where the OSDS fails, or threatens or impairs surface waters;**
- (2) Inspect OSDS at a frequency adequate to ascertain whether OSDS are failing;**
- (3) Consider replacing or upgrading OSDS to treat influent so that total nitrogen loadings in the effluent are reduced by 50%. This provision applies only:
  - (a) where conditions indicate that nitrogen-limited surface waters may be adversely affected by significant groundwater nitrogen loadings from OSDS, and**
  - (b) where nitrogen loadings from OSDS are delivered to groundwater that is closely hydrologically connected to surface water.****

**Applicability:** This management measure applies to all operating OSDSs. Watershed planning and implementation efforts related to OSDS inspections should rely upon information found at: <http://www.epa.gov/owow/NPS/MMGI/Chapter4/ch4-5b.html>

- (e) The purpose of this management measure is to minimize pollutant loadings from operating OSDS. This management measure requires that OSDS be modified, operated, repaired, and maintained to reduce nutrient and pathogen loadings in order to protect and enhance surface waters. In the past, it has been a common practice to site conventional OSDS in coastal areas that have inadequate separation distances to ground water, fractured bedrock, sandy soils, or other conditions that prevent or do not allow adequate treatment of OSDS-generated pollutants. Eutrophication in surface waters has also been attributed to the low nitrogen**

reductions provided by conventional OSDS designs.

Poorly designed or operating systems can cause ponding of partially treated sewage on the ground that can reach surface waters through runoff. In addition to oxygen-demanding organics and nutrients, these surface sources contain bacteria and viruses that present problems to human health. Although ground-water contamination from toxic substances is more often life-threatening, the majority of ground-water-related health complaints are associated with pathogens from septic tank systems (Yates, 1985).

Where development utilizing OSDS has already occurred, States and local governments have a limited capability to reduce OSDS pollutant loadings. One way to reduce the possibility of failed systems is to required scheduled pumpouts and regular maintenance of OSDS. Frequent inspections and proper operation and maintenance are the keys to achieving the most cost-effective OSDS pollutant reductions. Inspections upon resale or change of ownership of properties are also a cost-effective solution to ensure that OSDS are operating properly and meet current standards necessary to protect surface waters from OSDS-generated pollutants. Where phosphorus is a problem, phosphate bans can reduce phosphorus loadings by 14 to 17 percent (USEPA, 1992). Garbage disposal restrictions and low-volume plumbing fixtures can help ensure that conventional systems continue to operate properly. Low-volume plumbing fixtures have been shown to reduce hydraulic loadings to OSDS by 25 percent.

**Practices:** Suggested Existing Onsite Sewage Disposal System practices can be found at: [http://water.epa.gov/polwaste/nps/urban/upload/2005\\_12\\_08\\_NPS\\_urbanmm\\_urban\\_ch06.pdf](http://water.epa.gov/polwaste/nps/urban/upload/2005_12_08_NPS_urbanmm_urban_ch06.pdf)

**See Appendix for Responsible Agencies and Authorities**

## **Pollution Prevention**

### **Pollution Prevention Management Measure**

**Implement pollution prevention and education programs to reduce nonpoint source pollutants generated from the following activities, where applicable:**

- (a) The improper storage, use, and disposal of household hazardous chemicals, including automobile fluids, pesticides, paints, solvents, etc.;
- (b) Lawn and garden activities, including the application and disposal of lawn and garden care products, and the improper disposal of leaves and yard trimmings;
- (c) Turf management on golf courses, parks, and recreational areas;
- (d) Improper operation and maintenance of onsite disposal systems;
- (e) Discharge of pollutants into storm drains including floatables, waste oil, and litter;
- (f) Commercial activities including parking lots, gas stations, and other entities not under NPDES purview; and
- (g) Improper disposal of pet excrement.

**Applicability:** This management measure is intended to be applied to reduce the generation of polluted runoff in all areas within the coastal nonpoint pollution control program management area. The adoption of the Pollution Prevention Management Measure does not exclude applicability of other management measures to those sources covered by this management measure.

**Practices:** Suggested Pollution Prevention practices can be found at:  
[http://water.epa.gov/polwaste/nps/urban/upload/2005\\_12\\_08\\_NPS\\_urbanmm\\_urban\\_ch09.pdf](http://water.epa.gov/polwaste/nps/urban/upload/2005_12_08_NPS_urbanmm_urban_ch09.pdf)

**See Appendix for Responsible Agencies and Authorities**

**Golf Course Management Measure**

- (1) Develop and implement grading and site preparation plans to:
  - (a) Design and install a combination of management and physical practices to settle solids and associated pollutants in runoff from heavy rains and/or from wind;
  - (b) Prevent erosion and retain sediment, to the extent practicable, onsite during and after construction;
  - (c) Protect areas that provide important water quality benefits and/or are environmentally-sensitive ecosystems;
  - (d) Avoid construction, to the extent practicable, in areas that are susceptible to erosion and sediment loss;
  - (e) Protect the natural integrity of waterbodies and natural drainage systems by establishing streamside buffers; and
  - (f) Follow, to the extent practicable, the amended U.S. Golfing Association (USGA) guidelines for the construction of greens.
- (2) Develop nutrient management guidelines appropriate to Hawaii for qualified superintendents to implement so that nutrients are applied at rates necessary to establish and maintain vegetation without causing leaching into ground and surface waters.
- (3) Develop and implement an integrated pest management plan. Follow EPA guidelines for the proper storage and disposal of pesticides.
- (4) Develop and implement irrigation management practices to match the water needs of the turf.

**Applicability:** This management measure applies to all golf courses in Hawaii that are in operation, under construction, or to be built in the future. It should be noted that the other urban management measures also apply to the construction and operation of golf courses.

This management measure is an additional measure developed specifically for Hawaii and is not contained in EPA's *Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters*. Regardless of the current state and quality of management and maintenance of golf courses, this land use has the potential to be a significant source of polluted runoff due to the proportion of land area involved, the intensity of its management and the quantity of chemicals used.

**Practices:** The *Guidelines Applicable to Golf Courses in Hawaii* (July 2002 – Version 6) recommends the following measures to prevent groundwater and surface water pollution, soil contamination, chemical spills, noise and solid waste nuisances, and unsafe exposure to applied chemicals:

1. A groundwater or soil water monitoring plan for the purpose of preventing or minimizing groundwater contamination should be established with the following components:
  - a. Baseline groundwater quality;
  - b. Monitoring locations consisting of monitoring wells or lysimeters, or combination of both;

- c. Routine groundwater and/or soil water monitoring at frequencies such as quarterly, semiannually, or annually depending on the use of chemicals and the detection of contaminants;
  - d. A list of chemicals and fertilizers that will be or have been used that may affect soil or groundwater adversely, and the analyses for such contaminants;
  - e. Recordkeeping of monitoring results and a system of tracking trends in order to prevent, minimize, or mitigate occurrences of contamination;
  - f. A procedure to notify all affected parties and DOH of occurrences of contamination that pose, or may pose, a threat to public health or the environment.
  - g. Availability of monitoring data to any interested person.
2. A surface water monitoring plan, if applicable, for the purpose of preventing or minimizing surface water contamination should be established using the principles of item No. 1.
  3. If the golf course uses recycled water (treated wastewater) for irrigation, please refer to the Department of Health's Guidelines for the Treatment and Use of Recycled Water, May 15, 2002, for recycled water requirements.
  4. The use of an above-ground storage tank with applicable safety considerations for petroleum products, used for fueling golf carts, maintenance vehicles, or emergency generators, should be preferred over an underground storage tank in order to easily detect leaks and minimize the risk of soil and groundwater contamination resulting from a leaking storage tank.
  5. Buildings used to store fertilizers, pesticides, algicides, fungicides, herbicides, and other chemicals especially in liquid form should be designed purposely for the containment and recovery of a catastrophic spill or leak of contents. An early warning system for spill or leak detection is advantageous.
  6. Noise and dust from maintenance or construction activities should not disturb neighbors. Maintenance or construction activities should be scheduled and conducted accordingly.
  7. Solid wastes should be managed without creating a nuisance. Furthermore, all green waste generated by the golf course should be reused on-site. Shredding and composting are activities that precede the reuse of green waste as a soil conditioner or a ground cover for weed control. Space and equipment should be provided to accomplish these activities. Additionally, where practicable, locally produced compost and soil amendments should be used whenever available.
  8. Chemicals should be handled and applied according to instructions, and offsite drift during application should not occur. Methods of application and weather conditions should be chosen to optimize success.
  9. A Best Management Practices (BMP) plan should be made for the golf course. The BMP plan functions as a hands-on environmental and worker safety maintenance manual that describes in



plain English the elements and procedures for irrigation, chemical use, processing and reuse of green wastes, minimizing or preventing runoff, soil erosion and nuisance conditions, and sustaining worker safety. Use of the BMP should prevent the occurrence or recurrence of environmental or safety problems. The BMP should be available to any interested person.

10. Agencies or organizations such as the State Department of Agriculture, the National Resource Conservation Service, and the Golf Course Superintendents Association of America may provide ideas or practices that would help to achieve the intent of these guidelines. Inquiries to these sources of information are advantageous.

### **See Appendix for Responsible Agencies and Authorities**

### **Roads, Highways, and Bridges**

According to Chapter 264, HRS, all roads, alleys, streets, ways, lanes, bikeways, bridges, and all other real property highway related interests in the State, opened, laid out, subdivided, consolidated, acquired and built by the government are public highways. Public highways are of two types: (1) State highways, having an alignment or possession of a real property highway related interest as established by law, subdivided and acquired in accordance with policies and procedures of the department of transportation (DOT), separate and exempt from any county subdivision ordinances, and all those under the jurisdiction of DOT; and (2) County highways, which are all other public highways.

All roads, alleys, streets, ways, lanes, trails, bikeways, and bridges in the State, opened, laid out, or built by private parties and dedicated or surrendered to the public use, are declared to be public highways as follows: (1) dedication of public highways shall be by deed of conveyance naming the State as grantee in the case of a state highway and naming the county as grantee in the case of a county highway; and (2) surrender of public highways shall be deemed to have taken place if no act of ownership by the owner of the road, alley, street, bikeway, way, lane, trail, or bridge has been exercised for five years and when, in the case of a county highway, the county council of that county adopts, by resolution, the same as a county highway.

Hawaii Department of Transportation (DOT) has jurisdiction over State roadways. According to Section 264-8, HRS, specifications, standards and procedures to be followed in the installation and construction of connections for streets, roads and driveways, concrete curbs and sidewalks, structures, drainage systems, landscaping or grading within the highway rights-of-way, excavation and backfilling of trenches or other openings in state highways, and in the restoration, replacement, or repair of the base course, pavement surfaces, highway structures, and other highway improvements shall be prescribed by the director of transportation. The updated 2005 *Standard Specifications for Road and Bridge Construction* requires written, site-specific BMPs describing activities to minimize water pollution and soil erosion into State waters, drainage or sewer systems, and a plan indicating location of the BMPs, areas of soil disturbance, areas where vegetative practices are to be implemented, and drainage patterns. It requires contractors to follow guidelines in the *Construction Best Management Practices Field Manual* (dated January 2008) in developing, installing and maintaining BMPs for all projects.

State roads are under the jurisdiction of DOT, while county – or local – roads are under the jurisdiction of the respective counties. Many of the counties also have many miles of homestead roads or “paper”

roads. Under the terms of the Highways Act of 1892 and Chapter 264, HRS, all roads existing at the time of adoption of the Highways Act were declared to be public highways. In addition, public highways include all roads, alleys, streets, ways, lanes, bikeways, and bridges laid out on paper or built by the Territorial, State or County governments since 1892. A 1999 State Attorney General opinion clarified that all public highways are County highways unless declared by Chapter 264, HRS to be under State jurisdiction.

### Management Measure for Planning, Siting, and Developing Roads and Highways

**Plan, site, and develop roads and highways to:**

- (1) Protect areas that provide important water quality benefits or are particularly susceptible to erosion or sediment loss;**
- (2) Limit land disturbance such as clearing, grading and cut and fill to reduce erosion and sediment loss; and**
- (3) Limit disturbance of natural drainage features and vegetation.**

**Applicability:** This management measure applies to site development and land disturbing activities for new, relocated, and reconstructed (widened) roads (including residential streets) and highways in order to reduce the generation of nonpoint source pollutants and to mitigate the impacts of urban runoff and associated pollutants from such activities. Watershed planning and implementation efforts addressing planning, siting and developing roads and highways should rely upon information found at: <http://www.epa.gov/owow/NPS/MMGI/Chapter4/ch4-7a.html>

The best time to address control of NPS pollution from roads and highways is during the initial planning and design phase. New roads and highways should be located with consideration of natural drainage patterns and planned to avoid encroachment on surface waters and wet areas. Where this is not possible, appropriate controls will be needed to minimize the impacts of NPS runoff on surface waters.

This management measure emphasizes the importance of planning to identify potential NPS problems early in the design process. This process involves a detailed analysis of environmental features most associated with NPS pollution, erosion and sediment problems such as topography, drainage patterns, soils, climate, existing land use, estimated traffic volume, and sensitive land areas. Highway locations selected, planned, and designed with consideration of these features will greatly minimize erosion and sedimentation and prevent NPS pollutants from entering watercourses during and after construction. An important consideration in planning is the distance between a highway and a watercourse that is needed to buffer the runoff flow and prevent potential contaminants from entering surface waters. Other design elements such as project alignment, gradient, cross section, and the number of stream crossings also must be taken into account to achieve successful control of erosion and nonpoint sources of pollution.

**Practices:** Suggested Planning, Siting and Developing Roads, Highways and Bridges practices can be found at: [http://water.epa.gov/polwaste/nps/urban/upload/2005\\_12\\_08\\_NPS\\_urbanmm\\_urban\\_ch07.pdf](http://water.epa.gov/polwaste/nps/urban/upload/2005_12_08_NPS_urbanmm_urban_ch07.pdf)

**See Appendix for Responsible Agencies and Authorities**

## Management Measure for Bridges

**Site, design, and maintain bridge structures so that sensitive and valuable aquatic ecosystems and areas providing important water quality benefits are protected from adverse effects.**

**Applicability:** This management measure applies to new, relocated, and rehabilitated bridge structures in order to control erosion, streambed scouring, and surface runoff from such activities. Watershed planning and implementation efforts related to bridges should rely upon information found at: <http://www.epa.gov/owow/NPS/MMGI/Chapter4/ch4-7b.html>

- (f) This measure requires that NPS runoff impacts on surface waters from bridge decks be assessed and that appropriate management and treatment be employed to protect critical habitats, wetlands, fisheries, shellfish beds, and domestic water supplies. The siting of bridges should be a coordinated effort among the States, the FHWA, the U.S. Coast Guard, and the Army Corps of Engineers. Locating bridges in coastal areas can cause significant erosion and sedimentation, resulting in the loss of wetlands and riparian areas. Additionally, since bridge pavements are extensions of the connecting highway, runoff waters from bridge decks also deliver loadings of heavy metals, hydrocarbons, toxic substances, and deicing chemicals to surface waters as a result of discharge through scupper drains with no overland buffering. Bridge maintenance can also contribute heavy loads of lead, rust particles, paint, abrasive, solvents, and cleaners into surface waters. Protection against possible pollutant overloads can be afforded by minimizing the use of scuppers on bridges traversing very sensitive waters and conveying deck drainage to land for treatment. Whenever practical, bridge structures should be located to avoid crossing over sensitive fisheries and shellfish-harvesting areas to prevent washing polluted runoff through scuppers into the waters below. Also, bridge design should account for potential scour and erosion, which may affect shellfish beds and bottom sediments.

**Practices:** Suggested Bridge practices can be found at:  
[http://water.epa.gov/polwaste/nps/urban/upload/2005\\_12\\_08\\_NPS\\_urbanmm\\_urban\\_ch07.pdf](http://water.epa.gov/polwaste/nps/urban/upload/2005_12_08_NPS_urbanmm_urban_ch07.pdf)

**See Appendix for Responsible Agencies and Authorities**

## Management Measure for Operation and Maintenance

**Incorporate pollution prevention procedures into the operation and maintenance of roads, highways, and bridges to reduce pollutant loadings to surface waters.**

**Applicability:** This management measure applies to existing, restored, and rehabilitated roads, highways, and bridges. *This management measure does not apply to urban City and County of Honolulu due to overlap with NPDES storm water regulations.* Watershed planning and implementation efforts related to bridges should rely upon information found at: <http://www.epa.gov/owow/NPS/MMGI/Chapter4/ch4-7e.html>

- (g) Substantial amounts of eroded material and other pollutants can be generated by operation and maintenance procedures for roads, highways, and bridges, and from sparsely vegetated areas, cracked pavements, potholes, and poorly operating urban runoff control structures. This measure is intended to ensure that pollutant loadings from roads, highways, and bridges are minimized by the development and implementation of a program and associated practices to ensure that sediment and toxic substance loadings from operation and maintenance activities do not impair coastal surface waters. The program to be developed, using the practices described in this management measure, should consist of and identify standard operating procedures for nutrient and pesticide management, road salt use minimization, and maintenance guidelines (e.g., capture and contain paint chips and other particulates from bridge maintenance operations, resurfacing, and pothole repairs).

**Practices:** Suggested Operation and Maintenance practices can be found at: [http://water.epa.gov/polwaste/nps/urban/upload/2005\\_12\\_08\\_NPS\\_urbanmm\\_urban\\_ch11.pdf](http://water.epa.gov/polwaste/nps/urban/upload/2005_12_08_NPS_urbanmm_urban_ch11.pdf)

## See Appendix for Responsible Agencies and Authorities

## Management Measure for Road, Highway, and Bridge Runoff Systems

**Develop and implement runoff management systems for existing roads, highways, and bridges to reduce runoff pollutant concentrations and volumes entering surface waters.**

- (1) Identify priority and watershed pollutant reduction opportunities (e.g., improvements to existing urban runoff control structures); and
- (2) Establish schedules for implementing appropriate controls.

**Applicability:** This management measure applies to existing, resurfaced, restored, and rehabilitated roads, highways, and bridges that contribute to adverse effects in surface waters. *This management measure does not apply to urban City and County of Honolulu due to overlap with NPDES storm water regulations.* Watershed planning and implementation efforts related to road, highways and bridge runoff systems should rely upon information found at: <http://www.epa.gov/owow/NPS/MMGI/Chapter4/ch4-7f.html>

- (h) This measure requires that operation and maintenance systems include the development of retrofit projects, where needed, to collect NPS pollutant loadings from existing, reconstructed, and rehabilitated roads, highways, and bridges. Poorly designed or maintained roads and

bridges can generate significant erosion and pollution loads containing heavy metals, hydrocarbons, sediment, and debris that run off into and threaten the quality of surface waters and their tributaries. In areas where such adverse impacts to surface waters can be attributed to adjacent roads or bridges, retrofit management projects to protect these waters may be needed (e.g., installation of structural or nonstructural pollution controls). Retrofit projects can be located in existing rights-of-way, within interchange loops, or on adjacent land areas. Areas with severe erosion and pollution runoff problems may require relocation or reconstruction to mitigate these impacts.

Runoff management systems are a combination of nonstructural and structural practices selected to reduce nonpoint source loadings from roads, highways, and bridges. These systems are expected to include structural improvements to existing runoff control structures for water quality purposes; construction of new runoff control devices, where necessary to protect water quality; and scheduled operation and maintenance activities for these runoff control practices. Typical runoff controls for roads, highways, and bridges include vegetated filter strips, grassed swales, detention basins, constructed wetlands, and infiltration trenches.

**Practices:** Suggested Runoff System practices can be found at:

[http://water.epa.gov/polwaste/nps/urban/upload/2005\\_12\\_08\\_NPS\\_urbanmm\\_urban\\_ch07.pdf](http://water.epa.gov/polwaste/nps/urban/upload/2005_12_08_NPS_urbanmm_urban_ch07.pdf)

**See Appendix for Responsible Agencies and Authorities**

## MARINAS AND RECREATIONAL BOATING

### **A. Introduction**

There are fifteen management measures that apply to marinas and recreational boating.

#### **Siting and Design**

1. Marina Flushing
2. Water Quality Assessment
3. Habitat Assessment
4. Shoreline Stabilization
5. Storm Water Runoff
6. Fueling Station Design
7. Sewage Facility Management

#### **Marina and Boat Operation and Maintenance**

8. Solid Waste Management
9. Fish Waste Management
10. Liquid Material Management
11. Petroleum Control
12. Boat Cleaning
13. Public Education
14. Maintenance of Sewage Facilities
15. Boat Operation

The management measures for marinas are applicable to the facilities and their associated shore-based services that support recreational boats and boats for hire. The following operations/ facilities are covered by these management measures:

- any facility that contains 10 or more slips, piers where 10 or more boats may tie up, or any facility where a boat for hire is docked;
- boat maintenance or repair yards that are adjacent to the water;
- any federal, State, or local facility that involves recreational boat maintenance or repair that is on or adjacent to the water;
- public or commercial boat ramps;
- any residential or planned community marina with 10 or more slips; and
- any mooring field where 10 or more boats are moored.

The following table provides a summary of authorities that apply to the management measures for marinas and recreational boating. A written description of the specific authorities and implementation tools are provided under each management measure in Section B. Appendix A contains tables providing the relevant language for each regulatory and non-regulatory mechanism for each management measure.

Authority		Responsible Agency	Marina Flushing	Water Quality Assessment	Habitat Assessment	Shoreline Stabilization	Stormwater Management	Fueling Station Design	Sewage Facilities	Solid Waste Management	Fish Waste Management	Liquid Material Mgt.	Petroleum Control	Boat Cleaning	Public Education	Maint of Sewage Facilities	Boat Operation
<b>Local</b>	Chapter 12-202, MCC SMA Rules for Maui Planning Commission	Maui Plng Commission	X	X	X			X	X								
	Chapter 12-302, MCC SMA Rules for Molokai Planning Commission	Molokai Plng Commission	X	X	X			X	X								
	Chapter 12-402, MCC SMA Rules for Lanai Planning Commission	Lanai Plng Commission	X	X	X			X	X								
	Chapter 25, ROH Special Mgt Area	CCH	X	X	X			X	X								
	Rule 9, Hawaii Cty Planning Commission	Hawaii Cty Plng Commission	X	X	X			X	X								
	SMA Rules and Regs of the County of Kauai	Kauai Plng Commission	X	X	X			X	X								
<b>State</b>	Chapter 171, HRS Mgt & Disposition of Public Lands	DLNR	X	X	X												
	Chapter 183C, HRS Conservation District	DLNR	X	X	X	X	X	X	X								
	Chapter 190, HRS Marine Life Conservation Progr	DLNR															X
	Chapter 200, HRS Ocean Recreation & Coastal Areas Progr.	DLNR- DOBOR	X	X	X			X	X								
	Chapter 205A, HRS Coastal Zone Mgt	OP-CZM	X	X	X	X	X	X	X								
	Chapter 342D, HRS Water Pollution	DOH	X	X	X	X	X	X	X	X	X	X	X	X		X	X

Authority		Responsible Agency	Marina Flushing	Water Quality Assessment	Habitat Assessment	Shoreline Stabilization	Stormwater Management	Fueling Station Design	Sewage Facilities	Solid Waste Management	Fish Waste Management	Liquid Material Mgt.	Petroleum Control	Boat Cleaning	Public Education	Maint of Sewage Facilities	Boat Operation
State	Chapter 342I, HRS Special Wastes Recycling	DOH								X		X					
	Chapter 342J, HRS Hazardous Waste	DOH										X	X				
	Chapter 343, HRS Environmental Impact Statements	OEQC	X	X	X			X	X								
	Chapter 11-54, HAR Water Quality Standards	DOH		X	X	X											
	Chapter 11-55, HAR Water Pollution Control	DOH				X											
	Chapter 11-200, HAR EIS Rules	OEQC	X	X	X			X	X								
	Chapter 11-281, HAR Underground Storage Tanks	DOH						X				X					
	Chapter 13-5, HAR Conservation District	DLNR	X	X	X	X	X	X	X								
	Chapter 13-231, HAR Operation of Boats, Small Boat Harbors, & Permits	DLNR-DOBOR															X
	Chapter 13-232, HAR Sanitation and Fire Safety	DLNR-DOBOR	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	Chapter 13-235, HAR Offshore Mooring Rules and Areas	DLNR-DOBOR							X							X	



Authority		Responsible Agency	Marina Flushing	Water Quality Assessment	Habitat Assessment	Shoreline Stabilization	Stormwater Management	Fueling Station Design	Sewage Facilities	Solid Waste Management	Fish Waste Management	Liquid Material Mgt.	Petroleum Control	Boat Cleaning	Public Education	Maint of Sewage Facilities	Boat Operation
State	Chapter 13-243, HAR Vessel Equipment Requirements	DLNR														X	
	Chapter 13-244, HAR Rules of the Road	DLNR-DOBOR															X
	Chapter 13-256, HAR Ocean Rec Mgt Rules	DLNR-DOBOR															X
	Chapter 15-150, HAR SMA/Shoreline Areas	OP	X	X	X			X	X								
	<i>National Mgt Measures to Control NPS Pollution from Marinas and Rec'l Boating (2001)</i>	DLNR and EPA	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	<i>Managing Boat Wastes: A Guide for Hawaii Boaters (2005)</i>	DLNR-DOBOR, DOH, Hawaii Sea Grant													X	X	
	<i>Hawaii Recreational Harbors with MSD pumpouts (2006)</i>	DLNR-DOBOR													X	X	
Federal	Section 404, CWA	USACOE	X	X	X	X	X										
	Section 10, Rivers and Harbors Act of 1899	USACOE	X	X	X	X	X										

## **B. Management Measures**

### **Siting and Design**

#### **Marina Flushing Management Measure**

Site and design marinas such that tides and/or currents will aid in flushing of the site or renew its water regularly.

**Applicability:** This management measure applies to the siting and design of new and expanding marinas.

**Practices:** The *National Management Measures to Control Nonpoint Source Pollution from Marinas and Recreational Boating* (2001), which was incorporated into DLNR-DOBOR rules in 2004, contains the following specific language about marina flushing:

- ❖ Ensure that the bottom of the marina and the entrance channels are not deeper than adjacent navigable channels
- ❖ Consider design alternatives in poorly flushed waterbodies to enhance flushing
- ❖ Design new marinas with as few enclosed water sections or separated basins as possible to promote circulation within the entire basin.
- ❖ Consider the value of entrance channels in promoting flushing when designing or reconfiguring a marina.
- ❖ Establish two openings at the most appropriate locations within the marina to promote flow-through currents.
- ❖ Consider mechanical aerators to improve flushing and water quality where basin and entrance channel configuration cannot provide adequate flushing.

#### **See Appendix for Responsible Agencies and Authorities**

#### **Water Quality Assessment Management Measure**

Assess water quality as part of marina siting and design.

**Applicability:** This management measure applies to the siting and design of new and expanding marinas.

**Practices:** The *National Management Measures to Control Nonpoint Source Pollution from Marinas and Recreational Boating* (2001), which was incorporated into DLNR-DOBOR rules in 2004, contains the following specific language about water quality assessment:

- ❖ Use water quality sampling and/or monitoring to measure water quality conditions.
- ❖ Use a water quality modeling methodology to predict post-construction water quality conditions.
- ❖ Monitor water quality using indicators.
- ❖ Use rapid bioassessment techniques to monitor water quality.
- ❖ Establish a volunteer monitoring program.

#### **See Appendix for Responsible Agencies and Authorities**

## Habitat Assessment Management Measure

Site and design marinas to protect against adverse effects on coral reefs, shellfish resources, wetlands, submerged aquatic vegetation, or other important riparian and aquatic habitat areas as designated by local, State, or federal governments.

**Applicability:** This management measure applies to the siting and design of new and expanding marinas where site changes may have an impact on important marine species, coral reefs, wetlands, or other important habitats. The habitats of non-indigenous nuisance species are not considered important habitats.

**Practices:** The *National Management Measures to Control Nonpoint Source Pollution from Marinas and Recreational Boating* (2001), which was incorporated into DLNR-DOBOR rules in 2004, contains the following specific language about habitat assessment:

- ❖ Conduct habitat surveys and characterize the marina site, including identifying any exotic or invasive species.
- ❖ Assess habitat function (e.g., spawning area, nursery area, feeding area) to minimize indirect effects.
- ❖ Use rapid bioassessment techniques to assess effects on biological resources.
- ❖ Redevelop waterfront sites that have been previously disturbed and expand existing marinas.
- ❖ Consider alternative sites where adverse environmental effects will be minimized or positive effects will be maximized.
- ❖ Create new habitats or expand habitats in the marina basin.
- ❖ Minimize disturbance of riparian areas.
- ❖ Use dry stack storage.

**See Appendix for Responsible Agencies and Authorities**

## Shoreline Stabilization Management Measure

Where shoreline erosion is a serious nonpoint source pollution problem, shorelines may need to be stabilized. Vegetative methods are strongly preferred. Structural methods may be necessary where vegetative methods cannot work and where they do not interfere with natural beach processes or harm other sensitive ecological areas.

**Applicability:** This management measure applies to siting and design of new and expanding marinas where site changes may result in shoreline erosion.

**See Appendix for Responsible Agencies and Authorities**

**Practices:** The *National Management Measures to Control Nonpoint Source Pollution from Marinas and Recreational Boating* (2001), which was incorporated into DLNR-DOBOR rules in 2004, contains the following specific language about shoreline and streambank stabilization:

- ❖ Use vegetative plantings, wetlands, beaches, and natural shorelines where space allows.
- ❖ Where shorelines need structural stabilization and where space and use allow, riprap revetment is preferable to a solid vertical bulkhead.

- ❖ Where reflected waves will not endanger shorelines or habitats and where space is limited, protect shorelines with structural features such as vertical bulkheads.
- ❖ At boat ramps, retain natural shoreline features to the extent feasible and protect disturbed areas from erosion.

**See Appendix for Responsible Agencies and Authorities**

**Storm Water Runoff Management Measure**

**Implement effective runoff control strategies which include the use of pollution prevention activities and the proper design of hull maintenance areas.**

**Reduce the average annual loadings of total suspended solids (TSS) in runoff from hull maintenance areas by 80%. For the purposes of this measure, an 80% reduction of TSS is to be determined on an average annual basis.**

**Applicability:** This management measure applies to new and expanding marinas, and to existing marinas for *at least* the hull maintenance areas. (Hull maintenance areas are areas whose primary function is to provide a place for boats during the scraping, sanding, and painting of their bottoms.) If boat bottom scraping, sanding, and/or painting is done in areas other than those designated as hull maintenance areas, the management measure applies to those areas as well.

This measure does not apply to runoff that enters the marina property from upland sources. Upland sources are addressed by the management measures for agriculture, forestry, urban areas, hydromodifications, and wetland and riparian areas.

**NOTE:** *This management measure does not apply to existing, new, or expanding facilities that have a NPDES permit for their stormwater discharges.*

**Practices:** The *National Management Measures to Control Nonpoint Source Pollution from Marinas and Recreational Boating (2001)*, which was incorporated into DLNR-DOBOR rules in 2004, contains the following specific language about stormwater runoff management:

- ❖ Perform as much boat repair and maintenance work as possible inside work buildings.
- ❖ Where an inside work space is not available, perform abrasive blasting and sanding within spray booths or tarp enclosures.
- ❖ Where buildings or enclosed areas are not available, provide clearly designated land areas for boat repair and maintenance.
- ❖ Design hull maintenance areas to minimize contaminated runoff.
- ❖ Use vacuum sanders both to remove paint from hulls and to collect paint dust and chips.
- ❖ Restrict the types and/or amount of do-it-yourself work done at the marina.
- ❖ Clean hull maintenance areas immediately after any maintenance to remove debris, and dispose of collected material properly.
- ❖ Capture and filter pollutants out of runoff water with permeable tarps, screens, and filter cloths.
- ❖ Sweep or vacuum around hull maintenance areas, roads, and driveways frequently.
- ❖ Sweep parking lots regularly.
- ❖ Plant grass between impervious areas and the marina basin.

- ❖ Construct new or restore former wetlands where feasible and practical.
- ❖ Use porous pavement where feasible.
- ❖ Install oil/grit separators and/or vertical media filters to capture pollutants in runoff.
- ❖ Use catch basins where storm water flows to the marina basin in large pulses.
- ❖ Add filters to storm drains that are located near work areas.
- ❖ Place absorbents in drain inlets.
- ❖ Use chemical and filtration treatment systems only where necessary.

**See Appendix for Responsible Agencies and Authorities**

**Fueling Station Design Management Measure**

**Design fueling stations to allow for ease in cleanup of spills.**

**Applicability:** This management measure applies to new and expanding marinas where fueling stations are to be added or moved.

**Practices:** The *National Management Measures to Control Nonpoint Source Pollution from Marinas and Recreational Boating* (2001), which was incorporated into DLNR-DOBOR rules in 2004, contains the following specific language about fueling station design:

- ❖ Use automatic shutoffs on fuel lines and at hose nozzles to reduce fuel loss.
- ❖ Remove old-style fuel nozzle triggers that are used to hold the nozzle open without being held.
- ❖ Install personal watercraft (PWC) floats at fuel docks to help drivers refuel without spilling.
- ❖ Regularly inspect, maintain, and replace fuel hoses, pipes, and tanks.
- ❖ Install a spill monitoring system.
- ❖ Train fuel dock staff in spill prevention, containment, and cleanup procedures.
- ❖ Install easy-to-read signs on the fuel dock that explain proper fueling, spill prevention, and spill reporting procedures.
- ❖ Locate and design boat fueling stations so that spills can be contained, such as with a floating boom, and cleaned up easily.
- ❖ Write and implement a fuel spill recovery plan.
- ❖ Have spill containment equipment storage, such as a locker attached or adjacent to the fuel dock, easily accessible and clearly marked.

**See Appendix for Responsible Agencies and Authorities**

## Sewage Facility Management Measure

Install pumpout, dump station, and restroom facilities where needed at new and expanding marinas to reduce the release of sewage into surface waters. Design these facilities to allow ease of access and post signage to promote use by the boating public.

**Applicability:** This management measure applies to new and expanding marinas in areas where adequate marine sewage collection facilities do not exist. Marinas that do not provide services for vessels that have marine sanitation devices (MSDs) do not need to have pumpouts, although dump stations for portable toilets and restrooms should be available. This measure does not address direct discharges from vessels covered under Section 312, CWA.

### **Practices:**

The *National Management Measures to Control Nonpoint Source Pollution from Marinas and Recreational Boating* (2001), which was incorporated into DLNR-DOBOR rules in 2004, contains the following specific language about sewage facility management:

- ❖ Install pumpout facilities and dump stations. Use a system compatible with the marina's needs.
- ❖ Provide pumpout service at convenient times and at a reasonable cost.
- ❖ Keep pumpout stations clean and easily accessible, and consider having marina staff do pumpouts.
- ❖ Provide portable toilet dump stations near small slips and launch ramps.
- ❖ Provide restrooms at all marinas and boat ramps.
- ❖ Consider declaring marina waters to be a "no discharge" area.
- ❖ Establish practices and post signs to control pet waste problems.
- ❖ Avoid feeding wild birds in the marina.
- ❖ Establish no discharge zones to prevent any boat sewage from entering boating waters.
- ❖ Establish equipment requirement policies that prohibit the use of Y-valves on boats on inland waters.

**See Appendix for Responsible Agencies and Authorities**

## **Marina and Boat Operation and Maintenance**

### **Solid Waste Management Measure**

**Properly dispose of solid wastes produced by the operation, cleaning, maintenance, and repair of boats to limit entry of solid wastes into surface waters.**

**Applicability:** This management measure applies to the operation and maintenance of new and expanding marinas.

**Practices:** The *National Management Measures to Control Nonpoint Source Pollution from Marinas and Recreational Boating* (2001), which was incorporated into DLNR-DOBOR rules in 2004, contains the following specific language about solid waste management:

- ❖ Encourage marina patrons to avoid doing any hull maintenance while their boats are in the water.
- ❖ Place trash receptacles in convenient locations for marina patrons. Covered dumpsters and trash cans are ideal.
- ❖ Provide trash receptacles at boat launch sites.
- ❖ Provide facilities for collecting recyclable materials.
- ❖ Encourage fishing line collection and recycling or disposal.
- ❖ Provide boaters with trash bags.
- ❖ Use a reusable blasting medium.
- ❖ Require patrons to clean up pet wastes and provide a specific dog walking area at the marina.

**See Appendix for Responsible Agencies and Authorities**

### **Fish Waste Management Measure**

**Promote sound fish waste management through a combination of fish-cleaning restrictions, public education, and proper disposal of fish waste.**

**Applicability:** This management measure applies to marinas where fish waste is determined to be a source of water pollution.

**See Appendix for Responsible Agencies and Authorities**

**Practices:** The *National Management Measures to Control Nonpoint Source Pollution from Marinas and Recreational Boating* (2001), which was incorporated into DLNR-DOBOR rules in 2004, contains the following specific language about fish waste management:

- ❖ Clean fish offshore where the fish are caught and discard of the fish waste at sea (if allowed by the state).
- ❖ Install fish cleaning stations at the marina and at boat launch sites.
- ❖ Compost fish waste where appropriate.
- ❖ Freeze fish parts and reuse them as bait or chum on the next fishing trip.
- ❖ Encourage catch and release fishing, which does not kill the fish and produces no fish waste.

### Liquid Material Management Measure

Provide and maintain appropriate storage, transfer, containment, and disposal facilities for liquid material, such as oil, harmful solvents, antifreeze, and paints, and encourage recycling of these materials.

**Applicability:** This management measure applies to the operation and maintenance of marinas where liquid materials used in the maintenance, repair, or operation of boats are stored.

**Practices:** The *National Management Measures to Control Nonpoint Source Pollution from Marinas and Recreational Boating* (2001), which was incorporated into DLNR-DOBOR rules in 2004, contains the following specific language about liquid material management:

- ❖ Build curbs, berms, or other barriers around areas used for liquid material storage to contain spills.
- ❖ Store liquid materials under cover on a surface that is impervious to the type of material stored.
- ❖ Storage and disposal areas for liquid materials should be located in or near repair and maintenance areas, undercover, protected from runoff, with berms or secondary containment, and away from flood areas and fire hazards.
- ❖ Store minimal quantities of hazardous materials.
- ❖ Provide clearly labeled, separate containers for the disposal of waste oils, fuels, and other liquid wastes.
- ❖ Recycle liquid materials where possible.
- ❖ Change engine oil using nonspill vacuum-type systems to perform spill-proof oil changes or to suction oily water from bilges.
- ❖ Use antifreeze and coolants that are less toxic to the environment.
- ❖ Use alternative liquid materials where practical.
- ❖ Follow manufacturer's directions and use nontoxic or low-toxicity pesticides.
- ❖ Burn used oil used as a heating fuel.
- ❖ Prepare a hazardous materials spill recovery plan and update it as necessary.
- ❖ Keep adequate spill response equipment where liquid materials are stored.

### See Appendix for Responsible Agencies and Authorities

### Petroleum Control Management Measure

Reduce the amount of fuel and oil from boat bilges and fuel tank air vents entering marina and surface waters.

**Applicability:** This management measure applies to boats that have inboard fuel tanks.

**Practices:** The *National Management Measures to Control Nonpoint Source Pollution from Marinas and Recreational Boating* (2001), which was incorporated into DLNR-DOBOR rules in 2004, contains the following specific language about petroleum control:

- ❖ Promote the installation and use of fuel/air separators on air vents or tank stems of inboard fuel tanks to reduce the amount of fuel spilled into surface waters during fueling.
- ❖ Avoid overfilling fuel tanks.



- ❖ Provide “doughnuts” or small petroleum absorption pads to patrons to use while fueling to catch splashback and the last drops when the nozzle is transferred back from the boat to the fuel dock.
- ❖ Keep engines properly maintained for efficient fuel consumption, clean exhaust, and fuel economy. Follow the manufacturer’s specifications.
- ❖ Routinely check for engine fuel leaks and use a drip pan under engines.
- ❖ Avoid pumping any bilge water that is oily or has a sheen. Promote the use of materials that capture or digest oil in bilges. Examine these materials frequently and replace as necessary.
- ❖ Extract used oil from absorption pads if possible, or dispose of it in accordance with petroleum disposal guidelines.
- ❖ Prohibit the use of detergents and emulsifiers on fuel spills.

**See Appendix for Responsible Agencies and Authorities**

**Boat Cleaning Management Measure**

**For boats that are in the water, perform cleaning operations to minimize, to the extent practicable, the release to surface waters of harmful cleaners, solvents and paint from in-water hull cleaning.**

**Applicability:** This management measure applies to marinas where boat topsides are cleaned and marinas where hull scrubbing in the water has been shown to result in water or sediment quality problems.

**Practices:** The *National Management Measures to Control Nonpoint Source Pollution from Marinas and Recreational Boating* (2001), which was incorporated into DLNR-DOBOR rules in 2004, contains the following specific language about boat cleaning:

- ❖ Wash boat hulls above the waterline by hand. Where feasible, remove boats from the water and clean them where debris can be captured and properly disposed of.
- ❖ Attempt to wash boats frequently enough that the use of cleansers will not be necessary.
- ❖ If using cleansers, buy and use ones that will have minimal impact on the aquatic environment.
- ❖ Switch to long-lasting and low-toxicity or nontoxic antifouling paints.
- ❖ Avoid in-the-water hull scraping or any abrasive process done underwater that could remove paint from the boat hull.
- ❖ Ensure that adequate precautions have been taken to minimize the spread of exotic and invasive species when boats are transferred from one waterbody to another.
- ❖ Minimize the impacts of wastewater from pressure washing.

**See Appendix for Responsible Agencies and Authorities**

## Public Education Management Measure

Public education/outreach/training programs should be instituted for boaters, as well as marina owners and operators, to prevent improper disposal of polluting material.

**Applicability:** This management measure applies to all environmental control authorities in areas where marinas are located.

**Practices:** The *National Management Measures to Control Nonpoint Source Pollution from Marinas and Recreational Boating* (2001), which was incorporated into DLNR-DOBOR rules in 2004, contains the following specific language about public education:

- ❖ Use signs to inform marina patrons of appropriate clean boating practices.
- ❖ Establish bulletin boards for environmental messages and idea sharing.
- ❖ Promote recycling and trash reduction programs.
- ❖ Hand out pamphlets or flyers, send newsletters, and add inserts to bill mailings with information about how recreational boaters can protect the environment and have clean boating waters.
- ❖ Organize and present enjoyable environmental education meetings, presentations, and demonstrations and consider integrating them into ongoing programs.
- ❖ Educate and train marina staff to do their jobs in an environmentally conscious manner and to be good role models for marina patrons.
- ❖ Insert language into facility contracts that promotes tenants' using certain areas and clean boating techniques when maintaining their boats. Use a contract that ensures that tenants will comply with the marina's best management practices.
- ❖ Have a clearly written environmental best management practices agreement for outside contractors to sign as a precondition to working on any boat in the marina.
- ❖ Participate with an organization that promotes clean boating practices.
- ❖ Provide MARPOL placards.
- ❖ Paint signs on storm drains.
- ❖ Establish and educate marina patrons about rules governing fish cleaning.
- ❖ Educate boaters about good fish cleaning practices.
- ❖ Provide information on local waste collection and recycling programs.
- ❖ Hold clinics on safe fueling and bilge maintenance.
- ❖ Teach boaters how to fuel boats to minimize fuel spills.
- ❖ Stock phosphate-free, nontoxic cleaners and other environmentally friendly products.
- ❖ Place signs in the water and label charts to alert boaters about sensitive habitat areas.
- ❖ Educate boaters to thoroughly clean their boats before boating in other waterbodies.

**See Appendix for Responsible Agencies and Authorities**

## Maintenance of Sewage Facilities Management Measure

Ensure that sewage pumpout facilities are maintained in operational condition and encourage their use.

**Applicability:** This management measure applies to marinas where marine sewage disposal facilities exist.

**Practices:** The *National Management Measures to Control Nonpoint Source Pollution from Marinas and Recreational Boating* (2001), which was incorporated into DLNR-DOBOR rules in 2004, contains the following specific language about maintenance of sewage facilities:

- ❖ Regularly inspect and maintain sewage facilities.
- ❖ Disinfect the suction connection of a pumpout station (stationary or portable) by dipping it into or spraying it with disinfectant.
- ❖ Maintain convenient, clean, dry, and pleasant restroom facilities in the marina.
- ❖ Maintain a dedicated fund and issue a contract for pumpout and dump station repair and maintenance.

**See Appendix for Responsible Agencies and Authorities**

## Boat Operation Management Measure (applies to boating only)

Restrict boating activities where necessary to decrease turbidity and physical destruction of shallow-water habitat.

**Applicability:** This management measure applies in non-marina surface waters where evidence indicates that boating activities are impacting shallow-water habitats.

**Practices:** The *National Management Measures to Control Nonpoint Source Pollution from Marinas and Recreational Boating* (2001), which was incorporated into DLNR-DOBOR rules in 2004, contains the following specific language about boat operation:

- ❖ Restrict boater traffic in shallow-water areas.
- ❖ Establish and enforce no wake zones to decrease turbidity, shore erosion, and damage in marinas.

**See Appendix for Responsible Agencies and Authorities**

## HYDROMODIFICATION

### A. Introduction

There are four management measures that apply to hydromodification.

1. Physical and Chemical Characteristics of Surface Waters
2. Instream and Riparian Habitat Restoration
3. Protection of Surface Water Quality and Instream and Riparian Habitat from Dams
4. Eroding Streambank and Shorelines

According to the Environmental Protection Agency's (EPA) *Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters*, **hydromodification** means "alteration of the hydrologic characteristics of coastal and non-coastal waters, which in turn could cause degradation of water resources" (p 6-90). In other words, any alteration to a stream or coastal waters, whether a diversion, channel, dam, or levee is considered a hydromodification. The hydromodification management measures affect all land use activities, especially those associated with agriculture, forestry and urban development. Therefore, these management measures should be considered in conjunction with the management measures for agriculture, forestry, urban areas and, to a lesser extent, marinas.

For the purposes of this chapter, the following definitions will be used.

- A **stream** is any natural water course in which water usually flows in a defined bed or channel. The flow can be constant, uniform, or uninterrupted, regardless of whether the stream has been altered or channelized.
- A **perennial stream** carries water at all times.
- An **intermittent stream** carries water most of the time but periodically ceases to flow when evaporation or seepage into the stream's bed and banks exceed the available streamflow. For the purposes of this management measure, intermittent streams will also include:
  - **ephemeral streams** that carry water only after rains; and
  - **interrupted streams** that carry water generally through their length but may have sections with dry streambeds.
- A **channel** is a natural or constructed waterway that continuously or periodically passes water.
- A **streambank** is the side slopes of a channel between which the streamflow is normally confined.

The following table provides a summary of authorities that apply to the management measures for hydromodifications. A written description of the specific authorities and implementation tools are provided under each management measure in Section B. Appendix A contains tables providing the relevant language for each regulatory and non-regulatory mechanism for each management measure.

Authority		Responsible Agency	Phys & Chem Characteristics Surface Water	Instream & Riparian Habitat Rest'n	Prot'n of Surface of WQ & Instream/ Riparian Habitat	Eroding Streambanks and Shorelines
<b>Local</b>	Chapter 12-202, MCC, SMA Rules for Maui Png Comm.	Maui Png Commission	X	X	X	X
	Chapter 12-302 MCC, SMA Rules for Molokai Png Comm.	Molokai Png Commission	X	X	X	X
	Chapter 12-402, MCC, SMA Rules for Lanai Png Comm.	Lanai Png Commission	X	X	X	X
	<i>2030 General Plan Update: Draft Countywide Policy Plan (2008)</i>	Maui County				X
	Chapter 14-12, ROH Drainage, Flood & Pollution Control	CCH – DPW	X	X	X	X
	Chapter 25, ROH Special Mgt Area	CCH Png Commission	X	X	X	X
	Chapter 41-26, ROH Maint. of Channels, Streambeds, Streambanks etc.	CCH – DPW	X	X	X	X
	various sustainable communities and development plans for Oahu	CCH				X
	Rule 9, Hawaii County Planning Commission	Hawaii Cty. Png Comm.	X	X	X	X
	<i>Hawaii County General Plan (2005)</i>	Hawaii County				X
	SMA Rules and Regs of the County of Kauai	Kauai Png Commission	X	X	X	X
	<i>The Kauai General Plan (2000)</i>	Kauai County				X
<b>State</b>	Chapter 46, HRS General Provisions, County Org'n and Admin	Counties	X	X		
	Chapter 174C, HRS Hawaii Water Code	DLNR-CWRM	X	X	X	X
	Chapter 179D, HRS Dams and Reservoirs	DLNR			X	

Authority		Responsible Agency	Phys & Chem Characteristics Surface Water	Instream & Riparian Habitat Rest'n	Prot'n of Surface of WQ & Instream/ Riparian Habitat	Eroding Streambanks and Shorelines
<b>State</b>	Chapter 183C, HRS Conservation District	DLNR	X	X		
	Chapter 205A, HRS Coastal Zone Management	OP-CZM	X	X	X	X
	Chapter 342D, HRS Water Pollution	DOH	X	X	X	X
	Chapter 343, HRS Env'l Impact Statements	OEQC	X	X	X	X
	Chapter 11-54, HAR Water Quality Standards	DOH	X	X	X	
	Chapter 11-55, HAR Water Pollution Control	DOH	X	X	X	X
	Chapter 11-200, HAR EIS Rules	OEQC	X	X	X	X
	Chapter 13-5, HAR Conservation District	DLNR	X	X		
	Chapter 13-169, HAR Protection of Instream Uses of Water	DLNR-CWRM	X	X	X	X
	Chapter 13-231, HAR Operation of Boats, Small Boat Harbors, and Permits	DLNR-DOBOR				X
	Chapter 13-244, HAR Rules of the Road	DLNR-DOBOR				X
	Chapter 13-256, HAR Ocean Rec Mgt Rules & Areas	DLNR-DOBOR				X
	Chapter 15-150, HAR SMA/Shoreline Areas	OP	X	X	X	X
<b>Federal</b>	Section 404, CWA	USACOE	X	X	X	X
	Section 10, Rivers and Harbors Act of 1899	USACOE	X	X	X	X

## **B. Management Measures**

### **Channelization and Channel Modification**

#### **Management Measure for Physical and Chemical Characteristics of Surface Waters**

- (1) Evaluate the potential effects of proposed channelization and channel modification on the physical and chemical characteristics of surface waters in coastal areas;**
- (2) Plan and design channelization and channel modification to reduce undesirable impacts; and**
- (3) Develop an operation and maintenance program for existing modified channels that includes identification and implementation of opportunities to improve physical and chemical characteristics of surface waters in those channels.**

**Applicability:** This management measure applies to public and private channelization and channel modification activities to prevent the degradation of physical and chemical characteristics of surface waters from such activities. This management measure applies to any proposed channelization or channel modification projects, including levees, as well as existing modified channels. Watershed planning and implementation efforts related to the physical and chemical characteristics of surface waters associated with modified channels should rely upon information found at:

<http://www.epa.gov/owow/NPS/MMGI/Chapter6/ch6-2a.html>

- (i)** The purpose of this management measure is to ensure that the planning process for new hydromodification projects addresses changes to physical and chemical characteristics of surface waters that may occur as a result of the proposed work. Implementation of this management measure is intended to occur concurrently with the implementation of Instream and Riparian Habitat Restoration. For existing projects, the purpose of this management measure is to ensure that the operation and maintenance program uses any opportunities available to improve the physical and chemical characteristics of the surface waters. Changes created by channelization and channel modification activities are problematic if they unexpectedly alter environmental parameters to levels outside normal or desired ranges. The physical and chemical characteristics of surface waters that may be influenced by channelization and channel modification include sediment, turbidity, salinity, temperature, nutrients, dissolved oxygen, oxygen demand, and contaminants.

**Practices:** Suggested practices related to physical and chemical characteristics of channelization and channel modification:

[http://www.epa.gov/owow/NPS/hydromod/pdf/Chapter\\_3\\_Channelization\\_web.pdf](http://www.epa.gov/owow/NPS/hydromod/pdf/Chapter_3_Channelization_web.pdf)

**See Appendix for Responsible Agencies and Authorities**

## **Instream and Riparian Habitat Restoration Management Measure**

- (1) Evaluate the potential effects of proposed channelization and channel modification on instream and riparian habitat in coastal areas;**
- (2) Plan and design channelization and channel modification to reduce undesirable impacts; and**
- (3) Develop an operation and maintenance program with specific timetables for existing modified channels that includes identification of opportunities to restore instream and riparian habitat in those channels.**

**Applicability:** This management measure applies to any proposed channelization or channel modification project to determine changes in instream and riparian habitats and to existing modified channels to evaluate possible improvements to these environments. Watershed planning and implementation efforts related to instream and riparian habitat associated with modified channels should rely upon information found at:

<http://www.epa.gov/owow/NPS/MMGI/Chapter6/ch6-2b.html>

- (j) The purpose of this management measure is to correct or prevent detrimental changes to instream and riparian habitat from the impacts of channelization and channel modification projects. Implementation of this management measure is intended to occur concurrently with the implementation of Physical and Chemical Characteristics of Surface Waters management measure.

Contact between floodwaters and overbank soil and vegetation can be increased by a combination of setback levees and use of compound-channel designs. Levees set back away from the streambank (setback levees) can be constructed to allow for overbank flooding, which provides surface water contact to important streamside areas (including wetlands and riparian areas). Additionally, setback levees still function to protect adjacent property from flood damage. Compound-channel designs consist of an incised, narrow channel to carry surface water during low (base)-flow periods, a staged overbank area into which the flow can expand during design flow events, and an extended overbank area, sometimes with meanders, for high-flow events. Planting of the extended overbank with suitable vegetation completes the design.

Preservation of ecosystem benefits can be achieved by site-specific design to obtain predefined optimum or existing ranges of physical environmental conditions. Mathematical models can be used to assist in site-specific design. Instream and riparian habitat alterations caused by secondary effects can be evaluated by the use of models and other decision aids in the design process of a channelization and channel modification activity. After using models to evaluate secondary effects, restoration programs can be established.



### **Practices:**

Suggested practices related to instream and riparian habitat restoration of channelization and channel modification:

[http://www.epa.gov/owow/NPS/hydromod/pdf/Chapter\\_3\\_Channelization\\_web.pdf](http://www.epa.gov/owow/NPS/hydromod/pdf/Chapter_3_Channelization_web.pdf)

**See Appendix for Responsible Agencies and Authorities**

## **Dams**

### **Management Measure for Protection of Surface Water Quality and Instream and Riparian Habitat**

Develop and implement a program to manage the operation of dams in coastal areas that includes an assessment of:

- (1) Surface water quality and instream and riparian habitat and potential for improvement; and
- (2) Significant nonpoint source pollution problems that result from excessive surface water withdrawals.

**Applicability:** This management measure applies to dam operations that result in the loss of desirable surface water quality, and of desirable instream and riparian habitat. Dams are defined as constructed impoundments which are either:

- (a) 25 feet or more in height *and* greater than 15 acre-feet in capacity, or
- (b) 6 feet or more in height *and* greater than 50 acre-feet in capacity.

**Practices:** Suggested practices related to dams:

[http://www.epa.gov/owow/NPS/hydromod/pdf/Chapter\\_4\\_Dams\\_web.pdf](http://www.epa.gov/owow/NPS/hydromod/pdf/Chapter_4_Dams_web.pdf)

**See Appendix for Responsible Agencies and Authorities**

## **Streambank and Shoreline Erosion**

### **Management Measure for Eroding Streambanks and Shorelines**

- (1) Where streambank or shoreline erosion is a serious nonpoint source pollution problem, streambanks and shorelines may need to be stabilized. Vegetative methods are strongly preferred. Structural methods may be necessary where vegetative methods cannot work and where they do not interfere with natural processes or harm other sensitive ecological areas.
- (2) Protect streambank and shoreline features with the potential to reduce nonpoint source pollution.
- (3) Protect streambanks and shorelines from erosion due to uses of either the shorelands or adjacent surface waters.
- (4) Where artificial fill is eroding into adjacent streams or coastal waters, it should be removed.

**Applicability:** This management measure applies to eroding shorelines in coastal bays and to eroding streambanks in coastal streams. The measure does not imply that all shoreline and streambank erosion must be controlled. Some amount of natural erosion is necessary to provide the sediment for beaches in estuaries and coastal bays, for point bars and channel deposits in rivers, and for substrate in tidal flats and wetlands. The measure, however, applies to eroding shorelines and streambanks that constitute a nonpoint source pollution problem in surface waters. It is not intended to hamper the efforts of any States or localities to retreat rather than to harden the shoreline. Watershed planning

and implementation efforts related to streambank and shoreline erosion should rely upon information found at: <http://www.epa.gov/owow/NPS/MMGI/Chapter6/ch6-4.html>

- (k) Several streambank and shoreline stabilization techniques will be effective in controlling coastal erosion wherever it is a source of nonpoint pollution. Techniques involving marsh creation and vegetative bank stabilization ("soil bioengineering") will usually be effective at sites with limited exposure to strong currents or wind-generated waves. In other cases, the use of engineering approaches, including beach nourishment or coastal structures, may need to be considered. In addition to controlling those sources of sediment input to surface waters which are causing NPS pollution, these techniques can halt the destruction of wetlands and riparian areas located along the shorelines of surface waters. Once these features are protected, they can serve as a filter for surface water runoff from upland areas, or as a sink for nutrients, contaminants, or sediment already present as NPS pollution in surface waters.

Stabilization practices involving vegetation or coastal engineering should be properly designed and installed. These techniques should be applied only when there will be no adverse effects to aquatic or riparian river habitat, or to the stability of adjacent shorelines, from stabilizing a source of shoreline sediments. Finally, it is the intent of this measure to promote institutional measures that establish minimum set-back requirements or measures that allow a buffer zone to reduce concentrated flows and promote infiltration of surface water runoff in areas adjacent to the shoreline.

**Practices:** Suggested practices related to streambank and shoreline erosion:  
[http://www.epa.gov/owow/NPS/hydromod/pdf/Chapter\\_5\\_Erosion\\_web.pdf](http://www.epa.gov/owow/NPS/hydromod/pdf/Chapter_5_Erosion_web.pdf)

**See Appendix for Responsible Agencies and Authorities**

# WETLANDS, RIPARIAN AREAS, AND VEGETATED TREATMENT SYSTEMS

## A. Introduction

There are three management measures that apply to wetlands, riparian areas, and vegetated treatment systems.

1. Protection of Wetlands and Riparian Areas
2. Restoration of Wetlands and Riparian Areas
3. Vegetated Treatment Systems

For the purposes of Hawaii's coastal nonpoint pollution control program, **wetlands** are defined as:

*Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.*<sup>6</sup>

For the purposes of the coastal nonpoint pollution control program, **riparian areas** are defined as:

*Vegetated ecosystems along a waterbody through which energy, materials, and water pass. Riparian areas characteristically have a high water table and are subject to periodic flooding and influence from the adjacent waterbody. These systems encompass wetlands, uplands, or some combination of these two land forms. They will not in all cases have all of the characteristics necessary for them to be classified as wetlands.*<sup>7</sup>

Wetlands and riparian areas can play a critical role in reducing polluted runoff by intercepting surface runoff, subsurface flow, and certain groundwater flows. Their role in quality improvement includes processing, removing, transforming, and storing such pollutants as sediment, nitrogen, phosphorus, and certain heavy metals. Thus, wetlands and riparian areas buffer receiving waters from the effects of pollutants, or they prevent the entry of pollutants into receiving waters.

The following table provides a summary of authorities that apply to the management measures for wetlands, riparian areas, and vegetated treatment systems. A written description of the specific authorities and implementation tools are provided under each management measure in Section B. Appendix A contains tables providing the relevant language for each regulatory and non-regulatory mechanism for each management measure.

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<sup>6</sup> This definition is consistent with the Federal definition at 40 CFR 230.3, promulgated December 24, 1980. As amendments are made to the wetland definition, they will be considered applicable to this program.

<sup>7</sup> This definition is adapted from the definitions offered previously by Mitsch and Gosselink (1986) and Lowrance et al. (1988).

Authority		Responsible Agency	Protection of Wetlands & Riparian Areas	Restoration of Wetlands & Riparian Areas	Vegetated Treatment Systems
<b>Local</b>	Chapter 12-202, MCC, SMA Rules for Maui Png Comm.	Maui Png Commission	X	X	
	Chapter 12-302 MCC, SMA Rules for Molokai Png Comm.	Molokai Png Commission	X	X	
	Chapter 12-402, MCC, SMA Rules for Lanai Png Comm.	Lanai Png Commission	X	X	
	<i>2030 General Plan Update: Draft Countywide Policy Plan (2008)</i>	Maui County	X		
	Chapter 25, ROH Special Mgt Area	CCH Png Commission	X	X	
	various sustainable communities and development plans for Oahu	CCH	X		
	Rule 9, Hawaii County Planning Commission	Hawaii Cty. Png Comm.	X	X	
	<i>Hawaii County General Plan (2005)</i>	Hawaii County	X		
	SMA Rules and Regs of the County of Kauai	Kauai Png Commission	X	X	
	<i>The Kauai General Plan (2000)</i>	Kauai County	X		
<b>State</b>	Chapter 173A, HRS Acquisition of Resource Value Lands	DLNR	X	X	
	Chapter 174C, HRS Hawaii Water Code	DLNR – CWRM	X	X	
	Chapter 183, HRS Forest Reserves, Water Dev't and Zoning	DLNR	X	X	
	Chapter 183C, HRS Conservation District	DLNR	X	X	
	Chapter 195, HRS Natural Area Reserves System	DLNR	X	X	
	Chapter 195D, HRS Conservation of Aquatic Life, Wildlife & Land Plants	DLNR	X	X	
	Chapter 198, HRS Conservation Easements	DLNR	X	X	
	Chapter 205A, HRS Coastal Zone Management	OP-CZM	X	X	
	Chapter 342D, HRS Water Pollution	DOH	X	X	
	Chapter 11-54, HAR Water Quality Standards	DOH	X	X	
	Chapter 13-5, HAR Conservation District	DLNR	X	X	
	Chapter 13-169, HAR Protection of Instream Uses of Water	DLNR – CWRM	X	X	
	Chapter 15-150, HAR SMAs/Shoreline Areas	OP	X	X	
<b>Federal</b>	Section 404, CWA	USACOE	X	X	
	Section 10, Rivers and Harbors Act of 1899	USACOE	X	X	

## **B. Management Measures**

### **Management Measure for Protection of Wetlands and Riparian Areas**

**Protect from adverse effects wetlands and riparian areas that are serving a significant nonpoint source pollution abatement function and maintain this function while protecting the other existing functions of these wetlands and riparian areas as measured by characteristics such as vegetative composition and cover, hydrology of surface water and ground water, geochemistry of the substrate, and species composition.**

**Applicability:** This management measure applies to protecting wetlands and riparian areas from adverse nonpoint source pollution impacts. Watershed planning and implementation efforts related to the protection of wetlands and riparian areas should rely upon information found at: <http://www.epa.gov/owow/NPS/MMGI/Chapter7/ch7-2a.html>

The purpose of this management measure is to protect the existing water quality improvement functions of wetlands and riparian areas as a component of NPS programs. The overall approach is to establish a set of practices that maintains functions of wetlands and riparian areas and prevents adverse impacts to areas serving an NPS pollution abatement function. The ecosystem and water quality functions of wetlands and riparian areas serving an NPS pollution abatement function should be protected by a combination of programmatic and structural practices.

The term *NPS pollution abatement function* refers to the ability of a wetland or riparian area to remove NPS pollutants from runoff passing through the wetland or riparian area. Acting as a sink for phosphorus and converting nitrate to nitrogen gas through denitrification are two examples of the important NPS pollution abatement functions performed by wetlands and riparian areas.

This management measure provides for NPS pollution abatement through the protection of wetland and riparian functions. The permit program administered by the U.S. Army Corps of Engineers, EPA, and approved States under Section 404 of the Clean Water Act regulates the discharge of dredged or fill material into waters of the United States, including wetlands. The measure and section 404 program complement each other, but the focus of the two is different.

The measure focuses on nonpoint source problems in wetlands, as well as on maintaining the functions of wetlands that are providing NPS pollution abatement. The nonpoint source problems addressed include impacts resulting from upland development and upstream channel modifications that erode wetlands, change salinity, kill existing vegetation, and upset sediment and nutrient balances. The Section 404 program focuses on regulating the discharge of dredged or fill materials in wetlands, thereby protecting wetlands from physical destruction and other pollutant problems that could result from discharges of dredged or fill material. The nonpoint source pollution abatement functions performed by wetlands and riparian areas are most effective as parts of an integrated land management system that combines nutrient, sediment, and soil erosion control. These areas consist of a complex organization of biotic and abiotic elements. Wetlands and riparian

areas are effective in removing suspended solids, nutrients, and other contaminants from upland runoff, as well as maintaining stream channel temperature.

**Practices:** Suggested practices related to the protection of wetlands and riparian areas:

[http://water.epa.gov/polwaste/nps/wetmeasures/upload/2005\\_08\\_19\\_NPS\\_wetmeasures\\_ch4.pdf](http://water.epa.gov/polwaste/nps/wetmeasures/upload/2005_08_19_NPS_wetmeasures_ch4.pdf)

**See Appendix for Responsible Agencies and Authorities**

#### **Management Measure for Restoration of Wetlands and Riparian Areas**

**Promote the restoration of the pre-existing functions in damaged and destroyed wetlands and riparian systems in areas where the systems will serve a significant nonpoint source pollution abatement function.**

**Applicability:** This management measure applies to restoring the full range of wetland and riparian functions in areas where the systems have been degraded and destroyed, and where they can serve a significant nonpoint source pollution abatement function.

**Practices:** Suggested practices related to the restoration of wetlands and riparian areas:

[http://water.epa.gov/polwaste/nps/wetmeasures/upload/2005\\_08\\_19\\_NPS\\_wetmeasures\\_ch5.pdf](http://water.epa.gov/polwaste/nps/wetmeasures/upload/2005_08_19_NPS_wetmeasures_ch5.pdf)

**See Appendix for Responsible Agencies and Authorities**

## Management Measure for Vegetated Treatment Systems

Promote the use of engineered vegetated treatment systems such as constructed wetlands or vegetated filter strips where these systems will serve a significant nonpoint source pollution abatement function.

**Applicability:** This management measure applies in cases where engineered systems of wetlands or vegetated treatment systems can treat polluted runoff. Constructed wetlands and vegetated treatment systems often serve a significant pollution abatement function.

**Practices:** Suggested practices related vegetated treatment systems:

[http://water.epa.gov/polwaste/nps/wetmeasures/upload/2005\\_08\\_19\\_NPS\\_wetmeasures\\_ch6.pdf](http://water.epa.gov/polwaste/nps/wetmeasures/upload/2005_08_19_NPS_wetmeasures_ch6.pdf)

**See Appendix for Responsible Agencies and Authorities**

## Monitoring and Tracking Techniques

### **Monitoring Implementation:**

The overall management objective of section 6217 of the Coastal Zone Act Reauthorization Amendments (CZARA) is to develop and implement management measures for nonpoint source pollution to restore and protect coastal waters. The principal monitoring objective is to assess over time the success of the management measures in reducing pollution loads and improving water quality.

The objective above identifies the need for the monitoring: (1) to assess changes in pollution loads over time and (2) to assess changes in water quality over time. The State relies upon multiple efforts to assist in determining changes over time in pollutant loadings as well as changes in water quality.

- 1) State Comprehensive Water Quality Monitoring Strategy: As required by EPA, the State has developed a monitoring strategy to address ten elements of a state water monitoring and assessment program critical for an effective water quality monitoring program (<http://water.epa.gov/type/watersheds/monitoring/index.cfm>). The State's monitoring strategy will assist in determining how water quality is changing over time, identify problem areas in need restoration and high quality areas in need of protection, and determine the effectiveness of clean water projects and programs.
- 2) Projects supported with Section 319 funding: The State currently imposes several requirements related to the monitoring objectives stated above for projects supported with Section 319 funding. Watershed planning efforts are required to develop watershed plans which address Nine Elements (stated in the 2004 EPA Section 319 Funding Guidance) to insure these plans have adequate information to support implementation and a reasonable expectation the plans, once implemented, will result in water quality improvements. Watershed plans as well as implementation projects are required to document current pollutant loads and expected pollutant load reductions associated with implementation activities. This information is tracked by DOH for each project supported with Section 319 funding through the EPA Grants Reporting and Tracking System (GRTS).
- 3) Water Quality Monitoring and Integrated Water Quality Assessment: As part of its water quality monitoring program, DOH currently conducts baseline monitoring in several priority watersheds to assist with watershed plan development as well as eventual water quality trend analysis. Water quality monitoring priorities are coordinated within the DOH Clean Water Branch on at least an annual basis and are reflected in the State's Clean Water Act Section 106 and Section 319 workplans. The State addresses water quality assessment requirements of Section 305(b) of the Clean Water Act and the identification of impaired waters of Section 303(d) of the Clean Water Act through the State Integrated Water Quality Report. The Integrated Report represents water quality assessment decisions made relative to the State's water quality



standards and is based upon analysis of water quality monitoring data. This information is used to establish priorities for watershed planning and implementation as well as the development of Total Maximum Daily Loads.

(See [http://hawaii.gov/health/environmental/env-planning/wqm/2006\\_Integrated\\_Report/2006\\_Integrated\\_Report.pdf](http://hawaii.gov/health/environmental/env-planning/wqm/2006_Integrated_Report/2006_Integrated_Report.pdf))

- 4) Watershed Planning/Implementation: All watershed plans supported with Section 319 funding from DOH must include a monitoring and evaluation component. This information is critical in determining if recommended actions have been adequate to reduce pollutant loads and improve water quality. Where the approach and/or recommended actions have not been adequate to reduce pollutant loads and improve water quality, monitoring and evaluation data provide the foundation for adaptive management and refinement of the plan to insure water quality goals are met.

#### **Tracking Implementation:**

The documentation of management measure implementation is critical if associations are to be drawn between implementation of the coastal nonpoint pollution control program and water quality improvements. Tracking of management measure implementation will be required as part of watershed management efforts in priority watersheds (through the Hawaii Watershed Guidance). Data will be compiled in DOH's Section 319 Annual Report to EPA to convey monitoring and tracking information where watershed implementation efforts have been initiated. Data will include tracking of management measures implemented and associated pollutant load reductions. DOH will consider a contract in the short-term to conduct a management measure inventory in a priority watershed as a pilot project to verify that the identified indicators are readily tracked. Indicators for tracking management measure implementation are identified in the tables below.

**Indicators for Tracking Implementation-Agriculture Management Measures**

<b>Organization</b>	<b>Indicator</b>
County Dept. of Public Works	Erosion and sediment control: number of permits for agricultural grubbing and grading issues each fiscal year by island; number of violations reported
Soil and Water Conservation Districts (SWCD)/NRCS	Number of conservation plans related to agricultural operations approved annually by watershed, with acreage covered; BMPs for erosion and sediment control, confined animal facilities wastewater management, nutrient and pest management, grazing management and irrigation management reported by acreage; results of periodic inspections to ensure both technical specifications and maintenance standards have been met
Dept. of Health	Number of plans approved for livestock feeding or processing operations and waste systems under Chapter 11-62, HAR, for each fiscal year by island;
Dept. of Health	Number of water quality violations that were caused by erosion from agricultural lands

**Indicators for Tracking Implementation-Forestry Management Measures**

<b>Organization</b>	<b>Indicator</b>
Soil and Water Conservation Districts (SWCD)/NRCS	Number of conservation plans related to forestry operations approved annually by Soil and Water Conservation District, with acreage covered; BMPs for forestry operations; results of periodic inspections to ensure both technical specifications and maintenance standards have been met
Hawaii Dept. of Land and Natural Resources	Number of conservation plans approved annually for Conservation District Use Permits for forestry operations, and under the Forest Stewardship and Tree Farms programs, with acreage covered; BMPs for forestry operations; results of periodic inspections to ensure both technical specifications and maintenance standards have been met
Dept. of Health	Number of water quality violations that were caused by runoff from forestry operations

**Indicators for Tracking Implementation-Urban Management Measures**

<b>Organization</b>	<b>Indicator</b>
County Dept. of Public Works	Numbers of site plans, drainage plans, and erosion and sediment control plans reviewed and approved for each fiscal year by island; number of on-site inspections of BMPs conducted; number of violations reported
County Planning Depts.	Number of Special Management Area (SMA) permits issued for each fiscal year by island; types of BMPs/conditions required to address urban sources of polluted runoff
DOT Highways	Number of BMP plans for roads, highways and bridge construction reviewed and approved for each fiscal year by island; number of on-site inspections of BMPs conducted; number of violations reported
Dept. of Health	Number of watershed plans developed for each fiscal year by island; number of plans being implemented with summary of BMPs used
Dept. of Health	Number of water quality violations that were caused by urban sources of polluted
County Wastewater Divisions	Database of pumped cesspools and septic systems, including location and volume
DOH	Database of individual wastewater permits issued; database of cesspools and septic systems, by Tax Map Key parcel, with any inspections and problems noted

**Indicators for Tracking Implementation-Marinas and Recreational Boating Management Measures**

<b>Organization</b>	<b>Indicator</b>
DLNR-Division of Boating & Ocean Recreation	Numbers of Conservation District Use Applications (CDUAs) related to marina activity reviewed and approved for each fiscal year by island; number of on-site inspections of BMPs conducted; number of violations reported; number of on-site inspections for marina operations and maintenance; number of violations reported
County Planning Depts.	Number of Special Management Area (SMA) permits issued for marina development for each fiscal year by island; types of BMPs/conditions required to address sources of polluted runoff from marinas
Dept. of Health	Number of water quality violations that were caused by polluted runoff from marina activities

**Indicators for Tracking Implementation-Hydromodification Management Measures**

Comm Water Resources Management	Number of Stream Channel Alteration Permits (SCAPs) issued for each fiscal year by island; number of on-site inspections of BMPs conducted; number of violations reported
USACOE	Number of Section 404 permits issued each fiscal year by island for hydromodifications; number of on-site inspections of BMPs conducted; number of violations reported
USACOE	Number of Section 10 permits issued each fiscal year by island for hydromodifications; number of on-site inspections of BMPs conducted; number of violations reported
Dept. of Land and Natural Resources	Number of Conservation District Use Permits (CDUPs) issued for each fiscal year by island for hydromodifications; number of on-site inspections of BMPs conducted; number of violations reported
County Planning Depts.	Number of Special Management Area (SMA) permits issued for each fiscal year by island; types of BMPs/conditions required to address urban sources of polluted runoff
Counties	Number of linear feet of channels inspected and maintained each fiscal year by island
Dept. of Health	Number of water quality violations that were caused by hydromodifications

**Indicators for Tracking Implementation-Wetlands, Riparian Areas and Vegetated Treatment Systems Management Measures**

Comm Water Resources Management	Number of Stream Channel Alteration Permits (SCAPs) issued for each fiscal year by island; number of on-site inspections of BMPs conducted; number of violations reported
USACOE	Number of Section 404 permits issued each fiscal year by island; number of on-site inspections of BMPs conducted; number of violations reported
USACOE	Number of Section 10 permits issued each fiscal year by island; number of on-site inspections of BMPs conducted; number of violations reported
Dept of Land and Natural Resources	Number of Conservation District Use Permits (CDUPs) issued for each fiscal year by island that affect wetlands or riparian areas; number of on-site inspections of BMPs conducted; number of violations reported
County Planning Depts.	Number of Special Management Area (SMA) permits issued for each fiscal year by island that affect wetlands or riparian areas; types of BMPs/conditions required to address urban sources of polluted runoff
Dept. of Health	Number of water quality violations that affected wetlands or riparian areas

## Critical Coastal Areas and Additional Management Measures

The overall objective of Section 6217 of the Coastal Zone Act Reauthorization Amendments (CZARA) is to develop and implement management measures for nonpoint source pollution to restore and protect coastal waters. CZARA also calls for the implementation of additional management measures where coastal water quality is impaired or threatened even after the implementation of the management measures. These additional measures apply both to existing land and water uses that cause or contribute to water quality impairment and to new or substantially expanding land uses within critical coastal areas adjacent to impaired or threatened coastal waters.

The State of Hawaii has determined the watershed protection approach is the most effective way to address these issues. The watershed protection approach is an integrated strategy for protecting and restoring beneficial uses of state waters. A focus on the development of plans in specific watersheds will aid in identifying critical areas requiring management measure implementation to address nonpoint source pollution. The approach will also identify watersheds where management measure implementation has not been adequate to address water quality impairments. The information below outlines the basics of the State's watershed protection approach efforts and how these efforts address the need to identify critical coastal areas and additional management measures.

**Targeting Watersheds:** The State will target the use of the watershed guidance to watersheds identified through a recently developed prioritization process. The prioritization process identifies a subset of the State's watersheds based upon several environmental characteristics including: hydrology, land cover, human land use, soils, receiving water quality classification, and high quality biological resources. The use of this process enables the State to focus its resources on watersheds most in need of management measure implementation to protect high quality ecosystems and prevent or restore water quality impairment. In essence, the prioritization process identifies critical *watersheds* where application of the watershed guidance and implementation of the management measures will be most beneficial to water quality and ecosystem health.

**Developing Watershed Plans:** The Hawaii watershed guidance will be used to assist with the development of watershed plans in areas identified by the prioritization process mentioned above. Each watershed plan will focus on a specific watershed where it will identify critical areas, which require management measure implementation. Watershed plans will be required to address EPA's nine elements for watershed plans and include mapping as well as description of critical areas requiring management measure implementation to achieve required load

reductions and meet water quality standards. In addition, watershed planning efforts will be required to ensure protection of critical areas posed by anticipated future polluted runoff issues.

Watershed plans will also identify and implement additional management measures where coastal water quality remains impaired or threatened, after the implementation of all categories of management measures. Watershed plans are required to include a monitoring and evaluation component as well as an adaptive management process. Collectively, this information will be used by those implementing watershed plans to identify specific instances where implementation of the management measures has not been adequate to restore or protect water quality. Through this adaptive management approach, additional management measures will be identified and the watershed plan modified to include such measures.

## ACRONYMS

BLNR	Board of Land and Natural Resources
BMP	Best Management Practice
BWS	Honolulu Board of Water Supply
CDUA	Conservation District Use Application (permit process)
CDUP	Conservation District Use Permit
CED	covered electronic device
CES	University of Hawaii Cooperative Extension Service
CIP	capital improvement programs
CNPCP	coastal nonpoint pollution control program
COEMAP	Hawaii Coastal Erosion Management Plan
CTAHR	University of Hawaii College of Tropical Agriculture and Human Resources
CWA	Federal Clean Water Act
CWDA	critical wastewater disposal area
CWRM	Commission on Water Resource Management, “Water Commission”
CZM	coastal zone management
DES	City and County of Honolulu Department of Environmental Services
DLNR	Hawaii Department of Land and Natural Resources
DOA	Hawaii Department of Agriculture
DOBOR	DLNR’s Division of Boating and Ocean Recreation
DOFAW	DLNR’s Division of Forestry and Wildlife
DOH	Hawaii Department of Health
DOT	Hawaii Department of Transportation
DPW	Department of Public Works
EA	environmental assessment
eFOTG	NRCS’s electronic <i>Hawaii Field Office Technical Guide</i>
EIS	environmental impact statement
EPA	Environmental Protection Agency
FOTG	NRCS's <i>Field Office Technical Guide</i>
FSP	Hawaii’s Forest Stewardship Program
HAPPI	University of Hawaii CES Hawaii Pollution Prevention Information Project
HAR	Hawaii Administrative Rules
HCC	Hawaii County Code
HRS	Hawaii Revised Statutes
KCC	Kauai County Code

LAS	Hawaii's Local Action Strategy (to address land-based pollution threats)
LCC	large capacity cesspool
LUC	Hawaii Land Use Commission
LUPAG	Land Use Pattern Allocation Guide (Hawaii County)
MCC	Maui County Code
MSD	Marine Sanitation Device
NARS	Hawaii's Natural Area Reserve System
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NRCS	U.S.D.A. Natural Resources Conservation Service
NPS	non-point source (pollution)
OCCL	DLNR's Office of Conservation and Coastal Lands
ORMP	Hawaii Ocean Resources Management Plan
OSDS	onsite disposal system
OSWM	DOH's Office of Solid Waste Management
ROH	Revised Ordinances of Honolulu
SCAP	DLNR's Stream Channel Alteration Permit
SMA	county Special Management Area
SMZ	Streamside Management Zone
SWCD	soil and water conservation district
SWMP	DOT's Storm Water Management Program
TMDL	total maximum daily load
TSS	total suspended solids
UIC	underground injection control (line or program)
USACOE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
VFS	vegetated filter strips
VTS	vegetated treatment systems
WRPP	Water Resource Protection Plan



# Appendix A

## Management Measure-Supporting Information

### AGRICULTURE

#### Erosion and Sediment Control Management Measure

Apply any combination of conservation structural and management practices based on U.S. Department of Agriculture – Natural Resources Conservation Service standards and specifications to minimize the delivery of sediment from agricultural lands to surface waters, or

Design and install a combination of management and structural practices to settle the settleable solids and associated pollutants in runoff delivered from the contributing area for storms of up to and including a 10-year, 24-hour frequency.

#### Responsible Agencies and Authorities

The county departments of public works are the lead agencies for implementing this management measure because they administer the county grading ordinances (Chapter 10, HCC; Chapter 22-7 KCC; Chapter 20.08 MCC; Chapters 14-13 to 14-16, ROH). The local Soil and Water Conservation Districts (SWCDs) are also major players because they develop and approve conservation plans which allow agricultural operations to receive an exemption from the county grading ordinances (Chapter 180, HRS).

Significant amounts of lands in agriculture are State lands leased to agricultural operators. The Department of Land and Natural Resources (DLNR) Land Division is responsible for leasing these lands under Chapter 171, HRS. One of these lease conditions is that the operators work with the local soil and water conservation districts to develop and implement a conservation plan. Pursuant to Act 90, SLH 2003, beginning on January 1, 2010, the authority to manage, administer, and exercise control over any public lands that are designated important agricultural lands pursuant to Section 205-44.5, HRS, shall be transferred from DLNR to the State Department of Agriculture (DOA) (Section 171-3(b), HRS). Several leases have already been approved for transfer, which will occur in phases.

U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS) usually assists in developing conservation plans to treat existing and potential resource problems and has funding available to assist with the installation of best management practices. NRCS primarily develops plans for operators seeking funding under Federal Farm Bill programs. NRCS's *Hawaii Field Office Technical Guide* (eFOTG) outlines conservation practice standards and specifications for erosion and sediment control.

The University of Hawaii Cooperative Extension Service (CES) can also provide technical assistance. One of the publications developed under its Farm\*A\*Syst program is entitled *Minimizing Pollution Risk from Land Management* (HAPPI-Farm 3; December 2000). The four-page publication helps land users assess how their land management practices can impact the quality of both Hawaii's groundwater and surface water bodies. It describes practices to reduce water runoff and erosion, improve soil quality, and minimize nutrient losses from crop fields.

Hawaii Department of Health (DOH) has regulatory authority over water pollution control (Chapter 342D, HRS).

**Implementation Tools**

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 171, HRS Mgt and Disposition of Public Lands	DLNR	<ul style="list-style-type: none"> <li>- classifies all public lands for use, including those lands suitable for intensive agricultural use, special livestock use, and pasture use (§171-10)</li> <li>- describes methods to dispose of public lands, including lease, license, and permit by public auction (§171-14, -35, -37, -54, -55)</li> </ul>
Chapter 180, HRS Soil and Water Conservation Districts	Local SWCDs	<ul style="list-style-type: none"> <li>-provides power to the local conservation districts to develop plans for conservation of soil and water resources and control and prevention of erosion within the district (§180-13)</li> </ul>
Chapter 180C, HRS, Soil Erosion and Sediment Control	counties	<ul style="list-style-type: none"> <li>-requires counties to enact ordinances to control soil erosion and sediment, with a provision whereby standards shall be deemed met if it can be shown that the land is being managed in accordance with soil conservation practices acceptable to the applicable soil and water conservation district directors and that a comprehensive conservation program is being actively pursued (§180C-2)</li> </ul>
Chapter 10 HCC Soil Erosion and Sediment Control	Hawaii County DPW	<ul style="list-style-type: none"> <li>-requires permit for grading and grubbing of land, and stockpiling of material in excess of 500 cubic yards</li> <li>-all grading, grubbing and stockpiling permits and operations must conform to erosion and sedimentation control standards and guidelines (§10-26)</li> <li>-agricultural operations in conformance with soil conservation practices acceptable to the applicable soil and water conservation district and in accordance with an actively pursued comprehensive conservation program are exempted for this ordinance (§10-3)</li> </ul>
Chapter 22-7 KCC Grading, Grubbing and Stockpiling	Kauai County DPW	<ul style="list-style-type: none"> <li>-requires permit for grading, grubbing or stockpiling (§22-7.8)</li> <li>-all grading, grubbing and stockpiling activities shall incorporate BMPs to the maximum extent practicable to prevent damage by sedimentation to streams, watercourses, natural areas, and the property of others (§22-7.5)</li> <li>-all disturbed areas shall be stabilized with erosion and sediment control measures</li> <li>-agricultural operations managed in accordance with soil conservation practices acceptable to the applicable soil and water conservation district and in accordance with an actively pursued comprehensive conservation plan is exempted from provisions of this ordinance (§22-7.6)</li> </ul>
Chapter 14-13 through Chapter 14-16 ROH Grading, Soil Erosion and Sediment Control	City and County of Honolulu	<ul style="list-style-type: none"> <li>-Land being managed in accordance with soil conservation practices acceptable to the applicable soil and water conservation district, and with a comprehensive conservation program that is being actively pursued is exempt from this ordinance (§14-13.5)</li> <li>-requires permit for grading, grubbing or stockpiling (§14-14.1)</li> <li>-specifies conditions and special requirements of permits (§14-15)</li> <li>-establishes penalties for violations (§14-16)</li> </ul>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 20.08 MCC Soil Erosion and Sedimentation Control	Maui County DPW	<p>-land management in conformance with standards set for by the soil and water conservation districts and in accordance with an actively pursued comprehensive conservation program is exempted from this ordinance (§20.08.030)</p> <p>-all grading, grubbing and stockpiling activities shall provide BMPs to the maximum extent practicable to prevent damage by sedimentation to streams, watercourses, natural areas, and the property of others (§20.08.035)</p> <p>-requires permit for grading, grubbing or stockpiling (§20.08.040)</p>
<i>Hawaii Field Office Technical Guides (FOTG)</i>	NRCS	<p>-technical guides are the primary scientific references for NRCS. They contain technical information about the conservation of soil, water, air, and related plant and animal resources. Technical guides used in each field office are localized so that they apply specifically to the geographic area for which they are prepared. There are many standards related to erosion and sediment control, among them: channel bank vegetation (322); deep tillage (324); conservation cover (327); conservation crop rotation (328); residue and tillage management (329); contour farming (330); cover crop (340); critical area planting (342); diversion (362); field border (386); filter strip (393); grade stabilization structure (410); grassed waterway (412); mulching (484); sediment basin (350); streambank and shoreline protection (580); stripcropping (585); terrace (600); water and sediment control basin (638).</p>
Chapter 342D, HRS Water Pollution	DOH	<p>-allows DOH to institute a civil action for injunctive relief to prevent violation of State water quality standards (§342D-11)</p> <p>-under the statute, DOH may request the court to order nonpoint source polluters to implement all required management measures</p>

## Management Measure for Wastewater and Runoff from Confined Animal Facility

Limit the discharge from the confined animal facility to surface waters by:

- (1) Containing both the wastewater *and* the contaminated runoff from confined animal facilities that is caused by storms up to and including a 25-year, 24-hour frequency storm event. Storage structures should be of adequate capacity to allow for proper wastewater utilization and constructed so they prevent seepage to groundwater; and
- (2) Managing stored contaminated runoff and accumulated solids from the facility through an appropriate waste utilization system.

### Responsible Agencies and Authorities

Hawaii Department of Health (DOH) is the lead agency for implementing this management measure because it implements programs for wastewater management, water pollution control, safe drinking water, sanitation and solid waste management. DOH uses its *Guidelines for Livestock Waste Management* (1996) to require specific best management practices for siting, design, and pollution prevention for confined animal facilities.

The approval to construct and operate a livestock feeding or processing operation and its waste system is obtained through a plan review and approval process conducted by DOH under Chapter 11-62, HAR. Before construction, landowner must submit a site plan, design plan, and pollution prevention plan for review and approval by DOH. Prior to the introduction of livestock, DOH must conduct a site inspection of the completed construction and be satisfied that the facilities, waste systems, and pollution control measures are constructed in accordance with the approved plans and specifications.

Normally, operators of a confined animal facility will work with the local soil and water conservation district (SWCD) to develop a conservation plan for approval by the district. NRCS usually assists in developing conservation plans to treat existing and potential resource problems and has funding available to assist with the installation of best management practices, under the Federal Farm Bill.

The University of Hawaii Cooperative Extension Service (CES) can also provide technical assistance. One of the publications developed under its Farm\*A\*Syst program is entitled *Minimizing Pollution Risk from Livestock Operations* (HAPPI-Farm 7; December 2000). The four-page publication helps land users assess how their land management practices can impact the quality of both Hawaii's groundwater and surface water bodies. It describes practices to properly locate livestock, manage and store manure, maintain livestock facilities, prepare for emergency action, and minimize waste.

Significant amounts of lands in agriculture are State lands leased to agricultural operators. DLNR's Land Division is responsible for leasing these lands under Chapter 171, HRS. One of these lease conditions is that the operators work with the local soil and water conservation districts to develop and implement a conservation plan. Pursuant to Act 90, SLH 2003, beginning on January 1, 2010, the authority to manage, administer, and exercise control over any public lands that are designated important agricultural lands pursuant to section 205-44.5, HRS, shall be transferred from DLNR to the State Department of Agriculture (DOA) (Section 171-3(b), HRS). Several leases have already been approved for transfer, which will occur in phases.

Hawaii Department of Health (DOH) has regulatory authority over water pollution control and ensuring safe drinking water (Chapter 342D, HRS; Chapter 340E, HRS; Chapter 342H, HRS; Chapter 11-11, HAR; Chapter 11-21, HAR; Chapter 11-23, HAR; Chapter 11-26, HAR).

### **Implementation Tools**

<b>Regulatory or Non-Regulatory Mechanism</b>	<b>Responsible Agency</b>	<b>Description</b>
Chapter 11-62, HAR Wastewater Systems	DOH	<ul style="list-style-type: none"> <li>-buildings and operations, including farms, generating non-domestic wastewater shall meet the specific requirements of this chapter (§11-62-06(d))</li> <li>-wherever applicable, the director shall use the requirements for non-domestic wastewater as set forth in DOH’s Guidelines for Livestock Waste Management dated July 1996. Construction plans and engineering reports for proposed non-domestic wastewater systems shall be sufficient in scope and depth for determining the adequacy of compliance with the provisions of section 11-62-02 (§11-62-06(d)(1))</li> <li>-a wastewater system involving the subsurface disposal of wastewater shall be in compliance with chapter 11-23 (§11-62-06(l))</li> <li>-the director will review the use and disposal of non-domestic wastewater on a case-by-case basis (§11-62-07.1(a))</li> <li>-the director in determining treatment requirements for the non-domestic wastewater shall use requirements as set forth by the Animal Waste Guidelines (§11-62-07.1(c))</li> <li>-when exceptional quality wastewater sludge is applied in bulk to agricultural land, the director may require a nutrient balance to be submitted prior to application to the land (§11-62-42(e))</li> <li>-no person shall apply non-exceptional quality wastewater sludge to land unless the land is agricultural land.... and all the requirements of this section are met (§11-62-43)</li> <li>-wastewater sludge shall not be applied to the land so that either the sludge or any pollutant from the sludge enters state waters (§11-62-43(h))</li> <li>-discusses treatment of sludge to reduce pathogens (§11-62-46)</li> </ul>
<i>DOH Guidelines for Livestock Waste Management (1996)</i>	DOH	<ul style="list-style-type: none"> <li>-provides guidelines for siting, design, and pollution prevention for confined animal facilities, as well as guidelines for abandoning, retiring or permanently discontinuing use of a livestock production operation</li> </ul>
Chapter 340E, HRS Safe Drinking Water  Chapter 11-21, HAR Cross Connection and Back-Flow Control  Chapter 11-23, HAR Underground Injection Control	DOH	<ul style="list-style-type: none"> <li>-authorizes DOH to establish an underground injection control program to protect the quality of the state’s underground sources of drinking water from pollution by subsurface disposal of fluids (§340E)</li> <li>-A reduced pressure principal backflow preventor or air gap separation shall be required before any piping network in which fertilizers, pesticides and other chemicals or toxic contaminants are injected or siphoned into the irrigation system (§11-21-7)</li> <li>-provides criteria for exempting aquifers from underground source of drinking water status (§11-23-04)</li> </ul>
Chapter 11-11, HAR Sanitation	DOH	<ul style="list-style-type: none"> <li>-all liquid and solid waste discharges from livestock, poultry and stables shall be disposed of in a sanitary manner (§11-11-6(a))</li> <li>-dead animals shall be destroyed and not used for feeding of any animal (§11-11-6(c))</li> </ul>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 11-26, HAR Vector Control	DOH	-operators of farms on which animals or fowls are kept shall manage wet manure, and liquid or solid wastes in which flies may breed in a manner which inhibits fly breeding as prescribed by pest management methods (§11-26-11) -no operator shall use untreated animal or poultry farm wastes for soil enrichment unless the same wastes are managed to prevent fly breeding by an approved pest management method (§11-26-12)
Chapter 180, HRS Soil and Water Conservation Districts	Local SWCDs	-provides power to the local conservation districts to develop plans for conservation of soil and water resources and control and prevention of erosion within the district (§180-13)
Chapter 171, HRS Mgt and Disposition of Public Lands	DLNR	- classifies all public lands for use, including those lands suitable for intensive agricultural use, special livestock use, and pasture use (§171-10) - describes methods to dispose of public lands, including lease, license, and permit by public auction (§171-14, -35, -37, -54, -55)
<i>Hawaii Field Office Technical Guides (FOTG)</i>	NRCS	-technical guides are the primary scientific references for NRCS. They contain technical information about the conservation of soil, water, air, and related plant and animal resources. Technical guides used in each field office are localized so that they apply specifically to the geographic area for which they are prepared. There are many standards related to confined animal facilities among them: waste storage facility (313); composting facility (317); waste treatment lagoon (359); waste facility cover (367); roof runoff structure (558); heavy use area protection (561); amendments for treatment of agricultural waste (591); waste treatment (629); solid/liquid waste separation facility (632); waste utilization (633); manure transfer (634).
Chapter 342H, HRS Solid Waste Pollution	DOH	-prohibits disposal of solid waste anywhere other than a permitted solid waste management system (§342H-30) -encourages the recycling of solid wastes, including animal wastes and selected non-hazardous industrial wastes, and the composting of animal manures and by-products for agricultural and horticultural purposes. The use of treated sludge effluent for fertilizer and other agricultural purposes shall also be encouraged. Composting of agricultural secondary organic resources under approved methods shall also be encouraged. (§342H-36)
Chapter 342D, HRS Water Pollution	DOH	-prohibits discharge of any pollutant into State waters -allows DOH to institute a civil action for injunctive relief to prevent violation of State water quality standards (§342D-11) -under the statute, DOH may request the court to order nonpoint source polluters to implement all required management measures

## Nutrient Management Measure

Develop, implement, and periodically update a nutrient management plan to: (1) apply nutrients at rates necessary to achieve realistic crop yields, (2) improve the timing of nutrient application, and (3) use agronomic crop production technology to increase nutrient use efficiency. When the source of the nutrients is other than commercial fertilizer, determine the nutrient value. Determine and credit the nitrogen contribution of any legume crop. Soil and/or plant tissue testing should be used at a suitable interval. Nutrient management plans contain the following core components:

- (1) Farm and field maps showing acreage, crops, soils, and waterbodies.
- (2) Realistic yield expectations for the crop(s) to be grown, based on achievable yields for the crop. Individual producer constraints and other producer's yields would be considered in determining achievable yields.
- (3) A summary of the soil condition and nutrient resources available to the producer, which at a minimum would include:
  - An appropriate mix of soil (pH, P, K) and/or plant tissue testing or historic yield response data for the particular crop;
  - Nutrient analysis of manure, sludge, mortality compost (birds, pigs, etc.), or effluent (if applicable);
  - Nitrogen contribution to the soil from legumes grown in the rotation (if applicable); and
  - Other significant nutrient sources (e.g., irrigation water).
- (4) An evaluation of field limitations based on environmental hazards or concerns, such as:
  - Lava tubes, shallow soils over fractured bedrock, and soils with high leaching or runoff potential,
  - Distance to surface water,
  - Highly erodible soils, and
  - Shallow aquifers.
- (5) Best available information is used in developing recommendations for the appropriate mix of nutrient sources and requirements for the crops.
- (6) Identification of timing and application methods for nutrients to: provide nutrients at rates necessary to achieve realistic crop yields; reduce losses to the environment; and avoid applications as much as possible during periods of leaching or runoff.
- (7) Methods and practices used to prevent soil erosion or sediment loss.
- (8) Provisions for the proper calibration and operation of nutrient application equipment.

### Responsible Agencies and Authorities

Normally, operators of a confined animal facility will work with the local soil and water conservation district (SWCD) to develop a conservation plan for approval by the district. NRCS usually assists in developing conservation plans to treat existing and potential resource problems and has funding available to assist with the installation of best management practices, under the Federal Farm Bill.

The University of Hawaii Cooperative Extension Service (CES) can also provide technical assistance. Scientists within the University of Hawaii College of Tropical Agriculture and Human Resources (CTAHR), where the CES resides, developed a document entitled *Plant Nutrient Management in Hawaii's Soils: Approaches for Tropical and Subtropical Agriculture* (J.A. Silva and R.S. Uchida, eds., 2000, <http://www.ctahr.hawaii.edu/acad/PIO/FreePubs/PlantNutrient.asp>) for use by extension agents, NRCS and District personnel, and growers to address issues particular to nutrient management in Hawaii. The chapters are intended to help farmers and technical personnel understand how soil and

plant tissue analyses are interpreted to diagnose plant nutrition problems, and how soil management recommendations are developed to prevent or correct those problems. The approach is a scientific one, based on methods and processes used by faculty of CTAHR.

Another publication developed by CTAHR under its Farm\*A\*Syst program is entitled *Minimizing Pollution Risk from Nutrient Management* (HAPPI-Farm 4; December 2000). The four-page publication provides information on nutrient management for agricultural activities, and helps land users identify the level of risk from current practices and develop an action plan to establish practices that reduce the risks of contamination to surface and ground waters.

Significant amounts of lands in agriculture are State lands leased to agricultural operators. DLNR's Land Division is responsible for leasing these lands under Chapter 171, HRS. One of the requirements of these leases is that the operators work with the local soil and water conservation districts to develop and implement a conservation plan, as a lease condition. Pursuant to Act 90, SLH 2003, beginning on January 1, 2010, the authority to manage, administer, and exercise control over any public lands that are designated important agricultural lands pursuant to section 205-44.5, HRS, shall be transferred from DLNR to the State Department of Agriculture (DOA) (Section 171-3(b), HRS). Several leases have already been approved for transfer, which will occur in phases.

Hawaii Department of Health (DOH) has regulatory authority over water pollution control and ensuring safe drinking water (Chapter 342D, HRS; Chapter 340E, HRS; Chapter 342H, HRS; Chapter 11-21, HAR; Chapter 11-23, HAR).



## Implementation Tools

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
<p><i>Plant Nutrient Management in Hawaii's Soils: Approaches for Tropical and Subtropical Agriculture</i> (2000)</p>	<p>Univ. of Hawaii CES</p>	<ul style="list-style-type: none"> <li>-chapter 2 "Sampling and Analysis of Soils and Plant Tissues" describes how to take a representative samples and how samples are tested</li> <li>-chapter 3 "Essential Nutrients for Plant Growth: Nutrient Functions and Deficiency Symptoms" describes nutrient functions in plants and deficiency symptoms</li> <li>-chapter 4 "Recommended Plant Tissue Nutrient Levels" provides specific details on recommended plant tissue nutrient levels for vegetable, fruit, and ornamental foliage and flowering plants grown in Hawaii</li> <li>-chapter 5 "Use of Information from Soil Surveys and Classifications"</li> <li>-chapter 6 "How Fertilizer Recommendations are Made" describes how plant nutrient deficiencies are diagnosed, the value of good recordkeeping and nutrient management practices, CTAHR's Agricultural Diagnostic Service Center and the Fertilizer Advice (ADSC) and Consulting System (FACS).</li> <li>-chapter 7 "Interpreting Soil Nutrient Analysis Data" lists generalized adequate soil fertility levels for acidity, phosphorus, potassium, calcium, magnesium, and salinity for soils of three textures, provides generalized interpretations intended to help the farmer decide which soil nutrients must be supplemented to support an intended crop or help decide if changes in the fertilization program are needed.</li> <li>-chapter 8 "Collection of Calibration Data for Interpreting Soil and Plant Tissue Analyses"</li> <li>-chapter 9 "Predicting Soil Phosphorus Requirements"</li> <li>-chapter 10 "Soil Acidity and Liming" lists soil pH ranges for optimum growth of selected plants and specifies lime requirement curves for 22 acid soils of Hawaii.</li> <li>-chapter 11 "Plant Tolerance of Low Soil pH, Soil Aluminum, and Soil Manganese"</li> <li>-chapter 12 "Inorganic Fertilizer Materials"</li> <li>-chapter 13 "Biological Nitrogen Fixation (BNF)" describes the benefits of BNF and how to inoculate legumes with rhizobia to maximize BNF</li> <li>-chapter 14 "Mycorrhizal Fungi and Plant Nutrition"</li> <li>-chapter 15 "Organic Soil Amendments for Sustainable Agriculture" discusses organic sources of nitrogen, phosphorus, and potassium</li> </ul>
<p>Chapter 340E, HRS Safe Drinking Water</p> <p>Chapter 11-21, HAR Cross Connection and Back-Flow Control</p> <p>Chapter 11-23, HAR Underground Injection Control</p>	<p>DOH</p>	<ul style="list-style-type: none"> <li>-authorizes DOH to establish an underground injection control program to protect the quality of the state's underground sources of drinking water from pollution by subsurface disposal of fluids (§340E)</li> <li>-A reduced pressure principal backflow preventor or air gap separation shall be required before any piping network in which fertilizers, pesticides and other chemicals or toxic contaminants are injected or siphoned into the irrigation system (§11-21-7)</li> <li>-provides criteria for exempting aquifers from underground source of drinking water status (§11-23-04)</li> </ul>
<p>Chapter 180, HRS Soil and Water Conservation Districts</p>	<p>Local SWCDs</p>	<ul style="list-style-type: none"> <li>-provides power to the local conservation districts to develop plans for conservation of soil and water resources and control and prevention of erosion within the district (§180-13)</li> </ul>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
<i>Hawaii Field Office Technical Guides (FOTG)</i>	NRCS	-technical guides are the primary scientific references for NRCS. They contain technical information about the conservation of soil, water, air, and related plant and animal resources. Technical guides used in each field office are localized so that they apply specifically to the geographic area for which they are prepared. There are many standards related to nutrient management, among them: nutrient management (590).
Chapter 342H, HRS Solid Waste Pollution	DOH	-prohibits disposal of solid waste anywhere other than a permitted solid waste management system (§342H-30) -encourages the recycling of solid wastes, including animal wastes and selected non-hazardous industrial wastes, and the composting of animal manures and by-products for agricultural and horticultural purposes. The use of treated sludge effluent for fertilizer and other agricultural purposes shall also be encouraged. Composting of agricultural secondary organic resources under approved methods shall also be encouraged. (§342H-36)
Chapter 342D, HRS Water Pollution	DOH	-prohibits discharge of any pollutant into State waters -allows DOH to institute a civil action for injunctive relief to prevent violation of State water quality standards (§342D-11) -under the statute, DOH may request the court to order nonpoint source polluters to implement all required management measures

## **Pesticide Management Measure**

To eliminate the unnecessary release of pesticides into the environment and to reduce contamination of surface water and ground water from pesticides:

- (1) Use integrated pest management strategies where available that minimize chemical uses for pest control.
- (2) Manage pesticides efficiently by:
  - (a) calibrating equipment;
  - (b) using appropriate pesticides for given situation and environment;
  - (c) using alternative methods of pest control; and
  - (d) minimizing the movement of pest control agents from target area.
- (3) Use anti-backflow devices on hoses used for filling tank mixtures.
- (4) Enhance degradation or retention by increasing organic matter content in the soil or manipulating soil pH.

### **Responsible Agencies and Authorities**

Under the authority of Chapter 149A, HRS, Department of Agriculture (DOA), Pesticides Branch, is the lead agency for implementing those measures that relate to regulating pesticides. Chapter 4-66, HAR, administered by DOA, relates to the registration, licensing, certification, recordkeeping, usage, and other activities related to the safe and effective use of pesticides. It requires that those who apply or directly supervise others who apply restricted use pesticides be certified. Certification requires some understanding of the environmental concerns of using pesticides. This requirement is implemented under the CES/DOA Pesticide Applicator Program. Certification is not required for those using pesticides that are not classified as “restricted use.”

The local soil and water conservation district (SWCD) normally works with an agricultural landowner to develop a conservation plan for approval by the district. An approved conservation plan enables the landowner to be exempted from the county grading ordinances for any earthmoving activities. NRCS usually assists in developing conservation plans to treat existing and potential resource problems and has funding available to assist with the installation of best management practices, under the Federal Farm Bill. NRCS's *Hawaii Field Office Technical Guide* (eFOTG) outlines conservation practice standards for pest management.

Significant amounts of lands in agriculture are State lands leased to agricultural operators. DLNR's Land Division is responsible for leasing these lands under Chapter 171, HRS. One of these lease conditions is that the operators work with the local soil and water conservation districts to develop and implement a conservation plan. Pursuant to Act 90, SLH 2003, beginning on January 1, 2010, the authority to manage, administer, and exercise control over any public lands that are designated important agricultural lands pursuant to section 205-44.5, HRS, shall be transferred from DLNR to the State Department of Agriculture (DOA) (Section 171-3(b), HRS). Several leases have already been approved for transfer, which will occur in phases.

The University of Hawaii Cooperative Extension Service (CES) can also provide technical assistance. One of the publications developed under its Farm\*A\*Syst program is entitled *Minimizing Pollution Risk from Pest Management* (HAPPI-Farm 15; December 2000). The six-page publication provides information on pest management planning and proper pesticide use, and promotes the use of

integrated pest management. It helps land users assess the water pollution risks from their activities and develop action plans to establish practices that reduce pollution risks.

Hawaii Department of Health (DOH) has regulatory authority over water pollution control and ensuring safe drinking water (Chapter 342D, HRS; Chapter 340E, HRS; Chapter 11-21, HAR; Chapter 11-23, HAR).

### **Implementation Tools**

<b>Regulatory or Non-Regulatory Mechanism</b>	<b>Responsible Agency</b>	<b>Description</b>
Chapter 149A, HRS Hawaii Pesticides Law	DOA	-it is unlawful for a person to use any pesticide in a manner inconsistent with its label; to use, store, transport, or discard any pesticide in a manner that would have unreasonable adverse effects on the environment; to use or apply restricted use pesticides unless the person is a certified pesticide applicator or under the direct supervision of a certified pesticide applicator; or to fill with water, through a hose, pipe, or other similar transmission system, any tank, implement, apparatus, or equipment used to disperse pesticides, unless the transmission system is equipped with an air gap or a reduced pressure principle backflow device meeting the requirements under section 340E-2, HRS. (§149A-31)
Chapter 4-66, HAR Pesticides	DOA	-no pesticide shall be stored, displayed, place for sale or transported where food and food containers, feed, water for human or animal consumption, or any other items are likely to become contaminated and may create a hazard or cause injury to humans, vegetation, crops, livestock, wildlife, beneficial insects and aquatic life (§4-66-54) -an applicator applying restricted use pesticides shall be certified as a commercial pesticide applicator or a private pesticide applicator (§4-66-56) -Category 1 commercial pesticide applicator certification is necessary for persons using or supervising the use of restricted use pesticides in production of agricultural food and feed crops, as well as non-crop agricultural lands (§4-66-56(b)(1)) - Category 4 commercial pesticide applicator certification is necessary for persons using or supervising the use of restricted use pesticides applied by aircraft (§4-66-56(b)(4)) - Category 11 commercial pesticide applicator certification is necessary for persons using or supervising the use of restricted use pesticides applied through an irrigation system (§4-66-56(b)(11)) -Category 1 private pesticide applicator certification is necessary for private applicators using or supervising the use of restricted use pesticides in the production of agricultural commodities (§4-66-56(c)(1))
Chapter 4-66, HAR Pesticides, continued	DOA	-specific standards for certification of plant pest control applicators requires demonstrated knowledge of the crops grown and the specific pests on these crop, and operational knowledge concerning soil and water problems, pre-harvest intervals, reentry intervals, phytotoxicity, and potential for environmental contamination, non-target injury and community problems from the use of restricted use pesticides in agricultural areas (§4-66-58(a)(1))

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
<p>Chapter 340E, HRS Safe Drinking Water</p> <p>Chapter 11-21, HAR Cross Connection and Backflow Control</p> <p>Chapter 11-23, HAR Underground Injection Control</p>	DOH	<p>-authorizes the director to promulgate and enforce regulations relating to cross-connection and backflow prevention control and establishing an underground injection control program (§340E-2)</p> <p>-provides guidelines relating to backflow prevention devices for irrigation systems (§11-21-7)</p> <p>-a reduced pressure principal backflow preventor or air gap separation is required before any piping network in which fertilizers, pesticides and other chemicals or toxic contaminants are injected or siphoned into the irrigation system. (§11-21-7(a)(4))</p> <p>-provides criteria for exempting aquifers from underground source of drinking water status (§11-23-04)</p>
Chapter 180, HRS Soil and Water Conservation Districts	Local SWCDs	-provides power to the local conservation districts to develop plans for conservation of soil and water resources and control and prevention of erosion within the district (§180-13)
Chapter 171, HRS Mgt and Disposition of Public Lands	DLNR	<p>-classifies all public lands for use, including those lands suitable for intensive agricultural use, special livestock use, and pasture use (§171-10)</p> <p>-describes methods to dispose of public lands, including lease, license, and permit by public auction (§171-14, -35, -37, -54, -55)</p>
<i>Hawaii Field Office Technical Guides (FOTG)</i>	NRCS	-technical guides are the primary scientific references for NRCS. They contain technical information about the conservation of soil, water, air, and related plant and animal resources. Technical guides used in each field office are localized so that they apply specifically to the geographic area for which they are prepared. There are standards related to pesticides, among them: pest management (595).
Chapter 342D, HRS Water Pollution	DOH	<p>-prohibits discharge of any pollutant into State waters</p> <p>-allows DOH to institute a civil action for injunctive relief to prevent violation of State water quality standards (§342D-11)</p> <p>-under the statute, DOH may request the court to order nonpoint source polluters to implement all required management measures</p>

## Grazing Management Measure

Protect range, pasture and other grazing lands:

- (1) By implementing one or more of the following to protect sensitive areas (such as streambanks, wetlands, estuaries, ponds, lake shores, near coastal waters/ shorelines, and riparian zones):
  - (a) Exclude livestock,
  - (b) Provide stream crossings or hardened watering access for drinking,
  - (c) Provide alternative drinking water locations,
  - (d) Locate salt and additional shade, if needed, away from sensitive areas, or
  - (e) Use improved grazing management (e.g., herding) to reduce the physical disturbance and reduce direct loading of animal waste and sediment caused by livestock; *and*
- (2) By achieving either of the following on all range, pasture, and other grazing lands not addressed under (1):
  - (a) Implement range and pasture conservation and management practices that apply the progressive planning approach of USDA-NRCS following the standards and specifications contained in the FOTG that achieve an acceptable level of treatment to reduce erosion, and/or
  - (b) Maintain range, pasture, and other grazing lands in accordance with activity plans established by the Division of Land Management of DLNR, federal agencies managing grazing land, or other designated land management agencies.

### Responsible Agencies and Authorities

Normally, agricultural operators will work with the local soil and water conservation district (SWCD) to develop a conservation plan for approval by the district. NRCS usually assists in developing conservation plans to treat existing and potential resource problems and has funding available to assist with the installation of best management practices, under the Federal Farm Bill. NRCS's *Hawaii Field Office Technical Guide* (eFOTG) outlines conservation practice standards and specifications for grazing management.

Significant amounts of lands in agriculture are State lands leased to agricultural operators. DLNR's Land Division is responsible for leasing these lands under Chapter 171, HRS. One of the requirements of these leases is that the operators work with the local soil and water conservation districts to develop and implement a conservation plan, as a lease condition. Pursuant to Act 90, SLH 2003, beginning on January 1, 2010, the authority to manage, administer, and exercise control over any public lands that are designated important agricultural lands pursuant to section 205-44.5, HRS, shall be transferred from DLNR to the State Department of Agriculture (DOA) (Section 171-3(b), HRS). Several leases have already been approved for transfer, which will occur in phases.

The University of Hawaii Cooperative Extension Service (CES) can also provide technical assistance. A couple of the publications developed under its Farm\*A\*Syst program are entitled *Minimizing Pollution Risk from Pasture Management* (HAPPI-Farm 8; December 2000) and *Minimizing Pollution Risk from Livestock Operations* (HAPPI-Farm 7; December 2000). These publications provide information on how land users can reduce the risk of nonpoint source pollution from pastures and livestock.

Hawaii Department of Health (DOH) has regulatory authority over water pollution control (Chapter 342D, HRS).

**Implementation Tools**

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 180, HRS Soil and Water Conservation Districts	Local SWCDs	-provides power to the local conservation districts to develop plans for conservation of soil and water resources and control and prevention of erosion within the district (§180-13)
Chapter 171, HRS Mgt and Disposition of Public Lands	DLNR	- classifies all public lands for use, including those lands suitable for intensive agricultural use, special livestock use, and pasture use (§171-10) - describes methods to dispose of public lands, including lease, license, and permit by public auction (§171-14, -35, -37, -54, -55)
<i>Hawaii Field Office Technical Guides (FOTG)</i>	NRCS	-technical guides are the primary scientific references for NRCS. They contain technical information about the conservation of soil, water, air, and related plant and animal resources. Technical guides used in each field office are localized so that they apply specifically to the geographic area for which they are prepared. There are many standards related to grazing management, among them: brush management (314); fence (382); use exclusion (472); pasture and hay planting (512); pipeline (516); prescribed grazing (528); range planting (550); heavy use area protection (561); animal trails and walkways (575); stream crossing (578); watering facility (614); water harvesting catchment (636).
Chapter 342D, HRS Water Pollution	DOH	-allows DOH to institute a civil action for injunctive relief to prevent violation of State water quality standards (§342D-11) -under the statute, DOH may request the court to order nonpoint source polluters to implement all required management measures

## Irrigation Water Management Measure

To reduce nonpoint source pollution of surface waters caused by irrigation:

- (1) Operate the irrigation system so that the timing and amount of irrigation water applied match crop water needs. This will require, as a minimum: (a) the measurement of soil-water depletion volume and the volume of irrigation water applied; (b) uniform application of water; and (c) application rate which does not exceed infiltration rate in the field.
- (2) When chemigation is used, include backflow preventers for wells, minimize the harmful amounts of chemigated waters that discharge from the edge of the field, and control deep percolation. In cases where chemigation is performed with furrow irrigation systems, a tailwater management system may be needed.

The following limitations and special conditions apply:

- (1) In some locations, irrigation return flows are subject to other water rights or are required to maintain stream flow. In these special cases, on-site reuse could be precluded and would not be considered part of the management measure for such locations.
- (2) By increasing the water use efficiency, the discharge volume from the system will usually be reduced. While the total pollutant load may be reduced somewhat, there is the potential for an increase in the concentration of pollutants in the discharge. In these special cases, where living resources or human health may be adversely affected and where other management measures (nutrients and pesticides) do not reduce concentrations in the discharge, increasing water use efficiency would not be considered part of the management measure.
- (3) The time interval between the order for and the delivery of irrigation water to the farm may limit the irrigator's ability to achieve the maximum on-farm application efficiencies that are otherwise possible.
- (4) In some locations, leaching is necessary to control salt in the soil profile. Leaching for salt control should be limited to the leaching requirement for the root zone.
- (5) Where leakage from delivery systems or return flows supports wetlands or wildlife refuges, it may be preferable to modify the system to achieve a high level of efficiency and then divert the "saved water" to the wetland or wildlife refuge. This will improve the quality of water delivered to wetlands or wildlife refuges by preventing the introduction of pollutants from irrigated lands to such diverted water.
- (6) In some locations, sprinkler irrigation is used for crop cooling or other benefits (*e.g.*, watercress). In these special cases, applications should be limited to the amount necessary for crop protection, and applied water should not contribute to erosion or pollution.

### Responsible Agencies and Authorities

Hawaii Department of Health (DOH) is the lead agency for implementing this management measure because it implements programs for water pollution control and safe drinking water. Chapter 11-21, HAR, Cross-Connection and Back-Flow Control, administered by DOH, requires that a reduced pressure principal back-flow preventer or air gap separation be installed as part of any piping network in which fertilizers, pesticides and other chemicals or toxic contaminants are injected or siphoned into the irrigation system (§11-21-7(a)(4), HAR).

The local soil and water conservation district (SWCD) normally works with an agricultural landowner to develop a conservation plan for approval by the district. An approved conservation plan enables the



landowner to be exempted from the county grading ordinances for any earthmoving activities. NRCS usually assists in developing conservation plans to treat existing and potential resource problems and has funding available to assist with the installation of best management practices, under the Federal Farm Bill. NRCS's *Hawaii Field Office Technical Guide* (eFOTG) outlines conservation practice standards for irrigation.

Significant amounts of lands in agriculture are State lands leased to agricultural operators. DLNR's Land Division is responsible for leasing these lands under Chapter 171, HRS. One of the requirements of these leases is that the operators work with the local soil and water conservation districts to develop and implement a conservation plan, as a lease condition. Pursuant to Act 90, SLH 2003, beginning on January 1, 2010, the authority to manage, administer, and exercise control over any public lands that are designated important agricultural lands pursuant to section 205-44.5, HRS, shall be transferred from DLNR to the State Department of Agriculture (DOA) (Section 171-3(b), HRS). Several leases have already been approved for transfer, which will occur in phases.

The University of Hawaii Cooperative Extension Service (CES) can also provide technical assistance. One of the publications developed under its Farm\*A\*Syst program is entitled *Minimizing Pollution Risk from Irrigation Management* (HAPPI-Farm 6; December 2000). The four-page publication helps land users assess the water pollution risks associated with their irrigation practices and develop action plans to reduce those risks.

Hawaii Department of Health (DOH) has regulatory authority over water pollution control (Chapter 342D, HRS; Chapter 340E, HRS; Chapter 11-23, HAR).

### **Implementation Tools**

<b>Regulatory or Non-Regulatory Mechanism</b>	<b>Responsible Agency</b>	<b>Description</b>
Chapter 149A, HRS Hawaii Pesticides Law  Chapter 4-66, HAR Pesticides	DOA	-it is unlawful for a person to use any pesticide in a manner inconsistent with its label; to use, store, transport, or discard any pesticide in a manner that would have unreasonable adverse effects on the environment; to use or apply restricted use pesticides unless the person is a certified pesticide applicator or under the direct supervision of a certified pesticide applicator; or to fill with water, through a hose, pipe, or other similar transmission system, any tank, implement, apparatus, or equipment used to disperse pesticides, unless the transmission system is equipped with an air gap or a reduced pressure principle backflow device meeting the requirements under section 340E-2, HRS. (§149A-31) - Category 11 commercial pesticide applicator certification is necessary for persons using or supervising the use of restricted use pesticides applied through an irrigation system (§4-66-56(b)(11))

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
<p>Chapter 340E, HRS Safe Drinking Water</p> <p>Chapter 11-21, HAR Cross Connection and Backflow Control</p> <p>Chapter 11-23, HAR Underground Injection Control</p>	DOH	<p>-authorizes the director to promulgate and enforce regulations relating to cross-connection and backflow prevention control and establishing an underground injection control program (§340E-2)</p> <p>-provides guidelines relating to backflow prevention devices for irrigation systems (§11-21-7)</p> <p>-a reduced pressure principal backflow preventor or air gap separation is required before any piping network in which fertilizers, pesticides and other chemicals or toxic contaminants are injected or siphoned into the irrigation system. (§11-21-7(a)(4))</p> <p>-provides criteria for exempting aquifers from underground source of drinking water status (§11-23-04)</p>
Chapter 180, HRS Soil and Water Conservation Districts	Local SWCDs	-provides power to the local conservation districts to develop plans for conservation of soil and water resources and control and prevention of erosion within the district (§180-13)
Chapter 171, HRS Mgt and Disposition of Public Lands	DLNR	<p>-classifies all public lands for use, including those lands suitable for intensive agricultural use, special livestock use, and pasture use (§171-10)</p> <p>-describes methods to dispose of public lands, including lease, license, and permit by public auction (§171-14, -35, -37, -54, -55)</p>
<i>Hawaii Field Office Technical Guides (FOTG)</i>	NRCS	<p>-technical guides are the primary scientific references for NRCS. They contain technical information about the conservation of soil, water, air, and related plant and animal resources. Technical guides used in each field office are localized so that they apply specifically to the geographic area for which they are prepared. There are many standards related to irrigation water management, among them: irrigation water conveyance, high pressure (430DD); irrigation water conveyance, low pressure (430EE); irrigation water conveyance, steel pipeline (430FF); irrigation storage reservoir (436); irrigation system, microirrigation (441); irrigation system, sprinkler (442); irrigation system, surface and subsurface (443); irrigation water management (449); irrigation land leveling (464); irrigation regulating reservoirs (552); spring development (574); structure for water control (587); water harvesting catchment (636).</p>
Chapter 342D, HRS Water Pollution	DOH	<p>-prohibits discharge of any pollutant into State waters</p> <p>-allows DOH to institute a civil action for injunctive relief to prevent violation of State water quality standards (§342D-11)</p> <p>-under the statute, DOH may request the court to order nonpoint source polluters to implement all required management measures</p>

**Preharvest Planning Management Measure**

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

- (1) 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.
- (2) Time the activity for the season or moisture conditions when the least impact occurs.
- (3) Consider potential water quality impacts and erosion and sedimentation control in the selection of silvicultural and regeneration systems, especially for harvesting and site preparation.
- (4) 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.
- (5) Consider additional contributions from harvesting or roads to any known existing water quality impairments or problems in watersheds of concern.

Perform advance planning for forest road systems that includes the following elements, where appropriate:

- (1) 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 (SMZs); and
  - determine road usage and select the appropriate road standard.
- (2) 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;
  - for fish-bearing streams, design crossings to facilitate fish passage.
- (3) 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.
- (4) Use suitable materials to surface roads planned for all-weather use to support truck traffic.
- (5) 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.

Each State should develop a process (or utilize an existing process) that ensures that the management measures in this chapter are implemented. Such a process should include appropriate notification, compliance audits, or other mechanisms for forestry activities with the potential for significant adverse nonpoint source effects based on the type and size of operation and the presence of stream crossings or SMZs.

**Responsible Agencies and Authorities**

Hawaii Department of Land and Natural Resources (DLNR) is the primary agency responsible for this management measure, because it is responsible for leasing public lands that would be used for forestry

activities, for permitting forestry activities within the Conservation District, and for overseeing the Forest Stewardship and Tree Farm programs on both public and private lands.

Forestry activity may also take place on private land within the Agricultural District. In this case, the local soil and water conservation district normally works with the landowner to develop a conservation plan for the land use activity for approval by the district directors. An approved conservation plan to address soil and water conservation issues associated with the operation enables the landowner to be exempted from the county grading ordinances for any earthmoving activities.

### **Implementation Tools**

<b>Regulatory or Non-Regulatory Mechanism</b>	<b>Responsible Agency</b>	<b>Description</b>
Chapter 171, HRS Mgt and Disposition of Public Lands	DLNR	- classifies all public lands for use, including those lands suitable for timber growth (§171-10) - describes methods to dispose of public lands, including lease, license, and permit by public auction (§171-14, -35, -37, -54, -55)
Chapter 195F, HRS Forest Stewardship  Chapter 13-109, HAR Rules for Establishing Forest Stewardship	DLNR	-authorizes BLNR to establish a forest stewardship program to financially assist applicants to manage, protect, and restore important natural resources on private forest or formerly forested property (§195F-1) - to participate in the forest stewardship program, applicant landowner must prepare a forest stewardship management plan that describes management activities and practices (§195F-5) -provides list of forest stewardship management practices eligible for cost-share assistance, including those related to reforestation/ afforestation; forest/ agroforest improvements; windbreak/hedgerow establishment; soil and water protection/improvement; riparian/ wetland protection (§13-109-6) -describes what information the forest stewardship management plan must contain (§13-109-7)
Chapter 186, HRS Tree Farms  Chapter 13-106, HAR Rules for Establishing Tree Farms	DLNR	-authorizes BLNR to classify land as tree farm if it is suited for sustained production of forest products (§186-4) -eligible land must be operating under approved forest management prescriptions and according to a management plan approved by BLNR (§13-106-3) -forest management plan must address establishment, maintenance, and harvest of forest products in a sustained manner while exercising sound conservation prescriptions (§13-106-4; §13-106-5)
Chapter 183, HRS Forest Reserves, Water Development, Zoning  Chapter 13-104, HAR Regulating Activities within Forest Reserves	DLNR	-all harvesting of trees on public lands must be done in accordance with a BLNR-approved management plan and with provisions regarding conservation of aquatic life, wildlife, and land plants, and the provisions regarding EISs (§183-16.5) -commercial harvest of forest products valued at under \$10,000 within forest reserves is only allowed under permit (§13-104-22)

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 183C, HRS Conservation District  Chapter 13-5, HAR Conservation District	DLNR	-DLNR shall establish zones within the conservation district and permitted uses within those zones, which may include growth of commercial timber (§183C-4) -DLNR regulates land use in the conservation district through the issuance of permits (CDUPs) (§183C-6) -5 subzones within conservation district are established by DLNR; lands suitable for growing and harvesting of commercial timber or other forest products are included in the resource (R) subzone (§13-5-13) -commercial forestry in the resource subzone requires a permit from the DLNR and an approved management plan (§13-5-24) -permit application process and requirements are described in §13-5-31 -as a standard condition to the permit, use of the area shall conform with the program of appropriate soil and water conservation district or plan approved by and on file with the department (§13-5-42)
<i>Best Management Practices for Maintaining Water Quality in Hawaii</i> (June 1998)	DLNR	The manual addresses the (g) guidance management measures and encourages appropriate forestry best management practices. These BMPs can be required as conditions to the various DLNR permits and programs.
Chapter 180, HRS Soil and Water Conservation Districts	Local SWCDs	-provides power to the local conservation districts to develop plans for conservation of soil and water resources and control and prevention of erosion within the district (§180-13)
Chapter 180C, HRS, Soil Erosion and Sediment Control	counties	-requires counties to enact ordinances to control soil erosion and sediment, with a provision whereby standards shall be deemed met if it can be shown that the land is being managed in accordance with soil conservation practices acceptable to the applicable soil and water conservation district directors and that a comprehensive conservation program is being actively pursued (§180C-2)
Chapter 342D, HRS Water Pollution	DOH	-allows DOH to institute a civil action for injunctive relief to prevent violation of State water quality standards (§342D-11) -under the statute, DOH may request the court to order nonpoint source polluters to implement all required management measures

### Streamside Management Zones (SMZs)

**Establish and maintain a streamside management zone along surface waters, which is sufficiently wide and which 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. Manage the SMZ in such a way as to protect against soil disturbance in the SMZ and delivery to the stream of sediments and nutrients generated by forestry activities, including harvesting. Manage the SMZ canopy species to provide a sustainable source of large woody debris needed for instream channel structure and aquatic species habitat.**

### Responsible Agencies and Authorities

DLNR is the primary agency responsible for this management measure, because it is responsible for leasing public lands that would be used for forestry activities, for permitting forestry activities within the Conservation District, for overseeing the Forest Stewardship and Tree Farm programs on both

public and private lands, and for administering the Stream Channel Alteration Permit (SCAP) under the Commission on Water Resources Management.

Forestry activity may also take place on private land within the Agricultural District. In this case, the local soil and water conservation district normally works with the landowner to develop a conservation plan for the land use activity for approval by the district directors. An approved conservation plan to address soil and water conservation issues associated with the operation enables the landowner to be exempted from the county grading ordinances for any earthmoving activities.

### **Implementation Tools**

<b>Regulatory or Non-Regulatory Mechanism</b>	<b>Responsible Agency</b>	<b>Description</b>
Chapter 171, HRS Mgt and Disposition of Public Lands	DLNR	-classifies all public lands for use, including those lands suitable for timber growth (§171-10) -describes methods to dispose of public lands, including lease, license, and permit by public auction (§171-14, -35, -37, -54, -55)
Chapter 195F, HRS Forest Stewardship  Chapter 13-109, HAR Rules for Establishing Forest Stewardship	DLNR	-authorizes BLNR to establish a forest stewardship program to financially assist applicants to manage, protect, and restore important natural resources on private forest or formerly forested property (§195F-1) -to participate in the forest stewardship program, applicant landowner must prepare a forest stewardship management plan that describes management activities and practices (§195F-5) -provides list of forest stewardship management practices eligible for cost-share assistance, including those related to reforestation/ afforestation; forest/ agroforest improvements; windbreak/hedgerow establishment; soil and water protection/ improvement; riparian/ wetland protection (§13-109-6) -describes what information the forest stewardship management plan must contain (§13-109-7)
Chapter 186, HRS Tree Farms  Chapter 13-106, HAR Rules for Establishing Tree Farms	DLNR	-authorizes BLNR to classify land as tree farm if it is suited for sustained production of forest products (§186-4) -eligible land must be operating under approved forest management prescriptions and according to a management plan approved by BLNR (§13-106-3) -forest management plan must address establishment, maintenance, and harvest of forest products in a sustained manner while exercising sound conservation prescriptions (§13-106-4; §13-106-5)
Chapter 183, HRS Forest Reserves, Water Development, Zoning  Chapter 13-104, HAR Regulating Activities within Forest Reserves	DLNR	-all harvesting of trees on public lands must be done in accordance with a BLNR-approved management plan and with provisions regarding conservation of aquatic life, wildlife, and land plants, and the provisions regarding EISs (§183-16.5) -commercial harvest of forest products valued at under \$10,000 within forest reserves is only allowed under permit (§13-104-22)

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
<p>Chapter 183C, HRS Conservation District</p> <p>Chapter 13-5, HAR Conservation District</p>	DLNR	<p>-DLNR shall establish zones within the conservation district and permitted uses within those zones, which may include growth of commercial timber (§183C-4)</p> <p>-DLNR regulates land use in the conservation district through the issuance of permits (CDUPs) (§183C-6)</p> <p>-5 subzones within conservation district are established by DLNR; lands suitable for growing and harvesting of commercial timber or other forest products are included in the resource (R) subzone (§13-5-13)</p> <p>-commercial forestry in the resource subzone requires a permit from the DLNR and an approved management plan (§13-5-24)</p> <p>-permit application process and requirements are described in §13-5-31</p> <p>-as a standard condition to the permit, use of the area shall conform with the program of appropriate soil and water conservation district or plan approved by and on file with the department (§13-5-42)</p>
<p>Chapter 174C, HRS Hawaii Water Code</p> <p>Chapter 13-169, HAR Protection of Instream Uses of Water</p>	DLNR Commission on Water Resource Management	<p>-requires permit from Water Commission prior to undertaking a stream channel alteration to protect fishery, wildlife, recreational, aesthetic, scenic, and other beneficial uses (§174C-71)</p> <p>-outlines the stream channel alteration permit (SCAP) process (§13-169-50 through 13-169-54)</p>
<p><i>Best Management Practices for Maintaining Water Quality in Hawaii</i> (June 1998)</p>	DLNR	<p>The manual addresses the (g) guidance management measures and encourages appropriate forestry best management practices. These BMPs can be required as conditions to the various DLNR permits and programs.</p>
<p>Chapter 180, HRS Soil and Water Conservation Districts</p>	Local SWCDs	<p>-provides power to the local conservation districts to develop plans for conservation of soil and water resources and control and prevention of erosion within the district (§180-13)</p>
<p>Chapter 180C, HRS, Soil Erosion and Sediment Control</p>	counties	<p>-requires counties to enact ordinances to control soil erosion and sediment, with a provision whereby standards shall be deemed met if it can be shown that the land is being managed in accordance with soil conservation practices acceptable to the applicable soil and water conservation district directors and that a comprehensive conservation program is being actively pursued (§180C-2)</p>
<p>Chapter 342D, HRS Water Pollution</p>	DOH	<p>-allows DOH to institute a civil action for injunctive relief to prevent violation of State water quality standards (§342D-11)</p> <p>-under the statute, DOH may request the court to order nonpoint source polluters to implement all required management measures</p>

## Road Construction/Reconstruction Management Measure

- (1) Follow preharvest planning (as described under Preharvest Planning Management Measure) when constructing or reconstructing the roadway.
- (2) Follow designs planned under Preharvest Planning Management Measure for road surfacing and shaping.
- (3) Install road drainage structures according to designs planned under Preharvest Planning Management Measure and regional storm return period and installation specifications. Match these drainage structures with terrain features and with road surface and prism designs.
- (4) Guard against the production of sediment when installing stream crossings.
- (5) Protect surface waters from slash and debris material from roadway clearing.
- (6) Use straw bales, silt fences, mulching, or other favorable practices on disturbed soils on unstable cuts, fills, etc.

### Responsible Agencies and Authorities

DLNR is the primary agency responsible for this management measure, because it is responsible for leasing public lands that would be used for forestry activities, for permitting forestry activities within the Conservation District, for overseeing the Forest Stewardship and Tree Farm programs on both public and private lands, and for administering the Stream Channel Alteration Permit under the Commission on Water Resources Management.

Forestry activity may also take place on private land within the Agricultural District. In this case, the local SWCD normally works with the landowner to develop a conservation plan for the land use activity for approval by the district directors. An approved conservation plan to address soil and water conservation issues associated with the operation enables the landowner to be exempted from the county grading ordinances for any earthmoving activities.

### Implementation Tools

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 171, HRS Mgt and Disposition of Public Lands	DLNR	- classifies all public lands for use, including those lands suitable for timber growth (§171-10) - describes methods to dispose of public lands, including lease, license, and permit by public auction (§171-14, -35, -37, -54, -55)
Chapter 195F, HRS Forest Stewardship  Chapter 13-109, HAR Rules for Establishing Forest Stewardship	DLNR	-authorizes DLNR to establish a forest stewardship program to financially assist applicants to manage, protect, and restore important natural resources on private forest or formerly forested property (§195F-1) -to participate in the forest stewardship program, applicant landowner must prepare a forest stewardship management plan that describes management activities and practices (§195F-5) -provides list of forest stewardship management practices eligible for cost-share assistance, including those related to reforestation/ afforestation; forest/ agroforest improvements; windbreak/hedgerow establishment; soil and water protection/ improvement; riparian/ wetland protection (§13-109-6) -describes what information the forest stewardship management plan must contain (§13-109-7)



Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 186, HRS Tree Farms  Chapter 13-106, HAR Rules for Establishing Tree Farms	DLNR	<ul style="list-style-type: none"> <li>-authorizes BLNR to classify land as tree farm if it is suited for sustained production of forest products (§186-4)</li> <li>-eligible land must be operating under approved forest management prescriptions and according to a management plan approved by BLNR (§13-106-3)</li> <li>-forest management plan must address establishment, maintenance, and harvest of forest products in a sustained manner while exercising sound conservation prescriptions (§13-106-4; §13-106-5)</li> </ul>
Chapter 183, HRS Forest Reserves, Water Development, Zoning  Chapter 13-104, HAR Regulating Activities within Forest Reserves	DLNR	<ul style="list-style-type: none"> <li>-all harvesting of trees on public lands must be done in accordance with a BLNR-approved management plan and with provisions regarding conservation of aquatic life, wildlife, and land plants, and the provisions regarding EISs (§183-16.5)</li> <li>-commercial harvest of forest products valued at under \$10,000 within forest reserves is only allowed under permit (§13-104-22)</li> </ul>
Chapter 183C, HRS Conservation District  Chapter 13-5, HAR Conservation District	DLNR	<ul style="list-style-type: none"> <li>-DLNR shall establish zones within the conservation district and permitted uses within those zones, which may include growth of commercial timber (§183C-4)</li> <li>-DLNR regulates land use in the conservation district through the issuance of permits (CDUPs) (§183C-6)</li> <li>-5 subzones within conservation district are established by DLNR; lands suitable for growing and harvesting of commercial timber or other forest products are included in the resource (R) subzone (§13-5-13)</li> <li>-commercial forestry in the resource subzone requires a permit from the BLNR and an approved management plan (§13-5-24)</li> <li>-permit application process and requirements are described in §13-5-31</li> <li>-as a standard condition to the permit, use of the area shall conform with the program of appropriate soil and water conservation district or plan approved by and on file with the department (§13-5-42)</li> </ul>
Chapter 174C, HRS Hawaii Water Code  Chapter 13-169, HAR Protection of Instream Uses of Water	DLNR Commission on Water Resource Management	<ul style="list-style-type: none"> <li>- requires permit from the Water Commission prior to undertaking a stream channel alteration to protect fishery, wildlife, recreational, aesthetic, scenic, and other beneficial uses (§174C-71)</li> <li>-outlines the stream channel alteration permit (SCAP) process (§13-169-50 through 13-169-54)</li> </ul>
<i>Best Management Practices for Maintaining Water Quality in Hawaii</i> (June 1998)	DLNR	The manual addresses the (g) guidance management measures and encourages appropriate forestry best management practices. These BMPs can be required as conditions to the various DLNR permits and programs.
Chapter 180, HRS Soil and Water Conservation Districts	Local SWCDs	-provides power to the local conservation districts to develop plans for conservation of soil and water resources and control and prevention of erosion within the district (§180-13)
Chapter 180C, HRS, Soil Erosion and Sediment Control	counties	-requires counties to enact ordinances to control soil erosion and sediment, with a provision whereby standards shall be deemed met if it can be shown that the land is being managed in accordance with soil conservation practices acceptable to the applicable soil and water conservation district directors and that a comprehensive conservation program is being actively pursued (§180C-2)

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 10, HCC Soil Erosion and Sediment Control	Hawaii County DPW	<ul style="list-style-type: none"> <li>-requires permit for grading and grubbing of land, and stockpiling of material in excess of 500 cubic yards</li> <li>-all grading, grubbing and stockpiling permits and operations must conform to erosion and sedimentation control standards and guidelines (§10-26)</li> <li>-agricultural operations in conformance with soil conservation practices acceptable to the applicable soil and water conservation district and in accordance with an actively pursued comprehensive conservation program are exempted for this ordinance (§10-3)</li> </ul>
Chapter 22-7, KCC Grading, Grubbing and Stockpiling	Kauai County DPW	<ul style="list-style-type: none"> <li>-requires permit for grading, grubbing or stockpiling (§22-7.8)</li> <li>-all grading, grubbing and stockpiling activities shall incorporate BMPs to the maximum extent practicable to prevent damage by sedimentation to streams, watercourses, natural areas, and the property of others (§22-7.5)</li> <li>-all disturbed areas shall be stabilized with erosion and sediment control measures</li> <li>-agricultural operations managed in accordance with soil conservation practices acceptable to the applicable SWCD and in accordance with an actively pursued comprehensive conservation plan is exempted from provisions of this ordinance (§22-7.6)</li> </ul>
Chapter 14-13 through Chapter 14-16, ROH Grading, Soil Erosion and Sediment Control	City and County of Honolulu	<ul style="list-style-type: none"> <li>-land being managed in accordance with soil conservation practices acceptable to the applicable SWCD, and with a comprehensive conservation program that is being actively pursued is exempt from this ordinance (§14-13.5)</li> <li>-requires permit for grading, grubbing or stockpiling (§14-14.1)</li> <li>-specifies conditions and special requirements of permits (§14-15)</li> <li>-establishes penalties for violations (§14-16)</li> </ul>
Chapter 20.08, MCC Soil Erosion and Sedimentation Control	Maui County DPW	<ul style="list-style-type: none"> <li>-land management in conformance with standards set for by the SWCDs and in accordance with an actively pursued comprehensive conservation program is exempted from this ordinance (§20.08.030)</li> <li>-all grading, grubbing and stockpiling activities shall provide BMPs to the maximum extent practicable to prevent damage by sedimentation to streams, watercourses, natural areas, and the property of others (§20.08.035)</li> <li>-requires permit for grading, grubbing or stockpiling (§20.08.040)</li> </ul>
Chapter 342D, HRS Water Pollution	DOH	<ul style="list-style-type: none"> <li>-allows DOH to institute a civil action for injunctive relief to prevent violation of State water quality standards (§342D-11)</li> <li>-under the statute, DOH may request the court to order nonpoint source polluters to implement all required management measures</li> </ul>

## Road Management

- (1) Avoid using roads, where possible, for timber hauling or heavy traffic during wet periods on roads not designed and constructed for these conditions.
- (2) 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.
- (3) Remove drainage crossings and culverts if there is a reasonable risk of plugging or failure from lack of maintenance.
- (4) 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.
- (5) 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.
- (6) Conduct maintenance activities, such as dust abatement, so that chemical contaminants or pollutants are not introduced into surface waters, to the extent practicable.
- (7) Properly maintain permanent stream crossings and associated fills and approaches to reduce the likelihood that (a) stream overflow will divert onto roads, and (b) fill erosion will occur if the drainage structures become obstructed.

### Responsible Agencies and Authorities

DLNR is the primary agency responsible for this management measure, because it is responsible for leasing public lands that would be used for forestry activities, for permitting forestry activities within the Conservation District, for overseeing the Forest Stewardship and Tree Farm programs on both public and private lands, and for administering the Stream Channel Alteration Permit under the Commission on Water Resources Management.

Forestry activity may also take place on private land within the Agricultural District. In this case, the local SWCD normally works with the landowner to develop a conservation plan for the land use activity for approval by the district directors. An approved conservation plan to address soil and water conservation issues associated with the operation enables the landowner to be exempted from the county grading ordinances for any earthmoving activities.

### Implementation Tools

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
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Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
<p>Chapter 195F, HRS Forest Stewardship</p> <p>Chapter 13-109, HAR Rules for Establishing Forest Stewardship</p>	DLNR	<p>-authorizes BLNR to establish a forest stewardship program to financially assist applicants to manage, protect, and restore important natural resources on private forest or formerly forested property (§195F-1)</p> <p>-to participate in the forest stewardship program, applicant landowner must prepare a forest stewardship management plan that describes management activities and practices (§195F-5)</p> <p>-provides list of forest stewardship management practices eligible for cost-share assistance, including those related to reforestation/afforestation; forest/ agroforest improvements; windbreak/hedgerow establishment; soil and water protection/ improvement; riparian/ wetland protection (§13-109-6)</p> <p>- describes what information the forest stewardship management plan must contain (§13-109-7)</p>
<p>Chapter 186, HRS Tree Farms</p> <p>Chapter 13-106, HAR Rules for Establishing Tree Farms</p>	DLNR	<p>-authorizes BLNR to classify land as tree farm if it is suited for sustained production of forest products (§186-4)</p> <p>-eligible land must be operating under approved forest management prescriptions and according to a management plan approved by BLNR (§13-106-3)</p> <p>-forest management plan must address establishment, maintenance, and harvest of forest products in a sustained manner while exercising sound conservation prescriptions (§13-106-4; §13-106-5)</p>
<p>Chapter 183, HRS Forest Reserves, Water Development, Zoning</p> <p>Chapter 13-104, HAR Regulating Activities within Forest Reserves</p>	DLNR	<p>-all harvesting of trees on public lands must be done in accordance with a BLNR-approved management plan and with provisions regarding conservation of aquatic life, wildlife, and land plants, and the provisions regarding EISs (§183-16.5)</p> <p>-commercial harvest of forest products valued at under \$10,000 within forest reserves is only allowed under permit (§13-104-22)</p>
<p>Chapter 183C, HRS Conservation District</p> <p>Chapter 13-5, HAR Conservation District</p>	DLNR	<p>-DLNR shall establish zones within the conservation district and permitted uses within those zones, which may include growth of commercial timber (§183C-4)</p> <p>-DLNR regulates land use in the conservation district through the issuance of permits (CDUPs) (§183C-6)</p> <p>5 subzones within conservation district are established by DLNR; lands suitable for growing and harvesting of commercial timber or other forest products are included in the resource (R) subzone (§13-5-13)</p> <p>-commercial forestry in the resource subzone requires a permit from the BLNR and an approved management plan (§13-5-24)</p> <p>-permit application process and requirements are described in §13-5-31</p> <p>-as a standard condition to the permit, use of the area shall conform with the program of appropriate soil and water conservation district or plan approved by and on file with the department (§13-5-42)</p>
<p>Chapter 174C, HRS Hawaii Water Code</p> <p>Chapter 13-169, HAR Protection of Instream Uses of Water</p>	DLNR Commission on Water Resource Management	<p>-requires permit from the Water Commission prior to undertaking a stream channel alteration to protect fishery, wildlife, recreational, aesthetic, scenic, and other beneficial uses (§174C-71)</p> <p>-outlines the stream channel alteration permit (SCAP) process (§13-169-50 through 13-169-54)</p>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
<i>Best Management Practices for Maintaining Water Quality in Hawaii</i> (June 1998)	DLNR	The manual addresses the (g) guidance management measures and encourages appropriate forestry best management practices. These BMPs can be required as conditions to the various DLNR permits and programs.
Chapter 180, HRS Soil and Water Conservation Districts	Local SWCDs	-provides power to the local conservation districts to develop plans for conservation of soil and water resources and control and prevention of erosion within the district (§180-13)
Chapter 342D, HRS Water Pollution	DOH	-allows DOH to institute a civil action for injunctive relief to prevent violation of State water quality standards (§342D-11) -under the statute, DOH may request the court to order nonpoint source polluters to implement all required management measures

## Timber Harvesting

The timber harvesting management measure consists of implementing the following:

- (1) Timber harvesting operations with skid trails or cable yarding follow layouts determined under Preharvest Planning Management Measure.
- (2) Install landing drainage structures to avoid sedimentation, to the extent practicable. Disperse landing drainage over sideslopes.
- (3) 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 size of landing areas.
- (4) Protect stream channels and significant ephemeral drainages from logging debris and slash material.
- (5) Use appropriate areas for petroleum storage, draining, dispensing. Establish procedures to contain and treat spills. Recycle or properly dispose of all waste materials in accordance with State law.

For cable yarding:

- (1) Limit yarding corridor gouge or soil plowing by properly locating cable yarding landings.
- (2) Locate corridors for SMZs following SMZ management measure.
- (3) Cable yarding should not be done across perennial or intermittent streams, except at improved stream crossings.

For groundskidding:

- (1) Within SMZs, operate groundskidding equipment only at stream crossings, to the extent practicable. In SMZs, fell and endline trees to avoid sedimentation.
- (2) Use improved stream crossings for skid trails which cross flowing drainages. Construct skid trails to disperse runoff and with adequate drainage structures.
- (3) On steep slopes, use cable systems rather than groundskidding where groundskidding may cause excessive sedimentation.
- (4) Groundskidding should not be done across perennial or intermittent streams, except at improved stream crossings.

### Responsible Agencies and Authorities

DLNR is the primary agency responsible for this management measure, because it is responsible for leasing public lands that would be used for forestry activities, for permitting forestry activities within the Conservation District, for overseeing the Forest Stewardship and Tree Farm programs on both public and private lands, and for administering the Stream Channel Alteration Permit under the Commission on Water Resources Management.

Forestry activity may also take place on private land within the Agricultural District. In this case, the local SWCD normally works with the landowner to develop a conservation plan for the land use activity for approval by the district directors. An approved conservation plan to address soil and water conservation issues associated with the operation enables the landowner to be exempted from the county grading ordinances for any earthmoving activities.

**Implementation Tools**

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
<p>Chapter 195F, HRS Forest Stewardship</p> <p>Chapter 13-109, HAR Rules for Establishing Forest Stewardship</p>	<p>DLNR</p>	<p>-authorizes BLNR to establish a forest stewardship program to financially assist applicants to manage, protect, and restore important natural resources on private forest or formerly forested property (§195F-1)</p> <p>-to participate in the forest stewardship program, applicant landowner must prepare a forest stewardship management plan that describes management activities and practices (§195F-5)</p> <p>-provides list of forest stewardship management practices eligible for cost-share assistance, including those related to reforestation/ afforestation; forest/ agroforest improvements; windbreak/hedgerow establishment; soil and water protection/ improvement; riparian/ wetland protection (§13-109-6)</p> <p>-describes what information the forest stewardship management plan must contain (§13-109-7)</p>
<p>Chapter 186, HRS Tree Farms</p> <p>Chapter 13-106, HAR Rules for Establishing Tree Farms</p>	<p>DLNR</p>	<p>-authorizes BLNR to classify land as tree farm if it is suited for sustained production of forest products (§186-4)</p> <p>-eligible land must be operating under approved forest management prescriptions and according to a management plan approved by BLNR (§13-106-3)</p> <p>-forest management plan must address establishment, maintenance, and harvest of forest products in a sustained manner while exercising sound conservation prescriptions (§13-106-4; §13-106-5)</p>
<p>Chapter 183, HRS Forest Reserves, Water Development, Zoning</p> <p>Chapter 13-104, HAR Regulating Activities within Forest Reserves</p>	<p>DLNR</p>	<p>-all harvesting of trees on public lands must be done in accordance with a BLNR-approved management plan and with provisions regarding conservation of aquatic life, wildlife, and land plants, and the provisions regarding EISs (§183-16.5)</p> <p>-commercial harvest of forest products valued at under \$10,000 within forest reserves is only allowed under permit (§13-104-22)</p>
<p>Chapter 183C, HRS Conservation District</p> <p>Chapter 13-5, HAR Conservation District</p>	<p>DLNR</p>	<p>-DLNR shall establish zones within the conservation district and permitted uses within those zones, which may include growth of commercial timber (§183C-4)</p> <p>-DLNR regulates land use in the conservation district through the issuance of permits (CDUPs) (§183C-6)</p> <p>-5 subzones within conservation district are established by DLNR; lands suitable for growing and harvesting of commercial timber or other forest products are included in the resource (R) subzone (§13-5-13)</p> <p>-commercial forestry in the resource subzone requires a permit from the BLNR and an approved management plan (§13-5-24)</p> <p>-permit application process and requirements are described in §13-5-31</p> <p>-as a standard condition to the permit, use of the area shall conform with the program of appropriate soil and water conservation district or plan approved by and on file with the department (§13-5-42)</p>
<p>Chapter 174C, HRS Hawaii Water Code</p> <p>Chapter 13-169, HAR Protection of Instream Uses of Water</p>	<p>DLNR Commission on Water Resource Management</p>	<p>-requires permit from the Water Commission prior to undertaking a stream channel alteration to protect fishery, wildlife, recreational, aesthetic, scenic, and other beneficial uses (§174C-71)</p> <p>-outlines the stream channel alteration permit (SCAP) process (§13-169-50 through 13-169-54)</p>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
<i>Best Management Practices for Maintaining Water Quality in Hawaii</i> (June 1998)	DLNR	The manual addresses the (g) guidance management measures and encourages appropriate forestry best management practices. These BMPs can be required as conditions to the various DLNR permits and programs.
Chapter 180, HRS Soil and Water Conservation Districts	Local SWCDs	-provides power to the local conservation districts to develop plans for conservation of soil and water resources and control and prevention of erosion within the district (§180-13)
Chapter 342H, HRS Solid Waste Pollution	DOH	-prohibits disposal of solid waste anywhere other than a permitted solid waste management system (§342H-30)
Chapter 342J, HRS Hazardous Waste	DOH	-prohibits discharge of new, used or recycled oil into sewers, drainage systems, surface or ground waters, watercourse, marine waters, or onto the ground. The prohibition does not apply to inadvertent, normal discharges from vehicles and equipment, or maintenance and repair activities, provided that appropriate measures are taken to minimize releases (§342J-52(b))
Chapter 342D, HRS Water Pollution	DOH	-allows DOH to institute a civil action for injunctive relief to prevent violation of State water quality standards (§342D-11) -under the statute, DOH may request the court to order nonpoint source polluters to implement all required management measures

### Site Preparation and Forest Regeneration Management Measure

Confine on-site potential nonpoint source pollution and erosion resulting from site preparation and the regeneration of forest stands. The components of the management measure for site preparation and regeneration are:

- (1) Select a method of site preparation and regeneration suitable for the site conditions.
- (2) Conduct mechanical tree planting and ground-disturbing site preparation activities on the contour of erodible terrain.
- (3) Do not conduct mechanical site preparation and mechanical tree planting in SMZs.
- (4) Protect surface waters from logging debris and slash material.
- (5) Suspend operations during wet periods if equipment used begins to cause excessive soil disturbance that will increase erosion.
- (6) Locate windrows at a safe distance from drainages and SMZs to control movement of the material during high runoff conditions.
- (7) Conduct bedding operations in high water-table areas during dry periods of the year. Conduct bedding in erodible areas on the contour.
- (8) Protect small ephemeral drainages when conducting mechanical tree planting.

### Responsible Agencies and Authorities

DLNR is the primary agency responsible for this management measure, because it is responsible for leasing public lands that would be used for forestry activities, for permitting forestry activities within the Conservation District, for overseeing the Forest Stewardship and Tree Farm programs on both public and private lands, and for administering the Stream Channel Alteration Permit under the Commission on Water Resources Management.



Forestry activity may also take place on private land within the Agricultural District. In this case, the local SWCD normally works with the landowner to develop a conservation plan for the land use activity for approval by the district directors. An approved conservation plan to address soil and water conservation issues associated with the operation enables the landowner to be exempted from the county grading ordinances for any earthmoving activities.

DOH regulates the storage, disposal, and discharge of hazardous waste (including oil) and solid waste, under Chapters 342J and 342H, HRS.

### **Implementation Tools**

<b>Regulatory or Non-Regulatory Mechanism</b>	<b>Responsible Agency</b>	<b>Description</b>
Chapter 195F, HRS Forest Stewardship  Chapter 13-109, HAR Rules for Establishing Forest Stewardship	DLNR	-authorizes BLNR to establish a forest stewardship program to financially assist applicants to manage, protect, and restore important natural resources on private forest or formerly forested property (§195F-1) -to participate in the forest stewardship program, applicant landowner must prepare a forest stewardship management plan that describes management activities and practices (§195F-5) -provides list of forest stewardship management practices eligible for cost-share assistance, including those related to reforestation/ afforestation; forest/ agroforest improvements; windbreak/hedgerow establishment; soil and water protection/ improvement; riparian/ wetland protection (§13-109-6) -describes what information the forest stewardship management plan must contain (§13-109-7)
Chapter 186, HRS Tree Farms  Chapter 13-106, HAR Rules for Establishing Tree Farms	DLNR	-authorizes BLNR to classify land as tree farm if it is suited for sustained production of forest products (§186-4) -eligible land must be operating under approved forest management prescriptions and according to a management plan approved by BLNR (§13-106-3) -forest management plan must address establishment, maintenance, and harvest of forest products in a sustained manner while exercising sound conservation prescriptions (§13-106-4; §13-106-5)
Chapter 183, HRS Forest Reserves, Water Development, Zoning  Chapter 13-104, HAR Regulating Activities within Forest Reserves	DLNR	-all harvesting of trees on public lands must be done in accordance with a BLNR-approved management plan and with provisions regarding conservation of aquatic life, wildlife, and land plants, and the provisions regarding EISs (§183-16.5) -commercial harvest of forest products valued at under \$10,000 within forest reserves is only allowed under permit (§13-104-22)

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
<p>Chapter 183C, HRS Conservation District</p> <p>Chapter 13-5, HAR Conservation District</p>	DLNR	<p>-DLNR shall establish zones within the conservation district and permitted uses within those zones, which may include growth of commercial timber (§183C-4)</p> <p>-DLNR regulates land use in the conservation district through the issuance of permits (CDUPs) (§183C-6)</p> <p>-5 subzones within conservation district are established by DLNR; lands suitable for growing and harvesting of commercial timber or other forest products are included in the resource (R) subzone (§13-5-13)</p> <p>-commercial forestry in the resource subzone requires a permit from the DLNR and an approved management plan (§13-5-24)</p> <p>-permit application process and requirements are described in §13-5-31</p> <p>-as a standard condition to the permit, use of the area shall conform with the program of appropriate soil and water conservation district or plan approved by and on file with the department (§13-5-42)</p>
<p>Chapter 174C, HRS Hawaii Water Code</p> <p>Chapter 13-169, HAR Protection of Instream Uses of Water</p>	DLNR Commission on Water Resource Management	<p>- requires permit from the Water Commission prior to undertaking a stream channel alteration to protect fishery, wildlife, recreational, aesthetic, scenic, and other beneficial uses (§174C-71)</p> <p>-outlines the stream channel alteration permit (SCAP) process (§13-169-50 through 13-169-54)</p>
<p><i>Best Management Practices for Maintaining Water Quality in Hawaii</i> (June 1998)</p>	DLNR	<p>The manual addresses the (g) guidance management measures and encourages appropriate forestry best management practices. These BMPs can be required as conditions to the various DLNR permits and programs.</p>
<p>Chapter 180, HRS Soil and Water Conservation Districts</p>	Local SWCDs	<p>-provides power to the local conservation districts to develop plans for conservation of soil and water resources and control and prevention of erosion within the district (§180-13)</p>
<p>Chapter 342D, HRS Water Pollution</p>	DOH	<p>-allows DOH to institute a civil action for injunctive relief to prevent violation of State water quality standards (§342D-11)</p> <p>-under the statute, DOH may request the court to order nonpoint source polluters to implement all required management measures</p>
<p>Chapter 180C, HRS, Soil Erosion and Sediment Control</p>	counties	<p>-requires counties to enact ordinances to control soil erosion and sediment, with a provision whereby standards shall be deemed met if it can be shown that the land is being managed in accordance with soil conservation practices acceptable to the applicable SWCD directors and that a comprehensive conservation program is being actively pursued (§180C-2)</p>
<p>Chapter 10, HCC Soil Erosion and Sediment Control</p>	Hawaii County DPW	<p>-requires permit for grading and grubbing of land, and stockpiling of material in excess of 500 cubic yards</p> <p>-all grading, grubbing and stockpiling permits and operations must conform to erosion and sedimentation control standards and guidelines (§10-26)</p> <p>-agricultural operations in conformance with soil conservation practices acceptable to the applicable SWCD and in accordance with an actively pursued comprehensive conservation program are exempted for this ordinance (§10-3)</p>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 22-7, KCC Grading, Grubbing and Stockpiling	Kauai County DPW	-requires permit for grading, grubbing or stockpiling (§22-7.8) -all grading, grubbing and stockpiling activities shall incorporate BMPs to the maximum extent practicable to prevent damage by sedimentation to streams, watercourses, natural areas, and the property of others (§22-7.5) -all disturbed areas shall be stabilized with erosion and sediment control measures -agricultural operations managed in accordance with soil conservation practices acceptable to the applicable SWCD and in accordance with an actively pursued comprehensive conservation plan is exempted from provisions of this ordinance (§22-7.6)
Chapter 14-13 through Chapter 14-16, ROH Grading, Soil Erosion and Sediment Control	City and County of Honolulu	-land being managed in accordance with soil conservation practices acceptable to the applicable SWCD, and with a comprehensive conservation program that is being actively pursued is exempt from this ordinance (§14-13.5) -requires permit for grading, grubbing or stockpiling (§14-14.1) -specifies conditions and special requirements of permits (§14-15) -establishes penalties for violations (§14-16)
Chapter 20.08, MCC Soil Erosion and Sedimentation Control	Maui County DPW	-land management in conformance with standards set for by the SWCDs and in accordance with an actively pursued comprehensive conservation program is exempted from this ordinance (§20.08.030) -all grading, grubbing and stockpiling activities shall provide BMPs to the maximum extent practicable to prevent damage by sedimentation to streams, watercourses, natural areas, and the property of others (§20.08.035) -requires permit for grading, grubbing or stockpiling (§20.08.040)

## Fire Management

**Prescribe fire or suppress wildfire in a manner which reduces potential nonpoint source pollution of surface waters:**

- (1) Prescribed fire should 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, especially in SMZs, in streamside vegetation for small ephemeral drainages, or on very steep slopes.**
- (2) Prescriptions for fire should protect against excessive erosion or sedimentation, to the extent practicable.**
- (3) All bladed firelines, for prescribed fire and wildfire, should 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.**
- (4) Wildfire suppression and rehabilitation should consider possible nonpoint source pollution of watercourses, while recognizing the safety and operational priorities of fighting wildfires.**

### Responsible Agencies and Authorities

DLNR is the primary agency responsible for this management measure, because it is responsible for leasing public lands that would be used for forestry activities, for permitting forestry activities within the Conservation District, for overseeing the Forest Stewardship and Tree Farm programs on both

public and private lands, and for administering the Stream Channel Alteration Permit under the Commission on Water Resources Management.

Forestry activity may also take place on private land within the Agricultural District. In this case, the local SWCD normally works with the landowner to develop a conservation plan for the land use activity for approval by the district directors. An approved conservation plan to address soil and water conservation issues associated with the operation enables the landowner to be exempted from the county grading ordinances for any earthmoving activities.

**Implementation Tools**

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 185, HRS Land Fire Protection Law	DLNR	<ul style="list-style-type: none"> <li>-authorizes DLNR to take measures for the prevention, control, and extinguishment of wildland fires within forest reserves, public hunting areas, wildlife and plant sanctuaries, and natural area reserves, and to cooperate with established fire control agencies in developing plans and programs for the prevention, control, and extinguishment of fires on forest, grass, brush, and watershed lands not within DLNR’s fire protection responsibilities described above (§185-1.5)</li> <li>-authorizes DLNR to coordinate with DOH for the issuance of burning permits on lands where the department has direct fire protection responsibility and on adjoining property that offers a significant threat to those lands. Holders of permits shall start no fires during heavy winds or without sufficient help present to control the fire (§185-7(b))</li> </ul>
Chapter 11-60.1, HAR Air Pollution Control	DOH	<ul style="list-style-type: none"> <li>-persons engaged in burning for any agricultural operation, forest management, or range improvement must obtain an agricultural burning permit from DOH (§11-60.1-53)</li> <li>-establishes “no-burn” periods when meteorological conditions are detrimental to burning (§11-60.1-55)</li> </ul>
Chapter 195F, HRS Forest Stewardship  Chapter 13-109, HAR Rules for Establishing Forest Stewardship	DLNR	<ul style="list-style-type: none"> <li>-authorizes BLNR to establish a forest stewardship program to financially assist applicants to manage, protect, and restore important natural resources on private forest or formerly forested property (§195F-1)</li> <li>-to participate in the forest stewardship program, applicant landowner must prepare a forest stewardship management plan that describes management activities and practices (§195F-5)</li> <li>-provides list of forest stewardship management practices eligible for cost-share assistance, including those related to reforestation/ afforestation; forest/ agroforest improvements; windbreak/hedgerow establishment; soil and water protection/ improvement; riparian/ wetland protection (§13-109-6)</li> <li>-describes what information the forest stewardship management plan must contain (§13-109-7)</li> </ul>
Chapter 186, HRS Tree Farms  Chapter 13-106, HAR Rules for Establishing Tree Farms	DLNR	<ul style="list-style-type: none"> <li>-authorizes BLNR to classify land as tree farm if it is suited for sustained production of forest products (§186-4)</li> <li>-eligible land must be operating under approved forest management prescriptions and according to a management plan approved by BLNR (§13-106-3)</li> <li>-forest management plan must address establishment, maintenance, and harvest of forest products in a sustained manner while exercising sound conservation prescriptions (§13-106-4; §13-106-5)</li> </ul>
Chapter 183, HRS Forest Reserves, Water Development, Zoning  Chapter 13-104, HAR Regulating Activities within Forest Reserves	DLNR	<ul style="list-style-type: none"> <li>-all harvesting of trees on public lands must be done in accordance with a BLNR-approved management plan and with provisions regarding conservation of aquatic life, wildlife, and land plants, and the provisions regarding EISs (§183-16.5)</li> <li>-commercial harvest of forest products valued at under \$10,000 within forest reserves is only allowed under permit (§13-104-22)</li> </ul>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 183C, HRS Conservation District  Chapter 13-5, HAR Conservation District	DLNR	-DLNR shall establish zones within the conservation district and permitted uses within those zones, which may include growth of commercial timber (§183C-4) -DLNR regulates land use in the conservation district through the issuance of permits (CDUPs) (§183C-6) -5 subzones within conservation district are established by DLNR; lands suitable for growing and harvesting of commercial timber or other forest products are included in the resource (R) subzone (§13-5-13) -commercial forestry in the resource subzone requires a permit from the DLNR and an approved management plan (§13-5-24) -permit application process and requirements are described in §13-5-31 -as a standard condition to the permit, use of the area shall conform with the program of appropriate soil and water conservation district or plan approved by and on file with the department (§13-5-42)
<i>Best Management Practices for Maintaining Water Quality in Hawaii</i> (June 1998)	DLNR	The manual addresses the (g) guidance management measures and encourages appropriate forestry best management practices. These BMPs can be required as conditions to the various DLNR permits and programs.
Chapter 180, HRS Soil and Water Conservation Districts	Local SWCDs	-provides power to the local conservation districts to develop plans for conservation of soil and water resources and control and prevention of erosion within the district (§180-13)
Chapter 342D, HRS Water Pollution	DOH	-allows DOH to institute a civil action for injunctive relief to prevent violation of State water quality standards (§342D-11) -under the statute, DOH may request the court to order nonpoint source polluters to implement all required management measures

### Revegetation of Disturbed Areas

**Reduce erosion and sedimentation by rapid revegetation of areas disturbed by harvesting operations or road construction:**

- (1) Revegetate disturbed areas (using seeding or planting) promptly after completion of the earth-disturbing activity. Local growing conditions will dictate the timing for establishment of vegetative cover.**
- (2) Use mixes of species and treatments developed and tailored for successful vegetation establishment for the region or area.**
- (3) Concentrate revegetation efforts initially on priority areas such as disturbed areas in SMZs or the steepest areas of disturbance near drainages.**

### Responsible Agencies and Authorities

DLNR is the primary agency responsible for this management measure, because it is responsible for leasing public lands that would be used for forestry activities, for permitting forestry activities within the Conservation District, for overseeing the Forest Stewardship and Tree Farm programs on both public and private lands, and for administering the Stream Channel Alteration Permit under the Commission on Water Resources Management.

Forestry activity may also take place on private land within the Agricultural District. In this case, the local SWCD normally works with the landowner to develop a conservation plan for the land use activity for approval by the district directors. An approved conservation plan to address soil and water conservation issues associated with the operation enables the landowner to be exempted from the county grading ordinances for any earthmoving activities.

### **Implementation Tools**

<b>Regulatory or Non-Regulatory Mechanism</b>	<b>Responsible Agency</b>	<b>Description</b>
Chapter 195F, HRS Forest Stewardship  Chapter 13-109, HAR Rules for Establishing Forest Stewardship	DLNR	-authorizes BLNR to establish a forest stewardship program to financially assist applicants to manage, protect, and restore important natural resources on private forest or formerly forested property (§195F-1) -to participate in the forest stewardship program, applicant landowner must prepare a forest stewardship management plan that describes management activities and practices (§195F-5) -provides list of forest stewardship management practices eligible for cost-share assistance, including those related to reforestation/ afforestation; forest/ agroforest improvements; windbreak/hedgerow establishment; soil and water protection/ improvement; riparian/ wetland protection (§13-109-6) -describes what information the forest stewardship management plan must contain (§13-109-7)
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Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 174C, HRS Hawaii Water Code  Chapter 13-169, HAR Protection of Instream Uses of Water	DLNR Commission on Water Resource Management	- requires permit from the Water Commission prior to undertaking a stream channel alteration to protect fishery, wildlife, recreational, aesthetic, scenic, and other beneficial uses (§174C-71) -outlines the stream channel alteration permit (SCAP) process (§13-169-50 through 13-169-54)
<i>Best Management Practices for Maintaining Water Quality in Hawaii</i> (June 1998)	DLNR	The manual addresses the (g) guidance management measures and encourages appropriate forestry best management practices. These BMPs can be required as conditions to the various DLNR permits and programs.
Chapter 180, HRS Soil and Water Conservation Districts	Local SWCDs	-provides power to the local conservation districts to develop plans for conservation of soil and water resources and control and prevention of erosion within the district (§180-13)
Chapter 342D, HRS Water Pollution	DOH	-allows DOH to institute a civil action for injunctive relief to prevent violation of State water quality standards (§342D-11) -under the statute, DOH may request the court to order nonpoint source polluters to implement all required management measures
Chapter 180C, HRS, Soil Erosion and Sediment Control	counties	-requires counties to enact ordinances to control soil erosion and sediment, with a provision whereby standards shall be deemed met if it can be shown that the land is being managed in accordance with soil conservation practices acceptable to the applicable soil and water conservation district directors and that a comprehensive conservation program is being actively pursued (§180C-2)
Chapter 10, HCC Soil Erosion and Sediment Control	Hawaii County DPW	-requires permit for grading and grubbing of land, and stockpiling of material in excess of 500 cubic yards -all grading, grubbing and stockpiling permits and operations must conform to erosion and sedimentation control standards and guidelines (§10-26) -agricultural operations in conformance with soil conservation practices acceptable to the applicable SWCD and in accordance with an actively pursued comprehensive conservation program are exempted for this ordinance (§10-3)
Chapter 22-7, KCC Grading, Grubbing and Stockpiling	Kauai County DPW	-requires permit for grading, grubbing or stockpiling (§22-7.8) -all grading, grubbing and stockpiling activities shall incorporate BMPs to the maximum extent practicable to prevent damage by sedimentation to streams, watercourses, natural areas, and the property of others (§22-7.5) -all disturbed areas shall be stabilized with erosion and sediment control measures -agricultural operations managed in accordance with soil conservation practices acceptable to the applicable SWCD and in accordance with an actively pursued comprehensive conservation plan is exempted from provisions of this ordinance (§22-7.6)
Chapter 14-13 through Chapter 14-16, ROH Grading, Soil Erosion and Sediment Control	City and County of Honolulu	-land being managed in accordance with soil conservation practices acceptable to the applicable SWCD, and with a comprehensive conservation program that is being actively pursued is exempt from this ordinance (§14-13.5) -requires permit for grading, grubbing or stockpiling (§14-14.1) -specifies conditions and special requirements of permits (§14-15) -establishes penalties for violations (§14-16)



Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 20.08, MCC Soil Erosion and Sedimentation Control	Maui County DPW	-land management in conformance with standards set for by the SWCDs and in accordance with an actively pursued comprehensive conservation program is exempted from this ordinance (§20.08.030) -all grading, grubbing and stockpiling activities shall provide BMPs to the maximum extent practicable to prevent damage by sedimentation to streams, watercourses, natural areas, and the property of others (§20.08.035) -requires permit for grading, grubbing or stockpiling (§20.08.040)

### Forest Chemical Management

Use chemicals when necessary for forest management in accordance with the following to reduce nonpoint source pollution impacts due to the movement of forest chemicals off-site during and after application:

- (1) Conduct applications by skilled and, where required, licensed applicators according to the registered use, with special consideration given to impacts to nearby surface and ground waters.
- (2) Carefully prescribe the type and amount of pesticides appropriate for the insect, fungus, or herbaceous species.
- (3) Establish and identify buffer areas for surface waters. (This is especially important for aerial applications.)
- (4) 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.
- (5) Immediately report accidental spills of pesticides or fertilizers into surface waters to the appropriate State agency. Develop an effective spill contingency plan to contain spills.

#### Responsible Agencies and Authorities

DLNR is the primary agency responsible for this management measure, because it is responsible for leasing public lands that would be used for forestry activities, for permitting forestry activities within the Conservation District, for overseeing the Forest Stewardship and Tree Farm programs on both public and private lands, and for administering the Stream Channel Alteration Permit under the Commission on Water Resources Management.

Forestry activity may also take place on private land within the Agricultural District. In this case, the local SWCD normally works with the landowner to develop a conservation plan for the land use activity for approval by the district directors. An approved conservation plan to address soil and water conservation issues associated with the operation enables the landowner to be exempted from the county grading ordinances for any earthmoving activities.

Under the authority of Chapter 149A, HRS, Department of Agriculture (DOA), Pesticides Branch, is the lead agency for implementing those measures that relate to regulating pesticides. Chapter 4-66, HAR, administered by DOA, relates to the registration, licensing, certification, recordkeeping, usage, and other activities related to the safe and effective use of pesticides. It requires that those who apply or directly supervise others who apply restricted use pesticides be certified. Certification requires some understanding of the environmental concerns of using pesticides. This requirement is implemented

under the CES/DOA Pesticide Applicator Program. Certification is not required for those using pesticides that are not classified as “restricted use.”

**Implementation Tools**

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
<p>Chapter 149A, HRS Hawaii Pesticides Law</p> <p>Chapter 4-66, HAR Pesticides</p>	<p>DOA</p>	<p>-it is unlawful for a person to use any pesticide in a manner inconsistent with its label; to use, store, transport, or discard any pesticide in a manner that would have unreasonable adverse effects on the environment; to use or apply restricted use pesticides unless the person is a certified pesticide applicator or under the direct supervision of a certified pesticide applicator; or to fill with water, through a hose, pipe, or other similar transmission system, any tank, implement, apparatus, or equipment used to disperse pesticides, unless the transmission system is equipped with an air gap or a reduced pressure principle backflow device meeting the requirements under section 340E-2, HRS. (§149A-31)</p> <p>-an applicator applying restricted use pesticides shall be certified as a commercial pesticide applicator or a private pesticide applicator (§4-66-56)</p> <p>-Category 2 commercial pesticide applicator certification is necessary for persons using or supervising the use of restricted use pesticides in forests, forest nurseries, and forest seed producing areas (§4-66-56(b)(2))</p> <p>- Category 4 commercial pesticide applicator certification is necessary for persons using or supervising the use of restricted use pesticides applied by aircraft (§4-66-56(b)(4))</p> <p>- Category 11 commercial pesticide applicator certification is necessary for persons using or supervising the use of restricted use pesticides applied through an irrigation system (§4-66-56(b)(11))</p>
<p>Chapter 149A, HRS Hawaii Pesticides Law, continued</p> <p>Chapter 4-66, HAR Pesticides, continued</p>	<p>DOA</p>	<p>-specific standards for certification of forest pest control applicators requires demonstrated knowledge of the extent and types of forests, forest nurseries, seed production and pests involved. Applicators in this category shall demonstrate knowledge of the cyclic occurrence of certain pests, population dynamics, and the vulnerability of biota to pesticide application. Because forest stands frequently include watersheds and aquatic situations and harbor wildlife, the applicator shall demonstrate knowledge of pest control methods that will minimize the possibility of secondary problems such as ground water contamination and unintended effects on wildlife. Proper use of specialized equipment must be demonstrated, especially as it may relate to meteorological factors and adjacent land use. (§4-66-58(a)(2))</p> <p>-aerial pest control applicators shall demonstrate broad knowledge of the principles of drift and drift control, including the effects of weather, application equipment and techniques, pesticide formulations and adjuvants. (§4-66-58(a)(4))</p>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 340E, HRS Safe Drinking Water  Chapter 11-21, HAR Cross Connection and Backflow Control	DOH	<ul style="list-style-type: none"> <li>-authorizes the director to promulgate and enforce regulations relating to cross-connection and backflow prevention control (§340E-2)</li> <li>-provides guidelines relating to backflow prevention devices for irrigation systems (§11-21-7)</li> <li>-a reduced pressure principal backflow preventor or air gap separation is required before any piping network in which fertilizers, pesticides and other chemicals or toxic contaminants are injected or siphoned into the irrigation system. (§11-21-7(a)(4))</li> </ul>
Chapter 195F, HRS Forest Stewardship  Chapter 13-109, HAR Rules for Establishing Forest Stewardship	DLNR	<ul style="list-style-type: none"> <li>-authorizes BLNR to establish a forest stewardship program to financially assist applicants to manage, protect, and restore important natural resources on private forest or formerly forested property (§195F-1)</li> <li>-to participate in the forest stewardship program, applicant landowner must prepare a forest stewardship management plan that describes management activities and practices (§195F-5)</li> <li>-provides list of forest stewardship management practices eligible for cost-share assistance, including those related to reforestation/ afforestation; forest/ agroforest improvements; windbreak/hedgerow establishment; soil and water protection/ improvement; riparian/ wetland protection (§13-109-6)</li> <li>-describes what information the forest stewardship management plan must contain (§13-109-7)</li> </ul>
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Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
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## Wetland Forest Management

**Plan, operate, and manage normal, ongoing forestry activities (including harvesting, road design and construction, site preparation and regeneration, and chemical management) to adequately protect the aquatic functions of forested wetlands.**

### Responsible Agencies and Authorities

Because forested wetlands are typically located within protected areas, it is unlikely that forestry or silvicultural operations will be conducted on a commercial basis. However, salvage operations (*e.g.*, as a result of hurricanes) or other maintenance kinds of activities are sometimes conducted in these areas.

DLNR is the primary agency responsible for this management measure, because it is responsible for leasing public lands that would be used for forestry activities, for permitting forestry activities within the Conservation District, for overseeing the Forest Stewardship and Tree Farm programs on both public and private lands, and for administering the Stream Channel Alteration Permit under the Commission on Water Resources Management.

Forestry activity may also take place on private land within the Agricultural District. In this case, the local SWCD normally works with the landowner to develop a conservation plan for the land use activity for approval by the district directors. An approved conservation plan to address soil and water conservation issues associated with the operation enables the landowner to be exempted from the county grading ordinances for any earthmoving activities.

The U.S. Army Corps of Engineers (USACOE) has the authority to protect the waters of the United States, including wetlands, by regulating certain activities within those waters. Section 404 of the

Clean Water Act requires that anyone interested in placing dredged or fill material into waters of the United States must first obtain a permit from the Corps. “Waters of the United States” is defined broadly to include: “All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters: i.) which are or could be used by interstate or foreign travelers for recreational or other purposes; or ii.) from which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or iii.) which are used or could be used for industrial purpose by industries in interstate commerce” (33 CFR Part 328.3). Activities in wetlands for which Section 404 permits may be required include, but are not limited to: placement of fill and/or dredged material; ditching activities when the excavated material is sidecast; and placement of riprap and road fills.

### Implementation Tools

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 195F, HRS Forest Stewardship  Chapter 13-109, HAR Rules for Establishing Forest Stewardship	DLNR	<ul style="list-style-type: none"> <li>-authorizes BLNR to establish a forest stewardship program to financially assist applicants to manage, protect, and restore important natural resources on private forest or formerly forested property (§195F-1)</li> <li>-to participate in the forest stewardship program, applicant landowner must prepare a forest stewardship management plan that describes management activities and practices (§195F-5)</li> <li>-provides list of forest stewardship management practices eligible for cost-share assistance, including those related to reforestation/afforestation; forest/ agroforest improvements; windbreak/hedgerow establishment; soil and water protection/ improvement; riparian/ wetland protection (§13-109-6)</li> <li>-describes what information the forest stewardship management plan must contain (§13-109-7)</li> </ul>
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<p>Chapter 174C, HRS Hawaii Water Code</p> <p>Chapter 13-169, HAR Protection of Instream Uses of Water</p>	DLNR Commission on Water Resource Management	<p>- requires permit from the Water Commission prior to undertaking a stream channel alteration to protect fishery, wildlife, recreational, aesthetic, scenic, and other beneficial uses (§174C-71)</p> <p>-outlines the stream channel alteration permit (SCAP) process (§13-169-50 through 13-169-54)</p>
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<p>Chapter 342D, HRS Water Pollution</p>	DOH	<p>-allows DOH to institute a civil action for injunctive relief to prevent violation of State water quality standards (§342D-11)</p> <p>-under the statute, DOH may request the court to order nonpoint source polluters to implement all required management measures</p>

## URBAN AREAS

### Urban Runoff

#### New Development Management Measure

- (1) By design or performance:
  - a. After construction has been completed and the site is permanently stabilized, reduce the average annual total suspended solid (TSS) loadings by 80%. For the purposes of this measure, an 80% TSS reduction is to be determined on an average annual basis, or
  - b. Reduce the postdevelopment loadings of TSS so that the average annual TSS loadings are no greater than predevelopment loadings, and
- (2) To the extent practicable, maintain postdevelopment peak runoff rate and average volume at levels that are similar to predevelopment levels.

Sound watershed management requires that both structural and nonstructural measures be employed to mitigate the adverse impacts of storm water. Nonstructural Management Measures-Watershed Protection and Site Development- can be effectively used in conjunction with this management measure to reduce both the short- and long-term costs of meeting the treatment goals of this management

#### Responsible Agencies and Authorities

In urban areas, the counties have the lead in implementing this management measure. The approval of plans for new developments is the responsibility of the county planning departments. Storm drainage standards are implemented through the departments of public works.

Kauai County adopted a new drainage ordinance in 2001. It established new drainage principles and policies through the adoption of a Storm Water Runoff System Manual. It applies to all lands in Kauai and to all stormwater facilities constructed within the County rights-of-way, to easements dedicated to public use, and to privately-owned systems that are part of the required infrastructure improvements for a subdivision. In Hawaii County, all urban developments (with very few exceptions) have been mandated to maintain pre-development runoff conditions. Pre- and post- development runoffs are calculated using the County "Storm Drainage Standard." The minimum criteria used for runoff calculations are a 1-hour, 10-year storm event. This requirement inhibits conveyance of development runoff into natural drainage systems. Maui County Department of Public Works is in the process of revising its drainage rules to incorporate stormwater pollution control measures and best management practices (BMPs). The changes are based on the City and County of Honolulu's ordinance (Chapter 14, ROH) and will include a new section addressing storm water quality. The new requirements will apply to all residential, commercial, public facilities and transportation development projects requiring building permits. BMPs must either detain stormwater for a length of time that allows pollutants to settle, or use filtration or infiltration methods.

Generally, all development within the counties must conform to the policies outlined in the county general plans and specific community development plans. The county general plans provide a coordinated set of guidelines within each county for decision-making regarding future growth and

development and protection of natural and cultural resources. The general plans also guide revisions and updates to the county codes. They are given the effect of law through adoption by the respective county councils. Generally, all the county general plans have policies related to protecting the county's natural resources and minimizing adverse effects resulting from the inappropriate location, use, or design of sites and structures; protecting wetlands and riparian areas; and designing drainage systems to minimize polluted runoff, retain streambank vegetation, and maintain habitat and aesthetic values. Kauai's 2000 General Plan contains specific language regarding stormwater management from new developments.

County general plans are implemented through the specific community development plans, budgeting and capital improvement programs (CIP) guided by the goals, objectives and policies of the general plans and community development plans, county laws amended to be consistent with the intent of the general plan components, and approval or disapproval of developments seeking zoning and other development approvals based on how they support the visions expressed in the general plans. The county planning departments prepare annual reports to monitor progress towards achieving general plan goals, objectives and policies. The annual reports are submitted to the mayors and county councils for review. General plans are subject to periodic review and amendment, as specified by county procedures, with significant opportunities for input by the public.

If development activity will disturb one acre or more of total land area, then a National Pollutant Discharge Elimination System (NPDES) permit is required from the Hawaii Department of Health (DOH). This permit process is described in Chapter 11-55, HAR, "Water Pollution Control." A County grading permit is required for any grading and grubbing work before a NPDES permit can be issued. The grading permit allows the grading, while the NPDES permit regulates stormwater runoff from the construction site.

The Hawaii Department of Transportation (DOT) Standard Specifications are used for highway design and construction for Hawaii's transportation infrastructure. The current specifications in use are dated 1994, though many sections (technical provisions) have been revised since then. The updated 2005 *Standard Specifications for Road and Bridge Construction* requires written, site-specific BMPs describing activities to minimize water pollution and soil erosion into State waters, drainage or sewer systems, and a plan indicating location of the BMPs, areas of soil disturbance, areas where vegetative practices are to be implemented, and drainage patterns. DOT's *Storm Water Permanent Best Management Practices (BMP) Manual* (February 2007) applies to projects statewide within the DOT right-of-way or requiring a discharge/connection permit to DOT's MS4.

DOH has general regulatory authority over water pollution control.



## Implementation Tools

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 27, HCC Floodplain Management	Hawaii County DPW	<p>-no building permit, certificate of occupancy, or grading permit shall be issued, no structure shall be occupied, and no development or subdivision shall be approved without the approval of the director of public works with respect to compliance with the provisions of this chapter (§27-14)</p> <p>-all developments requiring a site drainage plan under §25-2-72(3) shall submit such a plan for review and approval by the director of public works. The site drainage plan shall comply with §27-20(a) and (b) and §27-24, and shall include a storm water disposal system to contain runoff caused by the proposed development, within the site boundaries, up to the expected one-hour, ten year storm event, as shown in the department of public works "Storm Drainage Standards," dated October 1970, or any approved revision, unless those standards specify a greater recurrence interval. The amount of expected runoff shall be calculated according to DPW "Storm Drainage Standards," dated October 1970, or any approved revision, or by any nationally-recognized method meeting with the approval of the director of public works. Runoff calculations shall include the effects of all improvements (§27-20(e))</p> <p>-storm water shall be disposed into drywells, infiltration basins, or other approved infiltration methods. The development shall not alter the general drainage pattern above or below the development (§27-20(f))</p> <p>-DPW's "Storm Drainage Standard," October 1970 edition, or latest revision, is incorporated into and made a part of this chapter (§27-26)</p>
Chapter 23, HCC Subdivisions	Hawaii Planning Dept.	<p>-subdivider shall construct a storm water disposal system to contain runoff caused by the subdivision improvements within the boundaries of the subdivision, up to the expected one-hour, ten year storm event, as shown in Plate 1 of DPW's "Storm Drainage Standards", dated October 1970, or any approved revisions, unless those standards specify a greater recurrence interval, in which case, the greater interval shall be used. The amount of expected runoff shall be calculated according to DPW's "Storm Drainage Standards", dated October 1970, or any approved revisions thereto, or by any nationally-recognized method meeting with the approval of the director of public works. Runoff calculations shall include the effects of all required subdivision improvements, and lot improvements that may be allowed by existing zoning. Storm water shall be disposed into drywells, infiltration basins, or other infiltration methods. The subdivision shall not alter the general drainage pattern above or below the subdivision. Subdivider shall also comply with the requirements of Chapter 27, HCC (§23-92)</p>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 25, HCC Zoning	Hawaii Planning Dept.	-an application for plan approval for new structures and additions to existing structures shall be accompanied by a site drainage plan under §27-20 approved by the director of public works, where plan approval is required under §25-2-71(a), (c)(2) and (c)(5), (d), (e), or (f). The site drainage plan shall comply with §27-20(a) and (b) and §27-24, and shall include a storm water disposal system to contain runoff caused by the proposed development, within the site boundaries, up to the expected one-hour, ten year storm event, as shown in DPW's "Storm Drainage Standards," dated October 1970, or any approved revision, unless those standards specify a greater recurrence interval (§25-2-72(3))
<i>County of Hawaii General Plan (2005)</i>	Hawaii County	<p><u>5.3 Relevant Policies related to Flooding and Other Natural Hazards:</u></p> <ul style="list-style-type: none"> <li>b. review land use policy as it related to flood plain, high surf and tsunami hazard areas; ....</li> <li>f. the "Drainage Master Plan for the County of Hawaii" shall be reviewed and updated to incorporate new studies and reflect newly identified priorities;</li> <li>g. development-related runoff shall be disposed of in a manner acceptable to DPW and in compliance with all State and Federal laws;...</li> <li>n. develop drainage master plans from a watershed perspective that considers non-structural alternatives, minimizes channelization, protects wetlands that serve drainage functions, coordinates the regulation of construction and agricultural operation, and encourages the establishment of floodplains as public greenways.</li> </ul>
Section 1 of Ordinance No. 778, A Bill for an Ordinance to Establish a New Article 16 in Chapter 22, KCC, Relating to the Establishment of Drainage Principles and Policies through the Adoption of a Storm Water Runoff System Manual, adopted 11/16/2001.	Kauai	-establishes new drainage principles and policies through the adoption of a Storm Water Runoff System Manual. It applies to all lands on Kauai and to all stormwater facilities constructed within the County rights-of-way, to easements dedicated to public use, and to privately-owned systems that are part of the required infrastructure improvements for a subdivision. The ordinance requires: maintenance of pre-development flow rates for developments to mitigate an increase in storm runoff as a results of construction of structures, roadways, and other impermeable surfaces, regulation of illicit discharges, minimizing of pollutants into streams by providing BMPs for erosion and sediment control for construction work, and establishment of hydrological and hydraulic methodology and criteria design for drainage systems for more frequent storms.
Chapter 22-16, KCC Drainage (2001)	Kauai DPW	<p>-provides drainage principles and policies as set forth in the Storm Water Runoff System Manual (§22-16-1.1)</p> <p>-county engineer shall review all drainage submittals for compliance with the Storm Water Runoff System Manual (§22-16-1.7)</p>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
<i>Department of Public Works (DPW), County of Kauai, Storm Water Runoff System Manual (July 2001)</i>	Kauai DPW	<ul style="list-style-type: none"> <li>-prepared to guide County engineers and other interested parties in the general features required for the design of storm drainage facilities in Kauai;</li> <li>-requires drainage reports to describe onsite and offsite drainage improvements for proposed developments.</li> <li>-permanent erosion and sediment control is required for developments greater than 2 acres. Permanent sediment basin(s) and sediment control facilities will be required to store 0.5 inch of sediment per acre of impervious surfaces, per storm event. (2.3.7)</li> <li>-channelization or alteration of natural drainageways should be minimized. (3.2 a.)</li> <li>-existing drainage conditions, including flow patterns and peak flow rates, shall not create an unreasonable risk to adjacent and downstream properties, as a result of a subdivision or development (3.2 e.)</li> <li>-drainage facilities shall be designed to handle the storm flow from a 100-year recurrence interval storm when the drainage area is greater than or equal to 100 acres (3.2 g.)</li> <li>-where there are no downstream drainage systems and/or if the downstream drainage system does not have sufficient drainage capacity, the upstream owner shall install drainage facilities (such as detention basins) to maintain both the 2-year and 100-year storm flows at or below the predevelopment flow rates and conditions (3.2 h.)</li> <li>-detention basins shall be installed to maintain storm flow discharges to downstream systems at or below predevelopment peak flow rates and to regulate runoff volume discharge rates. Detention facilities shall be required to keep peak storm flow rates leaving the site to pre-development levels and to detain the increased volume of runoff due to the proposed development, when the proposed project exceeds 2 acres in size or if the downstream drainage system cannot accommodate the increase in storm flows from the project and existing structures are subject to drainage or flooding problems. (3.2 i.)</li> <li>-establishes design criteria, guidelines, standards, and methods for effective drainage planning and design; includes recommended BMPs for construction activities.</li> </ul>
Chapter 9, KCC Subdivision	Kauai County	<ul style="list-style-type: none"> <li>-requires that subdivisions be planned, designed and constructed to preserve the natural environment, require the minimum feasible amount of land coverage and soil disturbance, and avoid probabilities of erosion, pollution, contamination or siltation of rivers, streams or ocean waters, and damage to vegetation. It also includes standards for storm drainage to protect natural features.</li> </ul>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
2000 Kauai General Plan	Kauai County	<p><u>3.4.2. Relevant Policies related to Watersheds, Streams and Water Quality</u></p> <p>In developing County roads and drainage facilities and in administering the grading, flood control, and drainage regulations, the County of Kauai shall carry out the following policies.</p> <p>(a) <u>New Development</u></p> <ol style="list-style-type: none"> <li>(1) Reduce average annual post-development sediment in runoff (total suspended solids), so that it is no greater than pre-development levels.</li> <li>(2) Maintain post-development peak runoff rate and average volume at levels similar to pre-development.</li> <li>(3) Work with other government agencies and community organizations to seek ways of reducing all types of nonpoint source water pollutants.</li> </ol>
MC-15-?? (draft) Rules for the Design of Stormwater Treatment Best Management Practices	Maui County DPW	<p>Maui County DPW is in the process of developing administrative rules to incorporate stormwater pollution control measures and BMPs requirements for any development. The new requirements will apply to all residential, commercial, public facilities and transportation development projects requiring building permits. BMPs must either detain stormwater for a length of time that allows pollutants to settle, or use filtration or infiltration methods.</p> <p><b><u>Section 15-???-05 Criteria for Sizing of Stormwater Quality Facilities.</u></b></p> <p>The criteria can be met by either detaining stormwater for a length of time that allows storm water pollutants to settle (detention treatment from such methods as extended detention wet and dry ponds, created wetlands, vaults/tanks, etc.), or by use of filtration or infiltration methods (flow-through based treatment from such methods as sand filters, grass swales, other media filters, and infiltration). In addition, short-term detention can be utilized with a flow-through based treatment system (e.g. a detention pond designed to meter flows through a swale of filter) to meet the criteria. Finally, upstream flow-through treatment and detention treatment can be utilized.</p> <p>Other proposals to satisfy the water quality criteria may be approved by the Director if the proposal is accompanied by a certification and appropriate supporting material from a civil engineer, licensed in the State of Hawaii, that verifies compliance with one of the following (by performance or design):</p> <ol style="list-style-type: none"> <li>1. After construction has been completed and the site is permanently stabilized, reduce the average annual total suspended solid (TSS) loadings by 80%. For the purposes of this measure, an 80% TSS reduction is to be determined on an average annual basis for the 2 year/24 hour storm.</li> <li>2. Reduce the post development loadings of TSS so that the average annual TSS loadings are no greater than predevelopment loadings.</li> </ol>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
MC-15-?? (draft) Rules for the Design of Stormwater Treatment Best Management Practices, continued	Maui County DPW	Chapters 18, MCC, "Subdivision" and 16.26, MCC, "Building Code" must be amended first to grant the authority for this new proposed administrative rule before the rule can go through the process of approval and implementation.
Chapter 11-55, HAR Water Pollution Control	DOH	<p><u>-NPDES General Permit:</u> The NPDES General Permit Authorizing Discharges of Storm Water Associated with Construction Activity covers discharges of stormwater runoff associated with construction activities, including clearing, grading, and excavation that result in the disturbance of one acre or more of total land area. This general permit also covers activities that disturb less than one acre of total land area that is part of a larger common plan if the larger common plan will ultimately disturb one acre or more of total land area. This general permit covers all areas of the State except for discharges in or to state waters classified by DOH as "class 1, inland waters," "class AA, marine waters," and some other restricted areas. For these state waters, an individual NPDES permit is required. (§11-55-04; 11-55-34.02; Appendix C)</p> <p><u>-NPDES Individual Permit:</u> For discharges of stormwater associated with construction activities that result in the disturbance of one acre or more of total land area that do not qualify for a general permit because they affect "class 1, inland waters" or "class AA, marine waters," a NPDES Individual Permit is required. (§11-55-04; §11-55-15)</p>
Chapter 11-54, HAR Water Quality Standards	DOH	<p>- defines classifications of water uses. The objective of "class 1, inland waters" is that they remain in their natural state as nearly as possible with an absolute minimum of pollution from any human-caused source. Waste discharge into these waters is prohibited. Any conduct that results in a demonstrable increase in levels of point or nonpoint source contamination in class 1 waters is prohibited. Class 1 waters include all standing and/or flowing waters, and elevated and/or low wetlands: (i) within the natural reserves, preserves, sanctuaries, and refuges established by DLNR under Chapter 195, HRS, or similar reserves for the protection of aquatic life; (ii) in national and state parks; (iii) in state or federal fish and wildlife refuges; (iv) which have been identified as a unique or critical habitat for threatened or endangered species by the USFWS; and (v) in protective Conservation District subzones designated under Chapter 13-5, HAR. (§11-54-3(b)(1))</p> <p>-Similarly, the objective of "class AA, marine waters" is that these waters remain in their natural pristine state as nearly as possible with an absolute minimum of pollution or alteration of water quality from any human-caused source or actions. Approximately 63% of Hawaii's coastline abuts Class AA marine waters. (§11-54-3(c)(1))</p>
<i>Standard Specifications for Road and Bridge Construction</i> (2005)	DOT	-Section 209 provides specifications about temporary water pollution, dust, and erosion control. It requires a written site-specific plan describing activities to minimize water pollution and soil erosion into State waters, drainage or sewer systems. Plan should indicate location of water pollution, dust and erosion control devices, details of BMPs to be installed or utilized; areas of soil disturbance in cut and fill; materials storage areas; and areas where vegetative practices are to be implemented. (209.03(A)(2))

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
<p><i>Storm Water Permanent Best Management Practices (BMP) Manual (February 2007)</i></p>	<p>DOT</p>	<ul style="list-style-type: none"> <li>-all contract, in-house and/or encroachment projects are subject to DOT's review to determine if stormwater permanent BMPs are required.</li> <li>-any project (new or redevelopment) is required to install permanent BMPs for stormwater management if it generates 1 or more acres of new permanent impervious surface. Any reconstruction of or new construction on existing impervious area exceeding 5,000 square feet shall be considered redevelopment.</li> <li>-applicable projects statewide are those within the DOT right-of-way or requiring a discharge/connection permit to DOT's MS4 permit on Oahu.</li> <li>-projects with special conditions may be subject to the rules and criteria contained in this manual regardless of square footage of the new impervious surface. Special conditions are determined by DOT and may include DOT projects which drain to sensitive receiving waters (DOH Water Quality Limited Segments (WQLS)), projects which drain to Class I Inland Waters, Class AA Marine Waters, and selected 303(d)- listed water bodies.</li> <li>-projects that return area to pre-development runoff conditions are exempt from the provisions of the manual.</li> <li>-specifies hydrologic design criteria for bridges and culverts, roadway drainage</li> <li>-runoff volume from the design storm shall be limited to pre-development values unless it can be shown that the runoff can be safely conveyed through existing or planned conveyances, the increased volume would not have adverse impacts downstream, and provided further that the final receiving waters are open coastal waters.</li> <li>-the manual also contains water quality criteria, with a goal to reduce the pollution associated with stormwater runoff from new development/ redevelopment to the maximum extent practicable. The criteria can be met by either detaining stormwater for a length of time that allows stormwater pollutants to settle or by use of flow-through based treatments. Additional controls may be required to meet specific water quality needs in watersheds that drain to sensitive receiving waters.</li> </ul>
<p>Chapter 342D, HRS Water Pollution</p>	<p>DOH</p>	<ul style="list-style-type: none"> <li>-prohibits discharge of any pollutant into State waters</li> <li>-allows DOH to institute a civil action for injunctive relief to prevent violation of State water quality standards (§342D-11)</li> <li>-under the statute, DOH may request the court to order nonpoint source polluters to implement all required management measures</li> </ul>

## Watershed Protection Management Measure

Develop a watershed protection program to:

- (1) Avoid conversion, to the extent practicable, of areas that are particularly susceptible to erosion and sediment loss;
- (2) Preserve areas that provide important water quality benefits and/or are necessary to maintain riparian and aquatic biota; and
- (3) Site development, including roads, highways, and bridges, to protect to the extent practicable the natural integrity of waterbodies and natural drainage systems.

### Responsible Agencies and Authorities

Generally, all development within the counties must conform to the policies outlined in the county general plans and specific community development plans. The county general plans provide a coordinated set of guidelines within each county for decision-making regarding future growth and development and protection of natural and cultural resources. The general plans also guide revisions and updates to the county codes. They are given the effect of law through adoption by the respective county councils. Generally, all the county general plans have policies related to protecting the county's natural resources and minimizing adverse effects resulting from the inappropriate location, use, or design of sites and structures; protecting wetlands and riparian areas; and designing drainage systems to minimize polluted runoff, retain streambank vegetation, and maintain habitat and aesthetic values.

County general plans are implemented through the specific community development plans, budgeting and CIP guided by the goals, objectives and policies of the general plans and community development plans, county laws amended to be consistent with the intent of the general plan components, and approval or disapproval of developments seeking zoning and other development approvals based on how they support the visions expressed in the general plans. The county planning departments prepare annual reports to monitor progress towards achieving general plan goals, objectives and policies. The annual reports are submitted to the mayors and county councils for review. General plans are subject to periodic review and amendment, as specified by county procedures, with significant opportunities for input by the public.

Kauai County's general plan was updated in 2000. The policies for land management derive from the concepts of *ahupua`a* and watershed, linking the mountains, lowlands and ocean as one basic ecological unit. The general plan contains a set of Heritage Resources Maps that document important natural, scenic and historic features, particularly in relation to the urban and agricultural lands that are developed or may be developed in the future. It specifies that important landforms shall be designated "Open" and zoned accordingly, in order to protect steep slopes and streams from erosion. The Heritage Resources Maps serve as a guide in preparing Development Plans, in preparing or revising land use ordinances and rules, and in reviewing subdivision and land use permit applications.

Hawaii County's general plan, which was updated in 2005, outlines policies that will greatly reduce the generation of polluted runoff and mitigate the impacts of urban runoff and associated pollutants from all site development. The General Plan provides the direction for the future growth of the County. As a policy document, the General Plan provides the legal basis for all subdivision, zoning, and related

ordinances and will guide revisions to the county code. The General Plan also includes Land Use Pattern Allocation Guide (LUPAG) maps by district which show conservation, agricultural, rural, resort and urban areas, urban expansion areas, and open areas.

Maui County is currently updating its general plan. A draft of the *Maui County 2030 General Plan Update: Countywide Policy Plan* is currently under review by the Maui County Council. It comprises goals, policies, programs and actions which are based on an assessment of current and future needs and available resources. Once it has been adopted, the updated general plan will become the principal tool for the government and public to use when evaluating projects and their impacts on land use and the environment, among other things. This general plan update includes goals, objectives and policies related to protecting the natural environment and promoting sustainable land use and growth management.

Like the other counties, the City and County of Honolulu implements a three-tiered system of objectives, policies, planning principles, guidelines, and regulations. The General Plan is the first tier and comprises brief statements of objectives and policies. The second tier is the Development Plans and Sustainable Communities Plans, which are adopted and revised by ordinance. The third tier is comprised of the implementing ordinances and regulations, which must be consistent with the General Plan and Development/Sustainable Communities Plans.

Eight community-oriented plans have been developed to help guide public policy, investment and decision-making through the 2025 planning horizon. Each plan addresses one of 8 geographic planning regions on Oahu. The planning regions of Ewa and Primary Urban Center are the areas to which major growth in population and economic activity will be directed, so the plans for these regions are titled "Development Plans." The remaining 6 planning regions are envisioned to remain relatively stable, so their plans are titled "Sustainable Communities Plans." These community-oriented plans generally recommend policies in an *ahupua`a* or watershed context.

In urban areas, the counties have the lead in the control of erosion during site development and ensuring proper site planning and stormwater management to protect sensitive natural features, through their ordinances and rules related to zoning, subdivisions, drainage, and erosion and sediment control.

All counties have ordinances that provide for cluster development and flexible design standards, though these are not well-publicized. While it appears that economics may be the driving factor in the development of these provisions, since clustering results in a cost savings with respect to infrastructure, these ordinances may also allow for innovative stormwater management techniques, reduced street and sidewalk widths, and other management measures to attenuate runoff from developments. While these ordinances do not explicitly promote the minimizing of impervious surfaces, they may permit the use of pervious pavements and other management measures that are not currently allowed under regular zoning and subdivision provisions.

Three of the four counties (City and County of Honolulu, Kauai, and Maui) have updated their grading and grubbing ordinances to incorporate minimum BMPs. Generally, these ordinances include similar



language that states “regardless of whether a permit is required...or an exemption.... is applicable, all grading, grubbing and stockpiling activities shall incorporate BMPs to the maximum extent practicable to prevent damage by sedimentation to streams, watercourses, natural areas, and the property of others.” The minimum BMPs relate to drainage, vegetation, erosion control, and sediment control, among other things, and require phasing and limiting areas of disturbance, and vegetative stabilization. The ordinances provide for the adoption of a BMP manual. The remaining county, Hawaii County, is currently in the process of revising its grading ordinance to make it consistent with the other counties.

Kauai County adopted a new drainage ordinance in 2001. It established new drainage principles and policies through the adoption of a Storm Water Runoff System Manual. It applies to all lands in Kauai and to all stormwater facilities constructed within the County rights-of-way, to easements dedicated to public use, and to privately-owned systems that are part of the required infrastructure improvements for a subdivision. In Hawaii County, all urban developments (with very few exceptions) have been mandated to maintain pre-development runoff conditions. Pre- and post- development runoffs are calculated using the County “Storm Drainage Standard.” The minimum criteria used for runoff calculations are a 1-hour, 10-year storm event. This requirement inhibits conveyance of development runoff into natural drainage systems. Maui County Department of Public Works is in the process of revising its drainage rules to incorporate stormwater pollution control measures and BMPs. The changes are based on the City and County of Honolulu’s ordinance (Chapter 14, ROH) and will include a new section addressing storm water quality. The new requirements will apply to all residential, commercial, public facilities and transportation development projects requiring building permits. BMPs must either detain stormwater for a length of time that allows pollutants to settle, or use filtration or infiltration methods.

If development activity will disturb one acre or more of total land area, then a NPDES permit is required from DOH. This permit process is described in Chapter 11-55, HAR, “Water Pollution Control.” A County grading permit is required for any grading and grubbing work before a NPDES permit can be issued. The grading permit allows the grading, while the NPDES permit regulates stormwater runoff from the construction site.

Typically, prospective development must undergo numerous permit processes, with their associated environmental assessments and extensive public review. Development in the Conservation District triggers a Conservation District Use Permit (CDUP) from DLNR; development within the counties’ Special Management Area (SMA) must seek an SMA permit from the respective county planning department. Chapter 343, HRS, and Chapter 11-200, HAR, both about the Environmental Impact Statement law, require the preparation of an environmental assessment (EA) and/or environmental impact statement (EIS) for proposed activities that trigger the environmental review process. Some of the trigger conditions are as follows: (1) use of State or county lands or funds; (2) use within the conservation district; (3) use within a shoreline setback area; (4) use within the Waikiki special district; (5) use within an historic site; (6) reclassification of conservation lands; and (7) certain amendments to a county general plan.

Construction of roads, highways and bridges will normally trigger the Chapter 343, HRS, process because of the use of State or county funds and/or lands. In determining whether an action may have

a significant effect on the environment, the approving State or county agency shall consider every phase of a proposed action, the expected consequences, both primary and secondary, and the cumulative as well as the short-term and long-term effects of the action. In most instances, an action will be determined to have a significant effect on the environment if it detrimentally affects water quality or affects an environmentally sensitive area such as a flood plain, beach, erosion-prone area, estuary, fresh water, or coastal waters. Mitigation measures must be identified to address these detrimental effects.

Privately-constructed roads, highways, and bridges usually must meet standards set by the State and/or county because they are transferred over to the State or county as public roadways upon completion of construction. Privately-constructed roads that remain private must still comply with counties requirements for erosion and sediment control, stormwater management, drainage, zoning and subdivisions.

DOT Standard Specifications are used for highway design and construction for Hawaii's transportation infrastructure. The current specifications in use are dated 1994, though many sections (technical provisions) have been revised since then. The updated 2005 *Standard Specifications for Road and Bridge Construction* requires written, site-specific BMPs describing activities to minimize water pollution and soil erosion into State waters, drainage or sewer systems, and a plan indicating location of the BMPs, areas of soil disturbance, areas where vegetative practices are to be implemented, and drainage patterns. It requires contractors to follow guidelines in the *Construction Best Management Practices Field Manual* (dated January 2008) in developing, installing and maintaining BMPs for all projects. The BMPs included in this manual focus on the areas of site management, erosion control, and sediment control.

The counties administer the Special Management Area (SMA) permit process. SMAs are a subset of the State's coastal zone and include all lands and waters beginning at the shoreline and extending inland or *mauka* at least 100 yards. Many new developments fall within this more sensitive coastal area, and the SMA permit process ensures that these developments are consistent with Hawaii's coastal zone management program objectives and policies. Although each county has its own procedures for administering SMA permits, the requirements and review processes for SMA applications are similar for all four counties and are based on Chapter 205A-26, HRS ("Special management area guidelines"). Each county requires a permit applicant to describe the proposed development in terms of the CZM objectives and policies.

Many watershed and *ahupua`a* management efforts have been initiated by a wide range of governmental and non-governmental entities. Some of the more recent efforts include DLNR's watershed partnerships for West Maui Mountains, East Maui, Koolau (Oahu), Kauai, Lanai, East Molokai, Three Mountain Alliance (Hawaii), Leeward Haleakala (Maui), and Kohala (Hawaii); City and County of Honolulu Board of Water Supply (BWS) watershed management plans for Koolau Loa and Waianae; watershed management projects funded under Section 319(h) of the Clean Water Act in Nawiliwili (with TMDL), Hanalei (with TMDL), Ala Wai (with TMDL), Koolaupoko, Kapakahi, Maunaloa Bay (LAS priority area), South Molokai, West Maui, Pelekane Bay, and Hilo Bay; and watershed-based

projects as part of Hawaii's Local Action Strategy (LAS) to address land-based pollution threats to coral reefs at Honolua (Maui), Kawela to Kapualei (Molokai), and Hanalei (Kauai).

The State Water Code (Chapter 174C, HRS), adopted by the Hawaii Legislature in 1987 and amended in 2004, provides the regulatory framework to protect wetlands and other areas critical to water quality. The State, in its stewardship capacity, has management responsibility for all water resources of the State through the Commission on Water Resource Management (CWRM) – also known as the Water Commission. The Water Commission sets policies and approves water allocations for all water users. Existing uses established prior to 1987 are grandfathered in, provided the existing use is reasonable and beneficial. The Water Code also requires CWRM to establish and administer a statewide in-stream use protection program, including flow standards on a stream-by-stream basis whenever necessary to protect the public interest. Instream flow standards describe the flow necessary to adequately protect fishery, wildlife, aesthetic, scenic, or other beneficial instream uses. Instream uses include: maintenance of fish and wildlife habitats, outdoor recreational activities, maintenance of ecosystems such as estuaries, wetlands, and stream vegetation, aesthetic values such as waterfalls and scenic waterways, navigation, instream hydropower generation, maintenance of water quality, conveyance of irrigation and domestic water supplies to downstream points of diversion, and the protection of traditional and customary Hawaiian rights.

CWRM adopted the updated *Water Resource Protection Plan* on August 28, 2008. The plan describes the program to protect and conserve Hawaii's water resources. The updated document includes policies, program directives, resource inventories, and recommendations across a broad spectrum of resource management issues, including watershed protection and water quality. Some of the plan's recommendations include:

- Take a more active role in watershed protection, watershed partnerships, and the watershed partnership association.
- Support DOFAW's watershed management activities and the division's leadership role in watershed management.
- Study existing government and community efforts in watershed management and protection, and encourage sharing of information and experiences.
- Study other watershed planning approaches and lessons learned, including the EPA's watershed approach and that of other state governments.
- Pursue appropriate funding to support watershed protection programs and objectives to protect water resources.
- Encourage the collaboration of federal, State, and county agencies with existing watershed partnerships and Conservation Districts to map the relationships between land management programs, land use regulations, economic and agricultural issues, and water quality and resource protection programs.
- Improve communication and encourage dialogue between watershed interests to result in the development of common goals and an integrated watershed management framework. A successful framework will acknowledge and build upon existing programs and organizations to maximize funding, staff, and volunteer resources through watershed-scale management and protection programs.

- Develop innovative public outreach methods and encourage communication between watershed entities. The development of a website devoted to Hawaii watershed projects, organized by geographic location, should facilitate this coordination.

DOH has general regulatory authority over water pollution control.

### Implementation Tools

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
<i>2000 Kauai General Plan</i>	Kauai County	<p><u>3.4.2. Relevant Policies related to Watersheds, Streams and Water Quality</u></p> <p>In developing County roads and drainage facilities and in administering the grading, flood control, and drainage regulations, the County of Kauai shall carry out the following policies.</p> <p>(b) <u>Site Development</u>. Plan, design and develop sites to:</p> <ol style="list-style-type: none"> <li>(1) Protect areas that provide important water quality benefits – i.e., wetlands;</li> <li>(2) Protect areas that are particularly susceptible to erosion and sediment loss – i.e., stream banks;</li> <li>(3) Promote the use of permeable surfaces for driveways and parking and limit increases of impervious areas;</li> <li>(4) Limit land disturbance activities such as clearing and grading, and cut and fill to reduce erosion and sediment loss; and</li> <li>(5) Avoid disturbance of natural drainage features and vegetation.</li> </ol> <p>(d) <u>Watershed Management</u></p> <ol style="list-style-type: none"> <li>(1) Manage land use and earth-moving activities from the standpoint of the entire watershed, considering important characteristics such as scenic landscape features, historic sites, native species of plants and animals, and other special resources.</li> <li>(2) Specify relevant best management practices as a condition of approving land use permits that affect stream corridors.</li> <li>(3) Collaborate with State agencies (Office of Planning, DLNR, DOH), federal agencies (U.S. Army Corps of Engineers, USFWS), and community organizations (e.g., Soil and Water Conservation Districts) in order to plan and manage watersheds.</li> </ol>
<i>County of Hawaii General Plan (2005)</i>	Hawaii County	<p><u>4.3 Relevant Policies related to Environmental Quality:</u></p> <p>b. reinforce and strengthen established standards where it is necessary, principally by initiating, recommending, and adopting ordinances pertaining to the control of pollutants that affect the environment; ...</p> <p>g. participate in watershed management projects to improve stream and coastal water quality and encourage local communities to develop such projects;</p> <p>h. work with the appropriate agencies to adopt appropriate measures and provide incentives to control point and nonpoint sources of pollution;</p> <p>j. require golf courses to implement BMPs to limit leaching of nutrients to groundwater in areas where they may affect streams or coastal ecosystems;</p>

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<i>County of Hawaii General Plan (2005), continued</i>	Hawaii County	<p>k. require implementation of the management measures contained in Hawaii’s coastal nonpoint pollution control program as a condition of land use permitting;</p> <p>l. review the County grading and grubbing ordinances to ensure that they adequately address potential erosion and runoff problems.</p> <p><u>5.3 Relevant Policies related to Flooding and Other Natural Hazards:</u></p> <p>b. review land use policy as it related to flood plain, high surf and tsunami hazard areas; ...</p> <p>f. the “Drainage Master Plan for the County of Hawaii” shall be reviewed and updated to incorporate new studies and reflect newly identified priorities;</p> <p>g. development-related runoff shall be disposed of in a manner acceptable to DPW and in compliance with all State and Federal laws;...</p> <p>n. develop drainage master plans from a watershed perspective that considers non-structural alternatives, minimizes channelization, protects wetlands that serve drainage functions, coordinates the regulation of construction and agricultural operation, and encourages the establishment of floodplains as public greenways.</p> <p><u>8.3 Relevant Policies related to Natural Resources and Shoreline:</u></p> <p>j. encourage the protection of watersheds, forest, brush, and grassland from destructive agents and uses;...</p> <p>l. work with the appropriate State, Federal agencies, and private land owners to establish a program to manage and protect identified watersheds;</p> <p><u>14.8.3. Relevant Policies related to Open Land Use:</u></p> <p>b. open space in urban areas shall be established and provided through zoning and subdivision regulations;</p> <p>c. encourage the identification, evaluation, and designation of natural areas;</p> <p>d. zoning, subdivision and other applicable ordinances shall provide for and protect open space areas;</p> <p>e. amend the Zoning Code to create a category for lands that should be kept in a largely natural state, but that may not be in the Conservation District, such as certain important viewplanes, buffer areas, and very steep slopes.</p>
<i>Maui County 2030 General Plan Update: Countywide Policy Plan (January 2008)</i>	Maui County	<p><u>Objective:</u> Improve the opportunity to experience the natural beauty and native biodiversity of the islands for present and future generations.</p> <p><u>Policies:</u></p> <p>c. restore and protect forests, wetlands, watersheds and stream flows and guard against wildfires, flooding and erosion; ...</p> <p>e. protect undeveloped beaches, dunes, and coastal ecosystems and restore natural shoreline processes;</p> <p><u>Objective:</u> Improve the quality of environmentally sensitive, locally valued natural resources and native ecology of each island.</p> <p><u>Policies:</u></p> <p>a. protect and restore nearshore reef environments and water quality;...</p> <p>c. improve the connection between urban environments and the natural landscape and incorporate natural features of the land into urban design;</p>

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<p><i>Maui County 2030 General Plan Update: Countywide Policy Plan (January 2008), continued</i></p>	<p>Maui County</p>	<p>d. utilize land conservation tools to ensure the permanence of valued open spaces;...</p> <p>f. mitigate the negative effects of upland uses on coastal wetlands, marine life, and coral reefs.</p> <p><u>Implementing Actions:</u></p> <p>a. strengthen coastal zone management, re-naturalization of shorelines, where possible, and filtration or treatment of urban and agricultural runoff;</p> <p>b. encourage the use and maintenance of stormwater treatment systems which incorporate the use of native vegetation and mimic natural systems; ...</p> <p>f. develop regulations to minimize runoff of pollutants into nearshore waters and reduce nonpoint and point source pollution.</p> <p><u>Objective:</u> Improve land use management and implement a directed growth strategy</p> <p><u>Policies:</u></p> <p>g. restrict development in areas that are prone to natural hazards, disasters or sea level rise;</p> <p>h. direct new development in and around communities with existing infrastructure and service capacity, and protect natural, scenic, shoreline and cultural resources;...</p> <p>i. enable existing and future communities to be self-sufficient through sustainable land use planning and traditional ahupua`a management practices;...</p> <p>n. protect summits, slopes, and ridgelines from inappropriate development.</p> <p><u>Objective:</u> improve and increase efficiency in land use planning and management.</p> <p><u>Policies:</u></p> <p>a. assess the cumulative impact of developments on natural ecosystems, natural resources, wildlife habitat and surrounding uses.</p> <p>b. ensure new development projects demonstrate a community need, show consistency with the General Plan and provide objective analysis of the impact of the project on the community;....</p> <p>g. improve the subdivision design and review process.</p>

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various Development Plans and Sustainable Communities Plans of the City and County of Honolulu	City and County of Honolulu	<p>-Primary Urban Center Development Plan (2004) includes in its guidelines “establish riparian zones for all streams to prevent the encroachment of buildings and structures and to establish and enforce policies for the protection and enhancement of stream habitats and water quality.”</p> <p>-East Honolulu Sustainable Communities Plan (April 1999) states “preserve the aesthetic and biological values of significant streams, wetlands, natural gulches and other drainageways, by providing appropriate setbacks as part of the open space system.”</p> <p>-One of the guidelines in the Koolaupoko Sustainable Communities Plan (August 2000) is to “incorporate erosion control measures and best management practices, as cited in Hawaii’s Coastal Nonpoint Pollution Control Program Management Plan to prevent pollution of wetlands, streams, estuaries, and nearshore waters.”</p>
various Development Plans and Sustainable Communities Plans of the City and County of Honolulu, continued	City and County of Honolulu	<p>-Koolau Loa Sustainable Communities Plan (October 1999) has several policies related to the protection of wetlands and riparian areas: “minimize soil erosion, runoff of pesticides, fertilizers and other non-point source contaminants into streams, wetlands, and marine habitats with strategies such as stream setbacks, erosion control devices, integrated pest management plans, and revegetation of disturbed areas”; and “where feasible, establish setbacks along rivers, streams, and shoreline areas to preserve these resources and protective buffer zones around biologically sensitive areas to minimize habitat disturbances.”</p> <p>-Waianae Sustainable Communities Plan (July 2000) recommends establishing Stream Conservation Corridors for the protection of streams and stream floodplains.</p>
Chapter 19, MCC Zoning	Maui Planning Dept.	<p>-provides for Planned Development on urban zoned lands greater than 3 acres or outside the urban district on lands greater than 10 acres, allowing for greater building densities but retaining not less than 20% of total area in common protected open space; rules specify allowed densities (§19.32)</p> <p>-permits cluster housing developments in order to allow development of housing sites which would otherwise be difficult to develop under conventional county subdivision standards, to allow flexibility in housing types, to encourage innovative site design and efficient open space, and to minimize grading, among other things. Cluster housing may be constructed in all residential and apartment districts, provided minimum land area and density requirements are met. (§19.83)</p> <p>-Maui County limits conversion of areas susceptible to erosion and sediment loss through requirements of specific Project Districts (§19.70 through 19.81). Most of these restrictions are with respect to steeply sloping lands.</p>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 8, KCC Comprehensive Zoning Ordinance	Kauai Planning Dept.	<p>-provides for a Project Development District where the permit process facilitates comprehensive site planning and design on lands greater than one acre in the Commercial, Resort, and Industrial Use districts or lands large enough to qualify for more than ten dwelling units in the Residential, Open or Agricultural districts. (§8-18)</p> <p>-establishes constraint districts to implement the objectives of the six development restriction zones established in its county general plan. Some activities in these districts are prohibited, while others are restricted or require special management measures. These progressive constraint or overlay districts address:</p> <ul style="list-style-type: none"> <li>• Drainage: protect the function of natural and existing watercourses as part of the system for surface water collection and dispersal; and maintain the quality of surface and marine waters (§8-11);</li> <li>• Flood: maintain the characteristics of flood plain areas which contribute to ground water recharge, storm water storage, silt retention, and marine water quality (§8-12);</li> <li>• Shore Areas: regulate development in shore and water areas to protect and maintain physical, biological, and scenic resources (§8-13);</li> </ul>
Chapter 8, KCC Comprehensive Zoning Ordinance, continued	Kauai Planning Dept.	<ul style="list-style-type: none"> <li>• Slope (greater than 20%): minimize erosion and siltation of downstream waters; ensure safety from downstream flooding; and protect ecologic functions (§8-14);</li> <li>• Soils: regulate development on soils that are unstable, have inadequate drainage characteristics, or require abnormal structural solutions because of load bearing or drainage characteristics (§8-15); and</li> <li>• Tsunami: limit development in areas subject to extraordinary ocean wave action (§8-16).</li> </ul>



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Chapter 25, HCC Zoning	Hawaii Planning Dept.	<p>-provides for Cluster Plan Development, in which exceptions are made to the density requirements of the single-family residential (RS) district on lands greater than two acres so that permitted density of dwelling units contemplated by the minimum building site requirements is maintained on an overall basis and desirable open space, tree cover, recreational areas, or scenic vistas are preserved. (§25-6-20)</p> <p>-provides for Project Districts, which are intended to provide for a flexible and creative planning approach rather than specific land use designations for quality developments on lands greater than 50 acres, establishing a continuity in land uses and designs while providing for a comprehensive network of infrastructural facilities and systems. (§25-6-40)</p> <p>-an application for plan approval for new structures and additions to existing structures shall be accompanied by a site drainage plan under §27-20 approved by the director of public works, where plan approval is required under §25-2-71(a), (c)(2) and (c)(5), (d), (e), or (f). The site drainage plan shall comply with §27-20(a) and (b) and §27-24, and shall include a storm water disposal system to contain runoff caused by the proposed development, within the site boundaries, up to the expected one-hour, ten year storm event, as shown in DPW’s “Storm Drainage Standards,” dated October 1970, or any approved revision, unless those standards specify a greater recurrence interval. (§25-2-72(3))</p>
Chapter 21, ROH Land Use Ordinance	CCH Planning Dept.	<p>The City and County of Honolulu’s zoning code provides for a variety of special districts which allow clustering and other innovative site planning practices:</p> <ul style="list-style-type: none"> <li>-Country Clusters to encourage the retention of large tracts of open space or agricultural lands which contribute to rural character by clustering dwellings within larger parcels of land (§21-3.60-1);</li> <li>-Flexible Site-Design for Housing to provide for cluster housing and planned development housing, two development options which offer more flexible site design opportunities than conventional subdivisions (§21-8.50);</li> <li>-Cluster Housing allows development of housing sites which would otherwise be difficult to develop under conventional city subdivision standards, allows flexibility in housing types, and encourages innovative site design and efficient open space (§21-8.50-1); and</li> <li>-Planned Development Housing, which allows for higher-density and mixed residential development on large parcels of land, along with innovative site design and efficient open space (§21-8.50-4).</li> </ul>

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Chapter 21, ROH Land Use Ordinance, continued	CCH Planning Dept.	<p>-Cluster and planned development housing are expressly prohibited, without adequate management measures, in areas subject to the following conditions: flooding, poor drainage, unstable subsurface, groundwater or seepage conditions, inundation or erosion by seawater, land slides or similar hazards, and adverse earth or rock formation or topography. (§21-8.50-11)</p> <p>CCH provides some overlay districts that, while primarily focused on ensuring public safety, also by default restrict siting of development within susceptible natural areas. These include a flood hazard district (§21-9.10), floodway district (§21-9.10-5), flood fringe district (§21-9.10-6), coastal high hazard district (§21-9.10-7), and general floodplain district (§21-9.10-8). In addition, preservation districts are established to preserve and manage major open space and recreational lands and lands of scenic and other natural resource value.</p>
MC-15-4 Rules for the Design of Storm Drainage Facilities in the County of Maui (1995)	Maui County DPW	<p>-In general, natural gullies, waterways, streams and tributaries shall not be replaced with a closed system except at roadway crossings. For natural drainageways with contributory areas greater than 100 acres, the engineer shall determine, dimension and designate the 100 year flooded width as a drainage reserve in the drainage report and on the final subdivision map, if applicable. (§15-04-06(a)(5))</p> <p>-additional storm runoff from a new development shall be disposed of at an appropriate drainage outlet or drainage system so as not to create any additional adverse effects to adjacent or downstream properties (§15-04-06(a)(13))</p>
MC-15-?? (draft) Rules for the Design of Stormwater Treatment Best Management Practices	Maui County DPW	<p>-Maui County DPW is in the process of developing administrative rules to incorporate stormwater pollution control measures and BMP requirements for any development. The new requirements will apply to all residential, commercial, public facilities and transportation development projects requiring building permits. BMPs must either detain stormwater for a length of time that allows pollutants to settle, or use filtration or infiltration methods. Chapters 18, MCC, "Subdivision" and 16.26, MCC, "Building Code" must be amended first to grant the authority for this new proposed administrative rule.</p>
Chapter 27, HCC Floodplain Management	Hawaii County DPW	<p>-no building permit, certificate of occupancy, or grading permit shall be issued, no structure shall be occupied, and no development or subdivision shall be approved without the approval of the director of public works with respect to compliance with the provisions of this chapter (§27-14)</p> <p>-all developments requiring a site drainage plan under §25-2-72(3) shall submit such a plan for review and approval by the director of public works. The site drainage plan shall comply with §27-20(a) and (b) and §27-24, and shall include a storm water disposal system to contain runoff caused by the proposed development, within the site boundaries, up to the expected one-hour, ten year storm event, as shown in DPW's "Storm Drainage Standards," dated October 1970, or any approved revision, unless those standards specify a greater recurrence interval. The amount of expected runoff shall be calculated according to DPW's "Storm Drainage Standards," dated October 1970, or any approved revision, or by any nationally-recognized method meeting with the approval of the director of public works. Runoff calculations shall include the effects of all improvements. (§27-20(e))</p>

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Chapter 27, HCC Floodplain Management, continued	Hawaii County DPW	<ul style="list-style-type: none"> <li>-storm water shall be disposed into drywells, infiltration basins, or other approved infiltration methods. The development shall not alter the general drainage pattern above or below the development (§27-20(f))</li> <li>-DPW's "Storm Drainage Standard," October 1970 edition, or latest revision, is incorporated into and made a part of this chapter (§27-26)</li> </ul>
Section 14-12, ROH Drainage, Flood and Pollution Control	CCH	<ul style="list-style-type: none"> <li>-in certain parts of Oahu, no building permit can be issued without approval of the chief engineer as to the adequacy of drainage, considering topographic conditions, rainfall, runoff, land use, depth and width of drainage channels, size of other drainage facilities, and past history of flooding. In these cases, drainage plans for the improvement or construction facilities must be submitted to the chief engineer for approval (§14-12.3 through 14-12.5)</li> <li>-before approval of any subdivision, the chief engineer shall check the subdivision plans against the areas of possible inundation in the watershed areas described in section 14-12.3. Any lot wholly or partially within the "possible flood area" must be noted as such on the subdivision map. The developer shall pay the entire cost of the drainage facilities to satisfy the anticipated drainage requirements (§14-12.9)</li> <li>-the chief engineer may require the construction of permanent detention or retention drainage structures or other engineering control facilities to contain or divert storm water runoff to satisfy the anticipated drainage requirement of all surface waters which may flow through or over the proposed subdivision, or to meet any conditions of the city's NPDES permit. (§14-12.9)</li> </ul>
Section 1 of Ordinance No. 778, A Bill for an Ordinance to Establish a New Article 16 in Chapter 22, KCC, Relating to the Establishment of Drainage Principles and Policies through the Adoption of a Storm Water Runoff System Manual, adopted 11/16/2001.	Kauai	<ul style="list-style-type: none"> <li>-establishes new drainage principles and policies through the adoption of a Storm Water Runoff System Manual. It applies to all lands on Kauai and to all stormwater facilities constructed within the County rights-of-way, to easements dedicated to public use, and to privately-owned systems that are part of the required infrastructure improvements for a subdivision. The ordinance requires: maintenance of pre-development flow rates for developments to mitigate an increase in storm runoff as a results of construction of structures, roadways, and other impermeable surfaces, regulation of illicit discharges, minimizing of pollutants into streams by providing BMPs for erosion and sediment control for construction work, and establishment of hydrological and hydraulic methodology and criteria design for drainage systems for more frequent storms.</li> </ul>
Title 18, MCC Subdivisions	Maui DPW	<ul style="list-style-type: none"> <li>-with few exceptions, the planning director shall not approve any subdivision that does not conform to or is inconsistent with the county general plan, community plans, land use ordinances, the provisions of the MCC, and other laws relating to the use of land (§18.04.030)</li> <li>-where a subdivision is traversed by a natural water course, drainage way, channel, or stream, a drainage easement or drainage right-of-way must be provided (§18.16.190)</li> <li>-provides general criteria for flexible design standards for developments with approved design guidelines and development plans pursuant to section 2.40.050, or Title 19, MCC (§18.32.030)</li> </ul>

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MC 15-107 Rules for Flexible Design Standards (2005)	Maui DPW	-These administrative rules establish a process for approving flexible design standards in certain developments when deviation from normal subdivision standards is appropriate to encourage and implement smart growth principles.
Chapter 9, KCC Subdivision	Kauai County	-requires that subdivisions be planned, designed and constructed to preserve the natural environment, require the minimum feasible amount of land coverage and soil disturbance, and avoid probabilities of erosion, pollution, contamination or siltation of rivers, streams or ocean waters, and damage to vegetation. It also includes standards for storm drainage to protect natural features.
Chapter 23, HCC Subdivisions	Hawaii Planning Dept.	<p>-where a subdivision is traversed by a natural water course, drainage way, channel, or stream, a drainage easement or drainage right-of-way must be provided (§23-30).</p> <p>-subdivider shall construct a storm water disposal system to contain runoff caused by the subdivision improvements within the boundaries of the subdivision, up to the expected one-hour, ten year storm event, as shown in Plate 1 of DPW’s “Storm Drainage Standards”, dated October 1970, or any approved revisions, unless those standards specify a greater recurrence interval, in which case, the greater interval shall be used. The amount of expected runoff shall be calculated according to DPW’s “Storm Drainage Standards”, dated October 1970, or any approved revisions thereto, or by any nationally-recognized method meeting with the approval of the director of public works. Runoff calculations shall include the effects of all required subdivision improvements, and lot improvements that may be allowed by existing zoning. Storm water shall be disposed into drywells, infiltration basins, or other infiltration methods. The subdivision shall not alter the general drainage pattern above or below the subdivision. Subdivider shall also comply with the requirements of chapter 27, HCC. (§23-92)</p> <p>-restricts subdivisions in a safety flood hazard district (SF district) unless protective improvements or other measures are undertaken by the developer (§23-99)</p>
Chapter 22, ROH Subdivision of Land	CCH Planning Dept	-subdivisions must conform to the county’s general plan and regional development plans (§22-3.4)
Chapter 20.08, MCC Soil Erosion and Sedimentation Control	Maui County DPW	<p>-all grading, grubbing and stockpiling activities shall provide BMPs to the maximum extent practicable to prevent damage by sedimentation to streams, watercourses, natural areas, and the property of others (§20.08.035)</p> <p>-requires permit for grading, grubbing or stockpiling (§20.08.040)</p>

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<i>Construction Best Management Practices (BMPs) for the County of Maui (May 2001)</i>	Maui DPW	-contains sections on erosion control planning, guidelines for the preparation of the erosion and sediment control plan, and BMP details and specifications. BMPs included are: surface roughening, temporary gravel construction entrance/exit, seeding, temporary diversions, grass-lined channels, temporary slope drains, level spreader, outlet stabilization structure, mats, nets and blankets, mulching, preservation of existing vegetation, protection of stockpiles, construction road stabilization, temporary excavated drop inlet protection, temporary fabric drop inlet protection, temporary block and gravel drop inlet protection, sod drop inlet protection, temporary sediment trap, sediment basin, sediment fence, dust control, good neighbor barriers, check dam, solid waste management, concrete waste management, and vehicle fuel and maintenance management. Under each BMP, information is provided on its purpose and applicability, planning considerations, construction specifications, and maintenance.
Chapter 22-7, KCC Grading, Grubbing and Stockpiling	Kauai County DPW	-requires permit for grading, grubbing or stockpiling (§22-7.8) -all grading, grubbing and stockpiling activities shall incorporate BMPs to prevent damage by sedimentation to streams, watercourses, natural areas, and the property of others (§22-7.5) -all disturbed areas shall be stabilized with erosion and sediment control measures
<i>Interim Construction Best Management Practices (BMPs) for Sediment and Erosion Control for the County of Kauai (April 2004)</i>	Kauai County DPW	-BMP manual is similar to that of Maui County above -provides a guide for the selection of site-specific BMPs that need to be employed in all grading, grubbing, and stockpiling work as mandated by the Kauai County grading ordinance
Chapter 10, HCC Soil Erosion and Sediment Control	Hawaii County DPW	-requires permit for grading and grubbing of land, and stockpiling of material in excess of 500 cubic yards -all grading, grubbing and stockpiling permits and operations must conform to erosion and sedimentation control standards and guidelines (§10-26) Hawaii County is currently in the process of revising its grading ordinance to make it consistent with the other counties.
Sections 14-13 -- 14-16, ROH Grading, Soil Erosion and Sediment Control	City and County of Honolulu	-requires permit for grading, grubbing or stockpiling (§14-14.1) -specifies conditions and special requirements of permits (§14-15) -establishes penalties for violations (§14-16)

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Chapter 11-55, HAR Water Pollution Control	DOH	<p><u>-NPDES General Permit:</u> The NPDES General Permit Authorizing Discharges of Storm Water Associated with Construction Activity covers discharges of stormwater runoff associated with construction activities, including clearing, grading, and excavation that result in the disturbance of one acre or more of total land area. This general permit also covers activities that disturb less than one acre of total land area that is part of a larger common plan if the larger common plan will ultimately disturb one acre or more of total land area. This general permit covers all areas of the State except for discharges in or to state waters classified by DOH as "class 1, inland waters," "class AA, marine waters," and some other restricted areas. For these state waters, an individual NPDES permit is required. (§11-55-04; 11-55-34.02; Appendix C)</p> <p><u>-NPDES Individual Permit:</u> For discharges of stormwater associated with construction activities that result in the disturbance of one acre or more of total land area that do not qualify for a general permit because they affect "class 1, inland waters" or "class AA, marine waters," a NPDES Individual Permit is required. (§11-55-04; §11-55-15)</p>
Chapter 11-54, HAR Water Quality Standards	DOH	<p>- defines classifications of water uses. The objective of "class 1, inland waters" is that they remain in their natural state as nearly as possible with an absolute minimum of pollution from any human-caused source. Waste discharge into these waters is prohibited. Any conduct that results in a demonstrable increase in levels of point or nonpoint source contamination in class 1 waters is prohibited. Class 1 waters include all standing and/or flowing waters, and elevated and/or low wetlands: (i) within the natural reserves, preserves, sanctuaries, and refuges established by DLNR under Chapter 195, HRS, or similar reserves for the protection of aquatic life; (ii) in national and state parks; (iii) in state or federal fish and wildlife refuges; (iv) which have been identified as a unique or critical habitat for threatened or endangered species by USFWS; and (v) in protective Conservation District subzones designated under Chapter 13-5, HAR. (§11-54-3(b)(1))</p>
Chapter 11-54, HAR Water Quality Standards, continued	DOH	<p>-similarly, the objective of "class AA, marine waters" is that these waters remain in their natural pristine state as nearly as possible with an absolute minimum of pollution or alteration of water quality from any human-caused source or actions. Approximately 63% of Hawaii's coastline abuts Class AA marine waters. (§11-54-3(c)(1))</p>

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<p><i>Standard Specifications for Road and Bridge Construction</i> (2005)</p>	<p>DOT</p>	<p>-Section 107.13 relates to pollution control and protection of archeological, historical, and burial sites. It specifies that contractors must “exercise precaution to prevent silting and pollution of oceans, rivers, streams, lakes, and reservoirs and other bodies and conveyances of water,” following the guidelines in the City and County of Honolulu’s “Best Management Practices Manual for Construction Sites in Honolulu”, in developing, installing, and maintaining BMPs for all projects; the CCH’s “Rules for Soil Erosion Standards and Guidelines” for all projects on Oahu; and appropriate soil erosion guidelines for Maui, Kauai, and Hawaii projects.</p> <p>-Section 201 addresses clearing and grubbing. It requires that all BMP measures be in place before clearing and grubbing start (201.03(B)). It also specifies how clearing and grubbing should take place to preserve and protects trees within established Tree Protection Zones.</p> <p>-Section 209 provides specifications about temporary water pollution, dust, and erosion control. It requires a written site-specific plan describing activities to minimize water pollution and soil erosion into State waters, drainage or sewer systems. Plan should indicate location of water pollution, dust and erosion control devices, details of BMPs to be installed or utilized; areas of soil disturbance in cut and fill; materials storage areas; and areas where vegetative practices are to be implemented. (209.03(A)(2)) Requires project to follow guidelines in the <i>Construction Best Management Practices Field Manual</i> (dated January 2008) in developing, installing and maintaining BMPs for all projects. Requires projects to follow the CCH “Rules for Soil Erosion Standards and Guidelines” for all projects on Oahu, and the respective soil erosion guidelines for Maui, Kauai, and Hawaii projects.</p>
<p>Chapter 183C, HRS Conservation District</p> <p>Chapter 13-5, HAR Conservation District</p>	<p>DLNR</p>	<p>-the legislature finds that lands within the state land use conservation district contain important natural resources essential to the preservation of the State’s fragile natural ecosystems and the sustainability of the State’s water supply (§183C-1)</p> <p>-DLNR shall establish zones within the conservation district and permitted uses within those zones (§183C-4)</p> <p>-DLNR regulates land use in the conservation district through the issuance of permits (CDUPs) (§183C-6)</p> <p>-5 subzones within the conservation district are established by DLNR: protective (P), limited (L), resource (R), General (G), and Special (S). (§13-5-10)</p>
<p>Chapter 343, HRS Environmental Impact Statements</p> <p>Chapter 11-200, HAR Environmental Impact Statement Rules</p>	<p>OEQC</p>	<p>-states that an environmental review process will integrate the review of environmental concerns with existing planning processes of the State and counties and alert decision makers to significant environmental effects which may result from the implementation of certain actions (§343-1)</p> <p>-the following actions, among others, shall trigger an EA: (1) use of State or county lands or funds; (2) use within the conservation district; (3) use within a shoreline setback area; (4) use within the Waikiki special district; (5) use within an historic site; (6) certain amendments to county general plans; and (7) reclassification of conservation lands (§343-5)</p> <p>-provides agencies and persons with procedures, specifications of contents of EAs and EISs, and criteria and definitions of statewide application (§11-200-1)</p>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 205A, HRS Coastal Zone Management	OP-CZM	<p>-establishes coastal zone management objectives and policies (§205A-2)</p> <p>-related policies include: ensure that new developments are compatible with their visual environment by designing and locating such developments to minimize the alteration of natural landforms and existing public views to and along the shoreline; encourage those developments that are not coastal dependent to locate in inland areas; promote water quantity and quality planning and management practices that reflect the tolerance of fresh water and marine ecosystems and maintain and enhance water quality through the development and implementation of point and nonpoint source water pollution control measures; control development in areas subject to storm wave, tsunami, flood, erosion, hurricane, wind, subsidence, and point and nonpoint source pollution hazards; ensure that developments comply with requirements of the Federal Flood Insurance Program; use, implement, and enforce existing law effectively in managing present and future coastal zone development; facilitate timely processing of applications for development permits and resolve overlapping or conflicting permit requirements; communicate the potential short and long-term impacts of proposed significant coastal developments early in their life cycle and in terms understandable to the public to facilitate public participation in the planning and review process; locate new structures inland from the shoreline setback to conserve open space, minimize interference with natural shoreline processes, and minimize loss of improvements due to erosion (§205A-2)</p> <p>-the objectives and policies of the chapter and any guidelines enacted by the legislature shall be binding upon actions within the coastal zone management area by all agencies, within the scope of their authority (§205A-4(b))</p> <p>-all agencies shall ensure that their rules comply with the objectives and policies of the chapter (§205A-5)</p> <p>-establishes special controls on developments within an area along the shoreline to avoid permanent losses of valuable resources (§205A-21, -26).</p> <p>-no development is allowed in any county within these special management areas (SMAs) without a permit (§205A-28). The county planning departments administer the SMA permit process.</p>
Chapter 205A, HRS Coastal Zone Management, continued	OP-CZM	<p>-no development is approved unless it is found that the development, among other things, will not have any substantial adverse environmental or ecological effect; is consistent with the objectives, policies, and SMA guidelines of the chapter; and is consistent with the county general plan and zoning. (§205A-26)</p>



Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
<p>Chapter 15-150, HAR Special Management Areas/Shoreline Areas</p> <p>Chapter 12-202, MCC SMA Rules for Maui Planning Commission</p> <p>Chapter 12-302, MCC SMA Rules for Molokai Planning Commission</p> <p>Chapter 12-402, MCC SMA Rules for Lanai Planning Commission</p> <p>Chapter 25, ROH Special Management Area</p> <p>Rule 9, Hawaii County Planning Commission</p> <p>SMA Rules and Regulations of the County of Kauai</p>	<p>OP for SMAs of CDDs</p> <p>County planning commissions</p>	<p>-provides guidelines for use by OP for the review of developments proposed in the SMA of community development districts (CDDs); development in the SMA of CDDs must be consistent with the objectives and policies established in Section 205A-2, HRS (§15-150-6)</p> <p>-county rules for administering the SMA permits and shoreline setback provisions within each county/island</p>
<p>Chapter 174C, HRS Hawaii Water Code</p> <p>Chapter 13-169, HAR Protection of Instream Uses of Water</p>	<p>DLNR Commission on Water Resource Management</p>	<p>-the state water code shall be liberally interpreted to obtain maximum beneficial use of the waters of the State for purposes such as domestic uses, aquaculture uses, irrigation and other agricultural uses, power development, and commercial and industrial uses. However, adequate provision shall be made for the protection of traditional and customary Hawaiian rights, the protection and procreation of fish and wildlife, the maintenance of proper ecological balance and scenic beauty, and the preservation and enhancement of waters of the State for municipal uses, public recreation, public water supply, agriculture, and navigation. Such objectives are declared to be in the public interest. (§174C-2(c))</p> <p>-requires permit from the Water Commission prior to undertaking a stream channel alteration to protect fishery, wildlife, recreational, aesthetic, scenic, and other beneficial uses (§174C-71)</p> <p>-outlines the stream channel alteration permit (SCAP) process (§13-169-50 through 13-169-54)</p>
<p>Chapter 342D, HRS Water Pollution</p>	<p>DOH</p>	<p>-prohibits discharge of any pollutant into State waters</p> <p>-allows DOH to institute a civil action for injunctive relief to prevent violation of State water quality standards (§342D-11)</p> <p>-under the statute, DOH may request the court to order nonpoint source polluters to implement all required management measures</p>

## Site Development Management Measure

Plan, design, and develop sites to:

- (1) Protect areas that provide important water quality benefits and/or are particularly susceptible to erosion and sediment loss;
- (2) Limit increases of impervious areas, except where necessary;
- (3) Limit land disturbance activities such as clearing and grading, and cut and fill to reduce erosion and sediment loss; and
- (4) Limit disturbance of natural drainage features and vegetation.

### Responsible Agencies and Authorities

In urban areas, the counties have the lead in the control of erosion during site development and ensuring proper site planning and stormwater management to protect sensitive natural features, through their ordinances and rules related to zoning, subdivisions, drainage, and erosion and sediment control.

Generally, all development within the counties must conform to the policies outlined in the county general plans and specific community development plans. The county general plans provide a coordinated set of guidelines within each county for decision-making regarding future growth and development and protection of natural and cultural resources. The general plans also guide revisions and updates to the county codes. They are given the effect of law through adoption by the respective county councils. Generally, all the county general plans have policies related to protecting the county's natural resources and minimizing adverse effects resulting from the inappropriate location, use, or design of sites and structures; protecting wetlands and riparian areas; and designing drainage systems to minimize polluted runoff, retain streambank vegetation, and maintain habitat and aesthetic values.

County general plans are implemented through the specific community development plans, budgeting and CIP guided by the goals, objectives and policies of the general plans and community development plans, county laws amended to be consistent with the intent of the general plan components, and approval or disapproval of developments seeking zoning and other development approvals based on how they support the visions expressed in the general plans. The county planning departments prepare annual reports to monitor progress towards achieving general plan goals, objectives and policies. The annual reports are submitted to the mayors and county councils for review. General plans are subject to periodic review and amendment, as specified by county procedures, with significant opportunities for input by the public.

Kauai County's general plan was updated in 2000. The policies for land management derive from the concepts of *ahupua`a* and watershed, linking the mountains, lowlands and ocean as one basic ecological unit. The general plan contains a set of Heritage Resources Maps that document important natural, scenic and historic features, particularly in relation to the urban and agricultural lands that are developed or may be developed in the future. It specifies that important landforms shall be designated "Open" and zoned accordingly, in order to protect steep slopes and streams from erosion. The Heritage Resources Maps serve as a guide in preparing Development Plans, in preparing or revising land use ordinances and rules, and in the review of subdivision and land use permit applications.

Hawaii County's general plan, which was updated in 2005, outlines policies that will greatly reduce the generation of polluted runoff and mitigate the impacts of urban runoff and associated pollutants from all site development. The General Plan provides the direction for the future growth of the County. As a policy document, the General Plan provides the legal basis for all subdivision, zoning, and related ordinances and will guide revisions to the county code. The General Plan also includes LUPAG maps by district which show conservation, agricultural, rural, resort and urban areas, urban expansion areas, and open areas.

Maui County is currently updating its general plan. A draft of the *Maui County 2030 General Plan Update: Countywide Policy Plan* is currently under review by the Maui County Council. It comprises goals, policies, programs and actions which are based on an assessment of current and future needs and available resources. Once it has been adopted, the updated general plan will become the principal tool for the government and public to use when evaluating projects and their impacts on land use and the environment, among other things. This general plan update includes goals, objectives and policies related to protecting the natural environment and promoting sustainable land use and growth management.

Like the other counties, the City and County of Honolulu implements a three-tiered system of objectives, policies, planning principles, guidelines, and regulations. The General Plan is the first tier and comprises brief statements of objectives and policies. The second tier is the Development Plans and Sustainable Communities Plans, which are adopted and revised by ordinance. The third tier is comprised of the implementing ordinances and regulations, which must be consistent with the General Plan and Development/Sustainable Communities Plans.

Eight community-oriented plans have been developed to help guide public policy, investment and decision-making through the 2025 planning horizon. Each plan addresses one of 8 geographic planning regions on Oahu. The planning regions of Ewa and Primary Urban Center are the areas to which major growth in population and economic activity will be directed, so the plans for these regions are titled "Development Plans." The remaining 6 planning regions are envisioned to remain relatively stable, so their plans are titled "Sustainable Communities Plans." These community-oriented plans generally recommend policies in an *ahupua`a* or watershed context and address the protection of wetlands and riparian areas.

All counties have ordinances that provide for cluster development and flexible design standards, though these are not well-publicized. While it appears that economics may be the driving factor in the development of these provisions, since clustering results in a cost savings with respect to infrastructure, these ordinances may also allow for innovative stormwater management techniques, reduced street and sidewalk widths, and other management measures to attenuate runoff from developments. While these ordinances do not explicitly promote the minimizing of impervious surfaces, they may permit the use of pervious pavements and other management measures that are not currently allowed under regular zoning and subdivision provisions.

Three of the four counties (City and County of Honolulu, Kauai, and Maui) have updated their grading and grubbing ordinances to incorporate minimum BMPs. Generally, these ordinances include similar

language that states “regardless of whether a permit is required...or an exemption.... is applicable, all grading, grubbing and stockpiling activities shall incorporate BMPs to the maximum extent practicable to prevent damage by sedimentation to streams, watercourses, natural areas, and the property of others.” The minimum BMPs relate to drainage, vegetation, erosion control, and sediment control, among other things, and require phasing and limiting areas of disturbance, and vegetative stabilization. The ordinances provide for the adoption of a BMP manual. The remaining county, Hawaii County, is currently in the process of revising its grading ordinance to make it consistent with the other counties.

Kauai County adopted a new drainage ordinance in 2001. It established new drainage principles and policies through the adoption of a Storm Water Runoff System Manual. It applies to all lands in Kauai and to all stormwater facilities constructed within the County rights-of-way, to easements dedicated to public use, and to privately-owned systems that are part of the required infrastructure improvements for a subdivision. In Hawaii County, all urban developments (with very few exceptions) have been mandated to maintain pre-development runoff conditions. Pre- and post- development runoffs are calculated using the County “Storm Drainage Standard.” The minimum criteria used for runoff calculations are a 1-hour, 10-year storm event. This requirement inhibits conveyance of development runoff into natural drainage systems. Maui County DPW is in the process of revising its drainage rules to incorporate stormwater pollution control measures and BMPs. The changes are based on the City and County of Honolulu’s ordinance (Chapter 14, ROH) and will include a new section addressing storm water quality. The new requirements will apply to all residential, commercial, public facilities and transportation development projects requiring building permits. BMPs must either detain stormwater for a length of time that allows pollutants to settle, or use filtration or infiltration methods.

If development activity will disturb one acre or more of total land area, then a NPDES permit is required from DOH. This permit process is described in Chapter 11-55, HAR, “Water Pollution Control.” A County grading permit is required for any grading and grubbing work before a NPDES permit can be issued. The grading permit allows the grading, while the NPDES permit regulates stormwater runoff from the construction site.

Typically, prospective development must undergo numerous permit processes, with their associated environmental assessments and extensive public review. Development in the Conservation District triggers a CDUP from DLNR; development within the counties’ SMA must seek an SMA permit from the respective county planning department. Chapter 343, HRS, and Chapter 11-200, HAR, both about the Environmental Impact Statement law, require the preparation of an EA and/or EIS for proposed activities that trigger the environmental review process. Some of the trigger conditions are as follows: (1) use of State or county lands or funds; (2) use within the conservation district; (3) use within a shoreline setback area; (4) use within the Waikiki special district; (5) use within an historic site; (6) reclassification of conservation lands; and (7) certain amendments to a county general plan.

Construction of roads, highways and bridges will normally trigger the Chapter 343, HRS, process because of the use of State or county funds and/or lands. In determining whether an action may have a significant effect on the environment, the approving State or county agency shall consider every phase of a proposed action, the expected consequences, both primary and secondary, and the cumulative as well as the short-term and long-term effects of the action. In most instances, an action

will be determined to have a significant effect on the environment if it detrimentally affects water quality or affects an environmentally sensitive area such as a flood plain, beach, erosion-prone area, estuary, fresh water, or coastal waters. Mitigation measures must be identified to address these detrimental effects.

Privately-constructed roads, highways, and bridges usually must meet standards set by the State and/or county because they are transferred over to the State or county as public roadways upon completion of construction. Privately-constructed roads that remain private must still comply with counties requirements for erosion and sediment control, stormwater management, drainage, zoning and subdivisions.

DOT Standard Specifications are used for highway design and construction for Hawaii's transportation infrastructure. The current specifications in use are dated 1994, though many sections (technical provisions) have been revised since then. The updated 2005 *Standard Specifications for Road and Bridge Construction* requires written, site-specific BMPs describing activities to minimize water pollution and soil erosion into State waters, drainage or sewer systems, and a plan indicating location of the BMPs, areas of soil disturbance, areas where vegetative practices are to be implemented, and drainage patterns. It requires contractors to follow guidelines in the *Construction Best Management Practices Field Manual* (dated January 2008) in developing, installing and maintaining BMPs for all projects. The BMPs included in this manual focus on the areas of site management, erosion control, and sediment control.

The counties administer the SMA permit process. SMAs are a subset of the State's coastal zone and include all lands and waters beginning at the shoreline and extending inland or *mauka* at least 100 yards. Many new developments fall within this more sensitive coastal area, and the SMA permit process ensures that these developments are consistent with Hawaii's coastal zone management program objectives and policies. Although each county has its own procedures for administering SMA permits, the requirements and review processes for SMA applications are similar for all four counties and are based on Chapter 205A-26, HRS ("Special management area guidelines"). Each county requires a permit applicant to describe the proposed development in terms of the CZM objectives and policies.

The State Water Code (Chapter 174C, HRS), adopted by the Hawaii Legislature in 1987 and amended in 2004 provides the regulatory framework to protect wetlands and other areas critical to water quality. The State, in its stewardship capacity, has management responsibility for all water resources of the State through CWRM – also known as the Water Commission. The Water Commission sets policies and approves water allocations for all water users. Existing uses established prior to 1987 are grandfathered in, provided the existing use is reasonable and beneficial. The Water Code also requires CWRM to establish and administer a statewide in-stream use protection program, including flow standards on a stream-by-stream basis whenever necessary to protect the public interest. Instream flow standards describe the flow necessary to adequately protect fishery, wildlife, aesthetic, scenic, or other beneficial instream uses. Instream uses include: maintenance of fish and wildlife habitats, outdoor recreational activities, maintenance of ecosystems such as estuaries, wetlands, and stream vegetation, aesthetic values such as waterfalls and scenic waterways, navigation, instream hydropower generation, maintenance of water quality, conveyance of irrigation and domestic water supplies to

downstream points of diversion, and the protection of traditional and customary Hawaiian rights. CWRM has developed a stream protection and management program implementation plan, which outlines actions and tasks to implement the statutory requirements.

DOH has general regulatory authority over water pollution control.

**Implementation Tools**

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
2000 Kauai General Plan	Kauai County	<p><u>3.4.2. Relevant Policies related to Watersheds, Streams and Water Quality</u></p> <p>In developing County roads and drainage facilities and in administering the grading, flood control, and drainage regulations, the County of Kauai shall carry out the following policies.</p> <p>(a) <u>New Development</u></p> <p>(1) Reduce average annual post-development sediment in runoff (total suspended solids), so that it is no greater than pre-development levels.</p> <p>(2) Maintain post-development peak runoff rate and average volume at levels similar to pre-development.</p> <p>(3) Work with other government agencies and community organizations to seek ways of reducing all types of nonpoint source water pollutants.</p> <p>(b) <u>Site Development</u>. Plan, design and develop sites to:</p> <p>(1) Protect areas that provide important water quality benefits – i.e., wetlands;</p> <p>(2) Protect areas that are particularly susceptible to erosion and sediment loss – i.e., stream banks;</p> <p>(3) Promote the use of permeable surfaces for driveways and parking and limit increases of impervious areas;</p> <p>(4) Limit land disturbance activities such as clearing and grading, and cut and fill to reduce erosion and sediment loss; and</p> <p>(5) Avoid disturbance of natural drainage features and vegetation.</p> <p>(c) <u>Construction Site Erosion and Sediment Control</u></p> <p>(1) Reduce erosion and, to the extent practicable, retain sediment onsite during and after construction.</p> <p>(2) Prior to land disturbance, prepare and implement an approved erosion and sediment control plan or similar administrative document that contains erosion and sediment control provisions.</p> <p>(d) <u>Watershed Management</u></p> <p>(1) Manage land use and earth-moving activities from the standpoint of the entire watershed, considering important characteristics such as scenic landscape features, historic sites, native species of plants and animals, and other special resources.</p>
2000 Kauai General Plan, continued	Kauai County	<p>(2) Specify relevant best management practices as a condition of approving land use permits that affect stream corridors.</p> <p>(3) Collaborate with State agencies (Office of Planning, DLNR, DOH), federal agencies (U.S. Army Corps of Engineers, USFWS), and community organizations (e.g., Soil and Water Conservation Districts) in order to plan and manage watersheds.</p>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
<p><i>County of Hawaii General Plan (2005)</i></p>	<p>Hawaii County</p>	<p><u>4.3 Relevant Policies related to Environmental Quality:</u></p> <ul style="list-style-type: none"> <li>b. reinforce and strengthen established standards where it is necessary, principally by initiating, recommending, and adopting ordinances pertaining to the control of pollutants that affect the environment; ...</li> <li>g. participate in watershed management projects to improve stream and coastal water quality and encourage local communities to develop such projects;</li> <li>h. work with the appropriate agencies to adopt appropriate measures and provide incentives to control point and nonpoint sources of pollution;</li> <li>j. require golf courses to implement BMPs to limit leaching of nutrients to groundwater in areas where they may affect streams or coastal ecosystems;</li> <li>k. require implementation of the management measures contained in Hawaii’s coastal nonpoint pollution control program as a condition of land use permitting;</li> <li>l. review the County grading and grubbing ordinances to ensure that they adequately address potential erosion and runoff problems.</li> </ul> <p><u>5.3 Relevant Policies related to Flooding and Other Natural Hazards:</u></p> <ul style="list-style-type: none"> <li>b. review land use policy as it related to flood plain, high surf and tsunami hazard areas; ....</li> <li>f. the “Drainage Master Plan for the County of Hawaii” shall be reviewed and updated to incorporate new studies and reflect newly identified priorities;</li> <li>g. development-related runoff shall be disposed of in a manner acceptable to DPW and in compliance with all State and Federal laws;...</li> <li>n. develop drainage master plans from a watershed perspective that considers non-structural alternatives, minimizes channelization, protects wetlands that serve drainage functions, coordinates the regulation of construction and agricultural operation, and encourages the establishment of floodplains as public greenways.</li> </ul> <p><u>8.3 Relevant Policies related to Natural Resources and Shoreline:</u></p> <ul style="list-style-type: none"> <li>j. encourage the protection of watersheds, forest, brush, and grassland from destructive agents and uses;...</li> <li>l. work with the appropriate State, Federal agencies, and private land owners to establish a program to manage and protect identified watersheds;</li> </ul> <p><u>13.2.3. Relevant Policies related to Transportation Roadways:</u></p> <ul style="list-style-type: none"> <li>l. adopt street design standards that accommodate, where appropriate, flexibility in the design of streets to preserve the rural character of an area and encourage a pedestrian-friendly design, including landscaping and planted medians;</li> <li>m. develop minimum street standards for homestead and other currently substandard roadways that are offered for dedication to the County to ensure minimal levels of public safety.</li> </ul>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
<p>County of Hawaii General Plan (2005), continued</p>	<p>Hawaii County</p>	<p><u>14.2.3. Relevant Policies related to Agricultural Land Use:</u>  h. develop subdivision standards that make a distinction between agricultural and urban land uses; ...  t. discourage speculative residential development on agricultural lands.</p> <p><u>14.5.3. Relevant Policies related to Multiple Residential Land Use:</u>  c. encourage flexibility in the design of residential sites, buildings and related facilities to achieve a diversity of socio-economic housing mix and innovative means of meeting the market requirements;....  f. applicable codes and ordinances shall be reviewed and amended as necessary to include consideration for urban design, and aesthetic quality through landscaping, open space and buffer areas.</p> <p><u>14.6.3. Relevant Policies related to Single-Family Residential Land Use:</u>  b. encourage innovative uses of land with respect to geologic and topographic conditions through the use of residential cluster and planning unit developments;  d. incorporate reasonable flexibility in codes and ordinances to achieve a diversity of socio-economic housing mix and to permit aesthetic balance between single-family residential structures and open spaces;  e. re-evaluate existing undeveloped single-family residential zoned areas and reallocate zoned lands in appropriate locations;  h. review and amend land use ordinances and codes to include considerations for rural-style residential subdivisions in appropriate locations. Standards and criteria for the establishment of these areas shall be developed.</p> <p><u>14.7.3. Relevant Policies related to Resort Land Use:</u>  a. the County may impose incremental and conditional zoning that would be based on performance standards;  c. lands currently designated Resort should be utilized before new resorts are allowed in undeveloped coastal areas.</p> <p><u>14.8.3. Relevant Policies related to Open Land Use:</u>  b. open space in urban areas shall be established and provided through zoning and subdivision regulations;  c. encourage the identification, evaluation, and designation of natural areas;  d. zoning, subdivision and other applicable ordinances shall provide for and protect open space areas;  e. amend the Zoning Code to create a category for lands that should be kept in a largely natural state, but that may not be in the Conservation District, such as certain important viewplanes, buffer areas, and very steep slopes.</p>



Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
<p>Maui County 2030 General Plan Update: Countywide Policy Plan (January 2008)</p>	<p>Maui County</p>	<p><u>Objective:</u> Improve the opportunity to experience the natural beauty and native biodiversity of the islands for present and future generations.</p> <p><u>Policies:</u></p> <ul style="list-style-type: none"> <li>c. restore and protect forests, wetlands, watersheds and stream flows and guard against wildfires, flooding and erosion; ...</li> <li>e. protect undeveloped beaches, dunes, and coastal ecosystems and restore natural shoreline processes;</li> </ul> <p><u>Objective:</u> Improve the quality of environmentally sensitive, locally valued natural resources and native ecology of each island.</p> <p><u>Policies:</u></p> <ul style="list-style-type: none"> <li>a. protect and restore nearshore reef environments and water quality;...</li> <li>c. improve the connection between urban environments and the natural landscape and incorporate natural features of the land into urban design;</li> <li>d. utilize land conservation tools to ensure the permanence of valued open spaces;...</li> <li>f. mitigate the negative effects of upland uses on coastal wetlands, marine life, and coral reefs.</li> </ul> <p><u>Implementing Actions:</u></p> <ul style="list-style-type: none"> <li>a. strengthen coastal zone management, re-naturalization of shorelines, where possible, and filtration or treatment of urban and agricultural runoff;</li> <li>b. encourage the use and maintenance of stormwater treatment systems which incorporate the use of native vegetation and mimic natural systems; ...</li> <li>f. develop regulations to minimize runoff of pollutants into nearshore waters and reduce nonpoint and point source pollution.</li> </ul> <p><u>Objective:</u> Increase the mix of housing types in towns and neighborhoods to promote sustainable land use planning, expand consumer choice and protect the County’s rural and small town character.</p> <p><u>Policies:</u></p> <ul style="list-style-type: none"> <li>e. encourage the building industry to use environmentally sustainable materials, technologies, and site planning;...</li> <li>g. reward developers and owners who incorporate green building practices and energy efficient technologies into their housing developments.</li> </ul> <p><u>Objective:</u> Improve land use management and implement a directed growth strategy</p> <p><u>Policies:</u></p> <ul style="list-style-type: none"> <li>g. restrict development in areas that are prone to natural hazards, disasters or sea level rise;</li> <li>h. direct new development in and around communities with existing infrastructure and service capacity, and protect natural, scenic, shoreline and cultural resources;...</li> <li>l. enable existing and future communities to be self-sufficient through sustainable land use planning and traditional ahupua`a management practices;...</li> <li>n. protect summits, slopes, and ridgelines from inappropriate development.</li> </ul>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
<p><i>Maui County 2030 General Plan Update: Countywide Policy Plan (January 2008), continued</i></p>	<p>Maui County</p>	<p><u>Objective:</u> Design all developments to be in harmony with the environment and protect each community’s sense of place.</p> <p><u>Policies:</u></p> <ul style="list-style-type: none"> <li>a. support and provide incentives for green building practices;...</li> <li>e. encourage the construction of structures which utilize traditional Hawaiian architecture and tropical building designs;...</li> <li>k. protect rural communities and traditional small towns by regulating the footprint, locations, site planning and design of structures.</li> </ul> <p><u>Implementing Actions:</u></p> <ul style="list-style-type: none"> <li>a. establish design guidelines and standards to enhance urban and rural environments; ....</li> </ul> <p><u>Objective:</u> improve and increase efficiency in land use planning and management.</p> <p><u>Policies:</u></p> <ul style="list-style-type: none"> <li>a. assess the cumulative impact of developments on natural ecosystems, natural resources, wildlife habitat and surrounding uses.</li> <li>b. ensure new development projects demonstrate a community need, show consistency with the General Plan and provide objective analysis of the impact of the project on the community;....</li> <li>g. improve the subdivision design and review process.</li> </ul> <p><u>Objective:</u> improve the efficiency and transparency of County government’s internal processes and decision-making.</p> <p><u>Implementing Actions:</u></p> <ul style="list-style-type: none"> <li>a. rewrite the county Zoning Ordinance to update County Codes to be consistent with the General Plan;</li> <li>b. Simplify and clarify the permitting process to provide certainly, efficiency, and transparency in the development process.</li> </ul>
<p>various Development Plans and Sustainable Communities Plans of the City and County of Honolulu</p>	<p>City and County of Honolulu</p>	<p>-Primary Urban Center Development Plan (2004) includes in its guidelines “establish riparian zones for all streams to prevent the encroachment of buildings and structures and to establish and enforce policies for the protection and enhancement of stream habitats and water quality.”</p> <p>-East Honolulu Sustainable Communities Plan (April 1999) states “preserve the aesthetic and biological values of significant streams, wetlands, natural gulches and other drainageways, by providing appropriate setbacks as part of the open space system.”</p> <p>-One of the guidelines in the Koolaupoko Sustainable Communities Plan (August 2000) is to “incorporate erosion control measures and BMPs, as cited in Hawaii’s Coastal Nonpoint Pollution Control Program Management Plan to prevent pollution of wetlands, streams, estuaries, and nearshore waters.”</p>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
various Development Plans and Sustainable Communities Plans of the City and County of Honolulu, continued	City and County of Honolulu	<p>-Koolau Loa Sustainable Communities Plan (October 1999) has several policies related to the protection of wetlands and riparian areas: “minimize soil erosion, runoff of pesticides, fertilizers and other non-point source contaminants into streams, wetlands, and marine habitats with strategies such as stream setbacks, erosion control devices, integrated pest management plans, and revegetation of disturbed areas”; and “where feasible, establish setbacks along rivers, streams, and shoreline areas to preserve these resources and protective buffer zones around biologically sensitive areas to minimize habitat disturbances.”</p> <p>-Waianae Sustainable Communities Plan (July 2000) recommends establishing Stream Conservation Corridors for the protection of streams and stream floodplains.</p>
Chapter 19, MCC Zoning	Maui Planning Dept.	<p>-provides for Planned Development on urban zoned lands greater than 3 acres or outside the urban district on lands greater than 10 acres, allowing for greater building densities but retaining not less than 20% of total area in common protected open space; rules specify allowed densities (§19.32)</p> <p>- permits cluster housing developments in order to allow development of housing sites which would otherwise be difficult to develop under conventional county subdivision standards, to allow flexibility in housing types, to encourage innovative site design and efficient open space, and to minimize grading, among other things. Cluster housing may be constructed in all residential and apartment districts, provided minimum land area and density requirements are met. (§19.83)</p> <p>-Maui County limits conversion of areas susceptible to erosion and sediment loss through requirements of specific Project Districts (§19.70 -- 19.81). Most of these restrictions are with respect to steeply sloping lands.</p>
Chapter 8, KCC Comprehensive Zoning Ordinance	Kauai Planning Dept.	<p>-provides for a Project Development District where the permit process facilitates comprehensive site planning and design on lands greater than one acre in the Commercial, Resort, and Industrial Use districts or lands large enough to qualify for more than ten dwelling units in the Residential, Open or Agricultural districts. (§8-18)</p> <p>-establishes constraint districts to implement the objectives of the six development restriction zones established in its county general plan. Some activities in these districts are prohibited, while others are restricted or require special management measures. These progressive constraint or overlay districts address:</p> <ul style="list-style-type: none"> <li>• Drainage: protect the function of natural and existing watercourses as part of the system for surface water collection and dispersal; and maintain the quality of surface and marine waters (§8-11);</li> <li>• Flood: maintain the characteristics of flood plain areas which contribute to ground water recharge, storm water storage, silt retention, and marine water quality (§8-12);</li> <li>• Shore Areas: regulate development in shore and water areas to protect and maintain physical, biological, and scenic resources (§8-13);</li> </ul>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 8, KCC Comprehensive Zoning Ordinance, continued	Kauai Planning Dept.	<ul style="list-style-type: none"> <li>• Slope (greater than 20%): minimize erosion and siltation of downstream waters; ensure safety from downstream flooding; and protect ecologic functions (§8-14);</li> <li>• Soils: regulate development on soils that are unstable, have inadequate drainage characteristics, or require abnormal structural solutions because of load bearing or drainage characteristics (§8-15); and</li> <li>• Tsunami: limit development in areas subject to extraordinary ocean wave action (§8-16).</li> </ul>
Chapter 25, HCC Zoning	Hawaii Planning Dept.	<p>-provides for Cluster Plan Development, in which exceptions are made to the density requirements of the single-family residential (RS) district on lands greater than two acres so that permitted density of dwelling units contemplated by the minimum building site requirements is maintained on an overall basis and desirable open space, tree cover, recreational areas, or scenic vistas are preserved. (§25-6-20)</p> <p>-provides for Project Districts, which are intended to provide for a flexible and creative planning approach rather than specific land use designations for quality developments on lands greater than 50 acres, establishing a continuity in land uses and designs while providing for a comprehensive network of infrastructural facilities and systems. (§25-6-40)</p> <p>-an application for plan approval for new structures and additions to existing structures shall be accompanied by a site drainage plan under §27-20 approved by the director of public works, where plan approval is required under §25-2-71(a), (c)(2) and (c)(5), (d), (e), or (f). The site drainage plan shall comply with §27-20(a) and (b) and §27-24, and shall include a storm water disposal system to contain runoff caused by the proposed development, within the site boundaries, up to the expected one-hour, ten year storm event, as shown in DPW's "Storm Drainage Standards," dated October 1970, or any approved revision, unless those standards specify a greater recurrence interval. (§25-2-72(3))</p>
Chapter 21, ROH Land Use Ordinance	CCH Planning Dept.	<p>The City and County of Honolulu's zoning code provides for a variety of special districts which allow clustering and other innovative site planning practices:</p> <ul style="list-style-type: none"> <li>-Country Clusters to encourage the retention of large tracts of open space or agricultural lands which contribute to rural character by clustering dwellings within larger parcels of land (§21-3.60-1);</li> <li>-Flexible Site-Design for Housing to provide for cluster housing and planned development housing, two development options which offer more flexible site design opportunities than conventional subdivisions (§21-8.50);</li> <li>-Cluster Housing allows development of housing sites which would otherwise be difficult to develop under conventional city subdivision standards, allows flexibility in housing types, and encourages innovative site design and efficient open space (§21-8.50-1); and</li> <li>-Planned Development Housing, which allows for higher-density and mixed residential development on large parcels of land, along with innovative site design and efficient open space (§21-8.50-4).</li> </ul>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 21, ROH Land Use Ordinance, continued	CCH Planning Dept.	<p>-Cluster and planned development housing are expressly prohibited, without adequate management measures, in areas subject to the following conditions: flooding, poor drainage, unstable subsurface, groundwater or seepage conditions, inundation or erosion by seawater, land slides or similar hazards, and adverse earth or rock formation or topography. (§21-8.50-11)</p> <p>The City and County of Honolulu provides some overlay districts that, while primarily focused on ensuring public safety, also by default restrict siting of development within susceptible natural areas. These include a flood hazard district (§21-9.10), floodway district (§21-9.10-5), flood fringe district (§21-9.10-6), coastal high hazard district (§21-9.10-7), and general floodplain district (§21-9.10-8). In addition, preservation districts are established to preserve and manage major open space and recreational lands and lands of scenic and other natural resource value.</p>
MC-15-4 Rules for the Design of Storm Drainage Facilities in the County of Maui (1995)	Maui County DPW	<p>-In general, natural gullies, waterways, streams and tributaries shall not be replaced with a closed system except at roadway crossings. For natural drainageways with contributory areas greater than 100 acres, the engineer shall determine, dimension and designate the 100 year flooded width as a drainage reserve in the drainage report and on the final subdivision map, if applicable. (§15-04-06(a)(5))</p> <p>-additional storm runoff from a new development shall be disposed of at an appropriate drainage outlet or drainage system so as not to create any additional adverse effects to adjacent or downstream properties (§15-04-06(a)(13))</p>
MC-15-?? (draft) Rules for the Design of Stormwater Treatment Best Management Practices	Maui County DPW	<p>-Maui County DPW is in the process of developing administrative rules to incorporate stormwater pollution control measures and BMP requirements for any development. The new requirements will apply to all residential, commercial, public facilities and transportation development projects requiring building permits. BMPs must either detain stormwater for a length of time that allows pollutants to settle, or use filtration or infiltration methods. Chapters 18, MCC, "Subdivision" and 16.26, MCC, "Building Code" must be amended first to grant the authority for this new proposed administrative rule.</p>
Chapter 27, HCC Floodplain Management	Hawaii County DPW	<p>-no building permit, certificate of occupancy, or grading permit shall be issued, no structure shall be occupied, and no development or subdivision shall be approved without the approval of the director of public works with respect to compliance with the provisions of this chapter (§27-14)</p> <p>-all developments requiring a site drainage plan under §25-2-72(3) shall submit such a plan for review and approval by the director of public works. The site drainage plan shall comply with §27-20(a) and (b) and §27-24, and shall include a storm water disposal system to contain runoff caused by the proposed development, within the site boundaries, up to the expected one-hour, ten year storm event, as shown in DPW's "Storm Drainage Standards," dated October 1970, or any approved revision, unless those standards specify a greater recurrence interval. The amount of expected runoff shall be calculated according to DPW's "Storm Drainage Standards," dated October 1970, or any approved revision, or by any nationally-recognized method meeting with the approval of the director of public works. Runoff calculations shall include the effects of all improvements. (§27-20(e))</p>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 27, HCC Floodplain Management, continued	Hawaii County DPW	<ul style="list-style-type: none"> <li>-storm water shall be disposed into drywells, infiltration basins, or other approved infiltration methods. The development shall not alter the general drainage pattern above or below the development. (§27-20(f))</li> <li>-DPW's "Storm Drainage Standard," October 1970 edition, or latest revision, is incorporated into and made a part of this chapter (§27-26)</li> </ul>
Section 14-12, ROH Drainage, Flood and Pollution Control	CCH	<ul style="list-style-type: none"> <li>-in certain parts of Oahu, no building permit can be issued without approval of the chief engineer as to the adequacy of drainage, considering topographic conditions, rainfall, runoff, land use, depth and width of drainage channels, size of other drainage facilities, and past history of flooding. In these cases, drainage plans for the improvement or construction facilities must be submitted to the chief engineer for approval (§14-12.3 through 14-12.5)</li> <li>-before approval of any subdivision, the chief engineer shall check the subdivision plans against the areas of possible inundation in the watershed areas described in §14-12.3. Any lot wholly or partially within the "possible flood area" must be noted as such on the subdivision map. The developer shall pay the entire cost of the drainage facilities to satisfy the anticipated drainage requirements (§14-12.9)</li> <li>-the chief engineer may require the construction of permanent detention or retention drainage structures or other engineering control facilities to contain or divert storm water runoff to satisfy the anticipated drainage requirement of all surface waters which may flow through or over the proposed subdivision, or to meet any conditions of the city's NPDES permit. (§14-12.9)</li> </ul>
Section 1 of Ordinance No. 778, A Bill for an Ordinance to Establish a New Article 16 in Chapter 22, KCC, Relating to the Establishment of Drainage Principles and Policies through the Adoption of a Storm Water Runoff System Manual, adopted 11/16/2001.	Kauai	<ul style="list-style-type: none"> <li>-establishes new drainage principles and policies through the adoption of a Storm Water Runoff System Manual. It applies to all lands on Kauai and to all stormwater facilities constructed within the County rights-of-way, to easements dedicated to public use, and to privately-owned systems that are part of the required infrastructure improvements for a subdivision. The ordinance requires: maintenance of pre-development flow rates for developments to mitigate an increase in storm runoff as a results of construction of structures, roadways, and other impermeable surfaces, regulation of illicit discharges, minimizing of pollutants into streams by providing BMPs for erosion and sediment control for construction work, and establishment of hydrological and hydraulic methodology and criteria design for drainage systems for more frequent storms.</li> </ul>
Title 18, MCC Subdivisions	Maui DPW	<ul style="list-style-type: none"> <li>-with few exceptions, the planning director shall not approve any subdivision that does not conform to or is inconsistent with the county general plan, community plans, land use ordinances, the provisions of the Maui County Code, and other laws relating to the use of land (§18.04.030)</li> <li>-where a subdivision is traversed by a natural water course, drainage way, channel, or stream, a drainage easement or drainage right-of-way must be provided (§18.16.190)</li> <li>-provides general criteria for flexible design standards for developments with approved design guidelines and development plans pursuant to section 2.40.050, or Title 19, MCC (§18.32.030)</li> </ul>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
MC 15-107 Rules for Flexible Design Standards (2005)	Maui DPW	-These administrative rules establish a process for approving flexible design standards in certain developments when deviation from normal subdivision standards is appropriate to encourage and implement smart growth principles.
Chapter 9, KCC Subdivision	Kauai County	-requires that subdivisions be planned, designed and constructed to preserve the natural environment, require the minimum feasible amount of land coverage and soil disturbance, and avoid probabilities of erosion, pollution, contamination or siltation of rivers, streams or ocean waters, and damage to vegetation. It also includes standards for storm drainage to protect natural features.
Chapter 23, HCC Subdivisions	Hawaii Planning Dept.	<p>-where a subdivision is traversed by a natural water course, drainage way, channel, or stream, a drainage easement or drainage right-of-way must be provided (§23-30).</p> <p>-subdivider shall construct a storm water disposal system to contain runoff caused by the subdivision improvements within the boundaries of the subdivision, up to the expected one-hour, ten year storm event, as shown in Plate 1 of DPW’s “Storm Drainage Standards”, dated October 1970, or any approved revisions, unless those standards specify a greater recurrence interval, in which case, the greater interval shall be used. The amount of expected runoff shall be calculated according to DPW’s “Storm Drainage Standards”, dated October 1970, or any approved revisions thereto, or by any nationally-recognized method meeting with the approval of the director of public works. Runoff calculations shall include the effects of all required subdivision improvements, and lot improvements that may be allowed by existing zoning. Storm water shall be disposed into drywells, infiltration basins, or other infiltration methods. The subdivision shall not alter the general drainage pattern above or below the subdivision. Subdivider shall also comply with the requirements of chapter 27, HCC (§23-92).</p> <p>-restricts subdivisions in a safety flood hazard district (SF district) unless protective improvements or other measures are undertaken by the developer (§23-99).</p>
Chapter 22, ROH Subdivision of Land	CCH Planning Dept.	-subdivisions must conform to the county’s general plan and regional development plans (§22-3.4)
Chapter 20.08, MCC Soil Erosion and Sedimentation Control	Maui County DPW	<p>-all grading, grubbing and stockpiling activities shall provide BMPs to prevent damage by sedimentation to streams, watercourses, natural areas, and the property of others (§20.08.035)</p> <p>-requires permit for grading, grubbing or stockpiling (§20.08.040)</p>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
<i>Construction Best Management Practices (BMPs) for the County of Maui (May 2001)</i>	Maui DPW	-contains sections on erosion control planning, guidelines for the preparation of the erosion and sediment control plan, and BMP details and specifications. BMPs included are: surface roughening, temporary gravel construction entrance/exit, seeding, temporary diversions, grass-lined channels, temporary slope drains, level spreader, outlet stabilization structure, mats, nets and blankets, mulching, preservation of existing vegetation, protection of stockpiles, construction road stabilization, temporary excavated drop inlet protection, temporary fabric drop inlet protection, temporary block and gravel drop inlet protection, sod drop inlet protection, temporary sediment trap, sediment basin, sediment fence, dust control, good neighbor barriers, check dam, solid waste management, concrete waste management, and vehicle fuel and maintenance management. Under each BMP, information is provided on its purpose and applicability, planning considerations, construction specifications, and maintenance.
Chapter 22-7, KCC Grading, Grubbing and Stockpiling	Kauai County DPW	-requires permit for grading, grubbing or stockpiling (§22-7.8) -all grading, grubbing and stockpiling activities shall incorporate BMPs to prevent damage by sedimentation to streams, watercourses, natural areas, and the property of others (§22-7.5) -all disturbed areas shall be stabilized with erosion and sediment control measures
<i>Interim Construction Best Management Practices (BMPs) for Sediment and Erosion Control for the County of Kauai (April 2004)</i>		-BMP manual is similar to that of Maui County above
Chapter 10, HCC Soil Erosion and Sediment Control	Hawaii County DPW	-requires permit for grading and grubbing of land, and stockpiling of material in excess of 500 cubic yards. -all grading, grubbing and stockpiling permits and operations must conform to erosion and sedimentation control standards and guidelines (§10-26) Hawaii County is currently in the process of revising its grading ordinance to make it consistent with the other counties.
Sections 14-13 -- 14-16, ROH Grading, Soil Erosion and Sediment Control	City and County of Honolulu	-requires permit for grading, grubbing or stockpiling (§14-14.1) -specifies conditions and special requirements of permits (§14-15) -establishes penalties for violations (§14-16)



Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 11-55, HAR Water Pollution Control	DOH	<p><u>-NPDES General Permit:</u> The NPDES General Permit Authorizing Discharges of Storm Water Associated with Construction Activity covers discharges of stormwater runoff associated with construction activities, including clearing, grading, and excavation that result in the disturbance of one acre or more of total land area. This general permit also covers activities that disturb less than one acre of total land area that is part of a larger common plan if the larger common plan will ultimately disturb one acre or more of total land area. This general permit covers all areas of the State except for discharges in or to state waters classified by DOH as "class 1, inland waters," "class AA, marine waters," and some other restricted areas. For these state waters, an individual NPDES permit is required. (§11-55-04; 11-55-34.02; Appendix C)</p> <p><u>-NPDES Individual Permit:</u> For discharges of stormwater associated with construction activities that result in the disturbance of one acre or more of total land area that do not qualify for a general permit because they affect "class 1, inland waters" or "class AA, marine waters," a NPDES Individual Permit is required. (§11-55-04; §11-55-15)</p>
Chapter 11-54, HAR Water Quality Standards	DOH	<p>- defines classifications of water uses. The objective of "class 1, inland waters" is that they remain in their natural state as nearly as possible with an absolute minimum of pollution from any human-caused source. Waste discharge into these waters is prohibited. Any conduct that results in a demonstrable increase in levels of point or nonpoint source contamination in class 1 waters is prohibited. Class 1 waters include all standing and/or flowing waters, and elevated and/or low wetlands: (i) within the natural reserves, preserves, sanctuaries, and refuges established by DLNR under Chapter 195, HRS, or similar reserves for the protection of aquatic life; (ii) in national and state parks; (iii) in state or federal fish and wildlife refuges; (iv) which have been identified as a unique or critical habitat for threatened or endangered species by the USFWS; and (v) in protective Conservation District subzones designated under Chapter 13-5, HAR. (§11-54-3(b)(1))</p>
Chapter 11-54, HAR Water Quality Standards, continued	DOH	<p>-Similarly, the objective of "class AA, marine waters" is that these waters remain in their natural pristine state as nearly as possible with an absolute minimum of pollution or alteration of water quality from any human-caused source or actions. Approximately 63% of Hawaii's coastline abuts Class AA marine waters. (§11-54-3(c)(1))</p>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
<p><i>Standard Specifications for Road and Bridge Construction (2005)</i></p>	<p>DOT</p>	<p>-Section 107.13 relates to pollution control and protection of archeological, historical, and burial sites. It specifies that contractors must “exercise precaution to prevent silting and pollution of oceans, rivers, streams, lakes, and reservoirs and other bodies and conveyances of water,” following the guidelines in CCH’s “Best Management Practices Manual for Construction Sites in Honolulu”, in developing, installing, and maintaining BMPs for all projects; CCH’s “Rules for Soil Erosion Standards and Guidelines” for all projects on Oahu; and appropriate soil erosion guidelines for Maui, Kauai, and Hawaii projects.</p> <p>-Section 201 addresses clearing and grubbing. It requires that all BMP measures be in place before clearing and grubbing start (201.03(B)). It also specifies how clearing and grubbing should take place to preserve and protects trees within established Tree Protection Zones.</p> <p>-Section 209 provides specifications about temporary water pollution, dust, and erosion control. It requires a written site-specific plan describing activities to minimize water pollution and soil erosion into State waters, drainage or sewer systems. Plan should indicate location of water pollution, dust and erosion control devices, details of BMPs to be installed or utilized; areas of soil disturbance in cut and fill; materials storage areas; and areas where vegetative practices are to be implemented. (209.03(A)(2)) Requires project to follow guidelines in the <i>Construction Best Management Practices Field Manual</i> (dated January 2008) in developing, installing and maintaining BMPs for all projects. Requires projects to follow the CCH’s “Rules for Soil Erosion Standards and Guidelines” for all projects on Oahu, and the respective soil erosion guidelines for Maui, Kauai, and Hawaii projects.</p> <p>-Section 209.03(B) specifically addresses construction requirements. It states the following:</p> <ul style="list-style-type: none"> <li>• Do not begin field work until rain gauge is installed and site specific BMPs are in place.</li> <li>• Modify and resubmit plans to correct conditions that develop during construction which were unforeseen during the design and pre-construction phases.</li> <li>• Limit maximum surface area of earth material exposed at any time to 300,000 square feet.</li> <li>• Protect temporarily or permanently disturbed soil surface from rainfall impact, runoff and wind before end of workday.</li> <li>• Protect exposed or disturbed surface area with mulches, grass seeds or hydromulch.</li> <li>• BMP measures shall be in place and operational (such as shaping the earthwork to control and direct the runoff) at the end of workday.</li> <li>• Install and maintain either or both stabilized construction entrances and wheel washes to minimize tracking of dirt and mud onto roadways.</li> <li>• Protect ditches, channels, and other drainageways leading away from cuts and fills at all times.</li> </ul>
<p><i>Standard Specifications for Road and Bridge Construction (2005), continued</i></p>	<p>DOT</p>	<ul style="list-style-type: none"> <li>• Cover exposed surface of materials completely with tarpaulin or similar device when transporting aggregate, soil, excavated material or material that may be source of fugitive dust.</li> <li>• Properly maintain all BMP features on a specified scheduled.</li> </ul>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
<p><i>Construction Best Management Practices Field Manual</i> (January 2008)</p>	<p>DOT</p>	<p>-purpose of this manual is to provide guidance on BMP installation and maintenance procedures for construction activities.            -intended for use by DOT Highways staff involved in construction projects (contract, in-house, maintenance, and encroachment) and consultants or contractors involved in projects which require work within DOT Highways rights-of-way or projects which connect or discharge to DOT Highways MS4 permit on Oahu.            The BMPs included in this manual focus on the areas of site management, erosion control, and sediment control. Site Management (SM) BMPs include preventative measures implemented during the planning or construction stage of a project. They are established practices and procedures to control potential pollutants at their source. Erosion Control (EC) BMPs are devices installed or constructed by the contractor on disturbed soil to protect the ground surface from erosion due to wind, rain, or runoff. Sediment Control (SC) BMPs are measures to intercept and detain sediment-laden runoff prior to discharge off-site or to the storm sewer system. These devices detain runoff to promote infiltration and/or sedimentation.</p>
<p>Chapter 183C, HRS Conservation District  Chapter 13-5, HAR Conservation District</p>	<p>DLNR</p>	<p>-the legislature finds that lands within the state land use conservation district contain important natural resources essential to the preservation of the State’s fragile natural ecosystems and the sustainability of the State’s water supply (§183C-1)            -DLNR shall establish zones within the conservation district and permitted uses within those zones (§183C-4)            -DLNR regulates land use in the conservation district through the issuance of permits (CDUPs) (§183C-6)            -5 subzones within the conservation district are established by DLNR: protective (P), limited (L), resource (R), General (G), and Special (S). (§13-5-10)            -new residential structures are not allowed in the P subzone. (§13-5-22)            -a single family residence in a floodplain or coastal high hazard area that conforms to applicable county regulations regarding the National Flood Insurance Program and single family residential standards as outlined in the chapter would only be allowed in the L subzone under permit from BLNR (§13-5-23).            -a single family residence that conforms to design standards as outlined in the chapter would be permissible in the R and G subzones with a permit from the BLNR (§13-5-24; §13-5-25).</p>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
<p>Chapter 183C, HRS Conservation District</p> <p>Chapter 13-5, HAR Conservation District, continued</p>	DLNR	<p>-in evaluation the merits of a proposed land use, the BLNR shall apply the following criteria: the proposed land use is consistent with the purpose of the conservation district and the objectives of the applicable subzone; the proposed land use complies with provisions of Chapter 205A, HRS; the proposed land use will not cause substantial adverse impact to existing natural resources; the proposed land use, including buildings, structures and facilities, shall be compatible with the locality and surrounding areas, appropriate to the physical conditions and capabilities of the specific parcel; existing physical and environmental aspects of the land will be preserved or improved upon; subdivision of land will not be utilized to increase the intensity of land uses in the conservation district; and the proposed land use will not be materially detrimental to the public health, safety and welfare (§13-5-30(c))</p> <p>-permit application process and requirements are described in §13-5-31; applications for permits shall contain a draft EA or EIS</p> <p>-single family residential uses approved by the BLNR shall comply with the design standards contained in Exhibit 4, entitled “Single Family Residential Standards,” dated September 9, 2005; not more than one single family residence shall be authorized within the conservation district on a legal lot of record (§13-5-41)</p> <p>-Exhibit 4, entitled “Single Family Residential Standards,” dated September 9, 2005, defines minimum lot size, minimum setback, maximum developable area, maximum height limit, and compatibility provisions.</p> <p>-before proceeding with any work authorized by the Board, the applicant shall submit copies of the construction plan and specifications to DLNR for approval for consistency with the conditions of the permit; cleared areas shall be revegetated within 30 days (§13-5-42)</p>
<p>Chapter 343, HRS Environmental Impact Statements</p> <p>Chapter 11-200, HAR Environmental Impact Statement Rules</p>	OEQC	<p>-states that an environmental review process will integrate the review of environmental concerns with existing planning processes of the State and counties and alert decision makers to significant environmental effects which may result from the implementation of certain actions (§343-1)</p> <p>-the following actions, among others, shall trigger an EA: (1) use of State or county lands or funds; (2) use within the conservation district; (3) use within a shoreline setback area; (4) use within the Waikiki special district; (5) use within an historic site; (6) certain amendments to county general plans; and (7) reclassification of conservation lands (§343-5)</p> <p>-provides agencies and persons with procedures, specifications of contents of EAs and EISs, and criteria and definitions of statewide application ((§11-200-1)</p>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 205A, HRS Coastal Zone Management	OP-CZM	<p>-establishes coastal zone management objectives and policies (§205A-2)</p> <p>-related policies include: ensure that new developments are compatible with their visual environment by designing and locating such developments to minimize the alteration of natural landforms and existing public views to and along the shoreline; encourage those developments that are not coastal dependent to locate in inland areas; promote water quantity and quality planning and management practices that reflect the tolerance of fresh water and marine ecosystems and maintain and enhance water quality through the development and implementation of point and nonpoint source water pollution control measures; control development in areas subject to storm wave, tsunami, flood, erosion, hurricane, wind, subsidence, and point and nonpoint source pollution hazards; ensure that developments comply with requirements of the Federal Flood Insurance Program; use, implement, and enforce existing law effectively in managing present and future coastal zone development; facilitate timely processing of applications for development permits and resolve overlapping or conflicting permit requirements; communicate the potential short and long-term impacts of proposed significant coastal developments early in their life cycle and in terms understandable to the public to facilitate public participation in the planning and review process; locate new structures inland from the shoreline setback to conserve open space, minimize interference with natural shoreline processes, and minimize loss of improvements due to erosion (§205A-2)</p> <p>-the objectives and policies of the chapter and any guidelines enacted by the legislature shall be binding upon actions within the coastal zone management area by all agencies, within the scope of their authority (§205A-4(b))</p> <p>-all agencies shall ensure that their rules comply with the objectives and policies of the chapter (§205A-5)</p> <p>-establishes special controls on developments within an area along the shoreline to avoid permanent losses of valuable resources (§205A-21, -26).</p> <p>-no development is allowed in any county within these special management areas (SMAs) without a permit (§205A-28). The county planning departments administer the SMA permit process.</p> <p>-no development is approved unless it is found that the development, among other things, will not have any substantial adverse environmental or ecological effect; is consistent with the objectives, policies, and SMA guidelines of the chapter; and is consistent with the county general plan and zoning. (§205A-26)</p>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
<p>Chapter 15-150, HAR Special Management Areas/Shoreline Areas</p> <p>Chapter 12-202, MCC SMA Rules for Maui Planning Commission</p> <p>Chapter 12-302, MCC SMA Rules for Molokai Planning Commission</p> <p>Chapter 12-402, MCC SMA Rules for Lanai Planning Commission</p> <p>Chapter 25, ROH Special Management Area</p> <p>Rule 9, Hawaii County Planning Commission</p> <p>SMA Rules and Regulations of the County of Kauai</p>	<p>OP for SMAs of CDDs</p> <p>County planning commissions</p>	<p>-provides guidelines for use by OP for the review of developments proposed in the SMA of community development districts (CDDs); development in the SMA of CDDs must be consistent with the objectives and policies established in Section 205A-2, HRS (§15-150-6)</p> <p>-county rules for administering the SMA permits and shoreline setback provisions within each county/island</p>
<p>Chapter 174C, HRS Hawaii Water Code</p> <p>Chapter 13-169, HAR Protection of Instream Uses of Water</p>	<p>DLNR Commission on Water Resource Management</p>	<p>-the state water code shall be liberally interpreted to obtain maximum beneficial use of the waters of the State for purposes such as domestic uses, aquaculture uses, irrigation and other agricultural uses, power development, and commercial and industrial uses. However, adequate provision shall be made for the protection of traditional and customary Hawaiian rights, the protection and procreation of fish and wildlife, the maintenance of proper ecological balance and scenic beauty, and the preservation and enhancement of waters of the State for municipal uses, public recreation, public water supply, agriculture, and navigation. Such objectives are declared to be in the public interest. (§174C-2(c))</p> <p>- requires permit from the Water Commission prior to undertaking a stream channel alteration to protect fishery, wildlife, recreational, aesthetic, scenic, and other beneficial uses (§174C-71)</p> <p>-outlines the stream channel alteration permit (SCAP) process (§13-169-50 through 13-169-54)</p>
<p>Chapter 342D, HRS Water Pollution</p>	<p>DOH</p>	<p>-prohibits discharge of any pollutant into State waters</p> <p>-allows DOH to institute a civil action for injunctive relief to prevent violation of State water quality standards (§342D-11)</p> <p>-under the statute, DOH may request the court to order nonpoint source polluters to implement all required management measures</p>

## Existing Development

### Existing Development Management Measure

Develop and implement watershed management programs to reduce runoff pollutant concentrations and volumes from existing development:

- (1) Identify priority local and/or regional watershed pollutant reduction opportunities, e.g., improvements to existing urban runoff control structures;
- (2) Contain a schedule for implementing appropriate controls;
- (3) Limit destruction of natural conveyance systems; and
- (4) Where appropriate, preserve, enhance, or establish buffers along surface waterbodies and their tributaries.

### Implementation Tools

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
various Development Plans and Sustainable Communities Plans of the City and County of Honolulu	City and County of Honolulu	<p>-Primary Urban Center Development Plan (2004) includes in its guidelines “establish riparian zones for all streams to prevent the encroachment of buildings and structures and to establish and enforce policies for the protection and enhancement of stream habitats and water quality.”</p> <p>-East Honolulu Sustainable Communities Plan (April 1999) states “preserve the aesthetic and biological values of significant streams, wetlands, natural gulches and other drainageways, by providing appropriate setbacks as part of the open space system.”</p> <p>-One of the guidelines in the Koolaupoko Sustainable Communities Plan (August 2000) is to “incorporate erosion control measures and BMPs, as cited in Hawaii’s Coastal Nonpoint Pollution Control Program Management Plan to prevent pollution of wetlands, streams, estuaries, and nearshore waters.”</p> <p>-Koolau Loa Sustainable Communities Plan (October 1999) has several policies related to the protection of wetlands and riparian areas: “minimize soil erosion, runoff of pesticides, fertilizers and other non-point source contaminants into streams, wetlands, and marine habitats with strategies such as stream setbacks, erosion control devices, integrated pest management plans, and revegetation of disturbed areas”; and “where feasible, establish setbacks along rivers, streams, and shoreline areas to preserve these resources and protective buffer zones around biologically sensitive areas to minimize habitat disturbances.”</p> <p>-Waianae Sustainable Communities Plan (July 2000) recommends establishing Stream Conservation Corridors for the protection of streams and stream floodplains.</p>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
2000 Kauai General Plan	Kauai County	<p><u>3.4.2. Relevant Policies related to Watersheds, Streams and Water Quality</u></p> <p>In developing County roads and drainage facilities and in administering the grading, flood control, and drainage regulations, the County of Kauai shall carry out the following policies.</p> <p>(d) <u>Watershed Management</u></p> <p>(3) Collaborate with State agencies (Office of Planning, DLNR, DOH), federal agencies (U.S. Army Corps of Engineers, USFWS), and community organizations (e.g., Soil and Water Conservation Districts) in order to plan and manage watersheds.</p>
County of Hawaii General Plan (2005)	Hawaii County	<p><u>4.3 Relevant Policies related to Environmental Quality:</u></p> <p>g. participate in watershed management projects to improve stream and coastal water quality and encourage local communities to develop such projects;</p> <p>h. work with the appropriate agencies to adopt appropriate measures and provide incentives to control point and nonpoint sources of pollution.</p>
Maui County 2030 General Plan Update: Countywide Policy Plan (January 2008)	Maui County	<p><u>Goal:</u> Maui County's natural environment and distinctive open spaces will be preserved, managed, and cared for in perpetuity.</p> <p><u>Objective:</u> Improve the opportunity to experience the natural beauty and native biodiversity of the islands for present and future generations.</p> <p><u>Policies:</u></p> <p>c. restore and protect forests, wetlands, watersheds and stream flows and guard against wildfires, flooding and erosion; ...</p> <p><u>Implementing Actions:</u></p> <p>b. develop island-wide networks of greenways, watercourses, and habitat corridors.</p>
Chapter 174C, HRS Hawaii Water Code  Chapter 13-169, HAR Protection of Instream Uses of Water	DLNR Commission on Water Resource Management	<p>-the state water code shall be liberally interpreted to obtain maximum beneficial use of the waters of the State for purposes such as domestic uses, aquaculture uses, irrigation and other agricultural uses, power development, and commercial and industrial uses. However, adequate provision shall be made for the protection of traditional and customary Hawaiian rights, the protection and procreation of fish and wildlife, the maintenance of proper ecological balance and scenic beauty, and the preservation and enhancement of waters of the State for municipal uses, public recreation, public water supply, agriculture, and navigation. Such objectives are declared to be in the public interest. (§174C-2(c))</p> <p>- requires permit from the Water Commission prior to undertaking a stream channel alteration to protect fishery, wildlife, recreational, aesthetic, scenic, and other beneficial uses (§174C-71)</p> <p>-outlines the stream channel alteration permit (SCAP) process (§13-169-50 through 13-169-54)</p>
Chapter 342D, HRS Water Pollution	DOH	<p>-prohibits discharge of any pollutant into State waters</p> <p>-allows DOH to institute a civil action for injunctive relief to prevent violation of State water quality standards (§342D-11)</p> <p>-under the statute, DOH may request the court to order nonpoint source polluters to implement all required management measures</p>



## Onsite Disposal Systems

### **New Onsite Disposal Systems Management Measure**

- (1) Ensure that new Onsite Disposal Systems (OSDS) are located, designed, installed, operated, inspected, and maintained to prevent the discharge of pollutants to the surface of the ground and to the extent practicable reduce the discharge of pollutants into ground waters that are closely hydrologically connected to surface waters. Where necessary to meet these objectives:  
(a) discourage the installation of garbage disposals to reduce hydraulic and nutrient loadings; and  
(b) where low-volume plumbing fixtures have not been installed in new developments or redevelopments, reduce total hydraulic loadings to the OSDS by 25%. Implement OSDS inspection schedules for preconstruction, construction, and postconstruction;**
- (2) Direct placement of OSDS away from unsuitable areas. Where OSDS placement away from unsuitable areas is not practicable, ensure that the OSDS is designed or sited at a density so as not to adversely affect surface waters or ground water that is closely hydrologically connected to surface water. Unsuitable areas include, but are not limited to, areas with poorly or excessively drained soils; areas with shallow water tables or areas with high seasonal water tables; areas overlaying fractured bedrock that drain directly to ground water; areas within floodplains; or areas where nutrient and/or pathogen concentrations in the effluent cannot be sufficiently treated or reduced before the effluent reaches sensitive waterbodies;**
- (3) Establish protective setbacks from surface waters, wetlands, and floodplains for conventional as well as alternative OSDS. The lateral setbacks should be based on soil type, slope, hydrologic factors, and type of OSDS. Where uniform protective setbacks cannot be achieved, site development with OSDS so as not to adversely affect waterbodies and/or contribute to a public health nuisance;**
- (4) Establish protective separation distances between OSDS system components and groundwater which is closely hydrologically connected to surface waters. The separation distances should be based on soil type, distance to ground water, hydrologic factors, and type of OSDS;**
- (5) Where conditions indicate that nitrogen-limited surface waters may be adversely affected by excess nitrogen loadings from ground water, require the installation of OSDS that reduce total nitrogen loadings by 50% to groundwater that is closely hydrologically connected to surface water.**

### Responsible Agencies and Authorities

DOH is the lead agency in implementing this management measure because it administers the regulatory programs for wastewater systems and safe drinking water. The county building departments administer the plumbing codes.

Chapter 11-62, HAR, administered by DOH, outlines the requirements for locating, building and operating wastewater treatment systems and individual wastewater systems. Section 11-62-03 defines an "individual wastewater system" as "a facility which is used and designed to receive and dispose of no more than 1,000 gallons per day of domestic wastewater" and "treatment works" as "any treatment unit and its associated collection system and disposal system, excluding individual wastewater systems." The chapter provides specific requirements for both types of wastewater systems. An engineer must evaluate the site for suitability for an OSDS, including depth of permeable soil over seasonal high groundwater, bedrock, or other limiting layer, soil factors, land slope, flooding hazard, and amount of suitable area available. No OSDS can be located within 50 feet of a stream, the ocean at the vegetation line, pond, lake, or other surface water body; or within 1,000 feet of a potable water source serving public water systems.

Chapter 11-62, HAR, also provides for the establishment of Critical Wastewater Disposal Areas (CWDAs), where the disposal of wastewater has or may cause adverse effects on human health or the environment due to existing hydrogeological conditions. CWDAs are established based on one or more of the following concerns: high water table; impermeable soil or rock formation; steep terrain; flood zone; protection of coastal waters and inland surface waters; high rate of cesspool failures; and protection of groundwater resources. CWDAs were designated for each county in 1990 and updated in 1997. Within CWDAs, DOH may impose more stringent requirements for wastewater systems, and cesspools are severely restricted or prohibited.

Although nitrogen-limited surface waters have not been specifically identified in Hawaii, Section 11-62-05, HAR (Critical Wastewater Disposal Areas) provides the Director of the DOH the discretion to require a higher degree of treatment for individual wastewater systems due to several concerns. One of the highlighted concerns in Section 11-62-05(a), HAR, is the “protection of coastal waters and inland surface waters”. The rule also allows the Director to “impose more stringent requirements than those specified in these rules for wastewater systems located or proposed to be located within any designated critical wastewater disposal area” and provides the director with the ability to impose “meeting higher effluent standards for wastewater systems” (Chapter 11-62-05(b)). The currently designated CWDAs cover the majority of the state, and these areas correspond with areas that would be most susceptible to nutrient enrichment by encompassing the coastal fringe and areas with a close groundwater to surface water connection. Chapter 11-62-05, HAR, also provides the Director the discretion to expand the CWDAs, and this can be used to modify CWDA boundaries if data demonstrate that a particular area requires denitrifying OSDS.

Since the initial management measure submission, the State has made progress in eliminating new individual cesspools<sup>1</sup>. Efforts to ban the use of new cesspools statewide have been made through revision to Chapter 11-62, HAR. The rule either bans or severely restricts the use of cesspools throughout the state. New cesspools are completely banned on the islands of Oahu and Kauai. On the islands of Maui, Molokai, and Hawaii, new cesspools for individual homes only are allowed in certain areas. These areas are designated in Critical Wastewater Disposal Area maps. The CWDA maps also delineate areas where cesspools are completely banned. The maps are based upon development density, groundwater development, potential contamination of coastal waters and the use of OSDS. Although the current rule still allows some new cesspools in limited areas, there are a number of items that either prohibit new cesspools or require that existing cesspools be upgraded. They include:

- Not allowing a new dwelling to be connected to an existing cesspool serving an existing dwelling;
- Requiring an existing cesspool system to meet current wastewater rules if there is a change in building usage or characteristics of the wastewater. For example, an existing cesspool must be upgraded if a non-dwelling using a cesspool is converted to a dwelling or a commercial building (e.g., office space) is converted to a food establishment;

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<sup>1</sup> The U.S. Environmental Protection Agency (EPA) promulgated Underground Injection Control (UIC) regulations on December 7, 1999, which prohibit the construction of new large capacity cesspools (LCCs) nationwide, effective April 5, 2000. Existing large capacity cesspools must be replaced by an alternative wastewater system and closed by April 5, 2005. The regulations do not contain any provisions for an extension to the deadline. In Hawaii, where the UIC program has not been delegated, EPA implements the regulations.

- Current rules do not allow two new dwellings to be served by a cesspool; and
- Current rules do not allow non-dwellings generating nondomestic-like wastewater to discharge wastewater into a new cesspool.

Chapter 11-23, HAR, also administered by DOH, establishes a state underground injection control (UIC) program in order to protect the quality of the State's underground sources of drinking water from pollution by subsurface disposal of fluids. It classifies exempted aquifers and underground sources of drinking water. Unless expressly exempted, all aquifers are considered underground sources of drinking water. UIC maps indicate the boundary line of exempted aquifers. While individual wastewater systems serving single family residential households are excluded from the chapter, no large municipal or community serving systems can use injection wells above the UIC line. Certain activities are also prohibited interior of the line.

Chapter 19-4.1(25), ROH, administered by the Building Department of the City and County of Honolulu, is a local addendum to the Universal Plumbing Code. This addendum requires that all new plumbing fixtures be "ultra low flow" fixtures. The requirement applies to all new residential developments and to all upgraded or replaced fixtures. Section 30-4, ROH, requires all non-residential properties to have ultra low flow fixtures, unless granted an exemption.

Section 16.20A, MCC, administered by the Maui Department of Public Works, requires that, as of December 31, 1992, only ultra low flow plumbing fixtures be offered for sale or installed in the County of Maui. Provisions of the chapter apply to all new construction, relocated buildings, and to any alteration, repairs or reconstruction within the property lines of the premises.

Chapter 17-47, HCC, administered by the County of Hawaii Department of Public Works, modifies the Uniform Plumbing Code to require the use of low flow plumbing fixtures. Chapter 27, HCC, states that on-site cesspools and septic systems shall be located to avoid impairment to them or contamination from them during flooding.

Chapter 14-4.1, KCC, require the use of low flow plumbing fixtures. This code section modifies the Uniform Plumbing Code, Section 1010.

The document *Onsite Wastewater Treatment Survey and Assessment* (March 2008) was prepared for the Hawaii CZM Program and DOH by the University of Hawaii's Water Resources Research Center and Engineering Solutions, Inc. to provide information to promote the effective use of onsite wastewater treatment systems in rural and urban settings. This document is intended for landowners, prospective homeowners, small developers and their architect/engineers, and regulators on the selection and operation of appropriate onsite wastewater systems for smaller residential applications in areas where no public sewers are available in Hawaii. The survey aims to provide this audience with information on a range of feasible, permanent, and reliable onsite wastewater treatment and disposal options that conform to current environmental regulations within the State of Hawaii. The document also describes the systems in terms of design and installation, operation and maintenance, cost, and field constraints to use; analyzes the onsite wastewater systems with respect to field conditions required for

optimal performance, and identifies system modifications that would be necessary for effective use/development under Hawaii conditions.

**Implementation Tools**

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 11-62, HAR Wastewater Systems	DOH	<ul style="list-style-type: none"> <li>-provides for the establishment of Critical Wastewater Disposal Areas (CWDAs) where DOH may impose more stringent requirements for wastewater systems and proposed cesspools shall be severely restricted or prohibited (§11-62-05)</li> <li>-CWDAs are established based on the following criteria: high water table; impermeable soil or rock formation; steep terrain; flood zone; protection of coastal waters and inland surface waters; high rate of cesspool failures; and protection of groundwater resources (§11-62-05)</li> <li>-requires proper operation and maintenance of wastewater systems (§11-62-06(e))</li> <li>-no person shall cause or allow any wastewater system to create or contribute to any of the following: human illness; public health hazard; nuisance; unsanitary condition; wastewater spill, overflow, or discharge into surface waters or onto the ground; harborage of vectors; foul or noxious odors; public safety hazard; or contamination, pollution or endangerment of drinking water (§11-62-06(g))</li> </ul>
Chapter 11-62, HAR Wastewater Systems, continued	DOH	<ul style="list-style-type: none"> <li>-if applicable, a wastewater system involving the subsurface disposal of wastewater shall be in compliance with chapter 11-23 (§11-62-06(l))</li> <li>-outlines specific requirements for wastewater treatment works (§11-62-23.1)</li> <li>-outlines specific requirements for individual wastewater systems (§11-62-31.1)</li> <li>-owner of individual wastewater system shall certify that it will be operated and maintained in accordance with all provisions of the operation and maintenance manual. The certification shall include a statement that upon sale or transfer of ownership, the sale or transfer will include the appropriate transfer documents and provisions binding the new owner to the operation and maintenance manual (§11-62-31.1(e))</li> <li>-an engineer must evaluate proposed site for suitability for an OSDS, including depth of permeable soil over seasonal high groundwater, bedrock, or other limiting layer, soil factors, land slope, flooding hazard, and amount of suitable area available. (§11-62-31.2)</li> <li>-pumpers and haulers of wastewater from OSDS must maintain records, including location of wastewater system pumped, name of owner, date of pumping, type and volume of wastewater pumped, results of any test analyses, disposal site of pumped wastewater, for submittal to DOH (§11-62-62)</li> <li>-no OSDS can be located within 50 feet of a stream, the ocean at the vegetation line, pond, lake, or other surface water body; or within 1,000 feet of a potable water source serving public water systems. (§11-62, Appendix F)</li> </ul>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 11-23, HAR Underground Injection Control	DOH	<ul style="list-style-type: none"> <li>-excluded from this chapter are individual wastewater systems serving single family residential households which generate a volume of domestic sewage less than 1,000 gallons per day (§11-23-02)</li> <li>-classifies exempted aquifers and underground sources of drinking water on UIC maps (§11-23-04)</li> <li>-classifies types of injection wells and allowable injection methods and locations (§11-23-06)</li> <li>- establishes siting and pre-construction requirements for injection wells (§11-23-09) and operating conditions (§11-23-11)</li> </ul>
<i>Onsite Wastewater Treatment Survey and Assessment</i> (March 2008)	CZM Program, DOH	<ul style="list-style-type: none"> <li>-intended for landowners, prospective homeowners, or small developers and their architect/engineers, and regulators on the selection and operation of appropriate onsite wastewater systems for smaller residential applications in areas where no public sewers are available in Hawaii.</li> <li>-provides information on a range of feasible, permanent, and reliable onsite wastewater treatment and disposal options that conform to current environmental regulations within the State of Hawaii.</li> <li>-describes the systems in terms of design and installation, operation and maintenance, cost, and field constraints to use.</li> <li>-analyzes the onsite wastewater systems with respect to field conditions required for optimal performance, and identifies system modifications that would be necessary for effective use/development under Hawaii conditions.</li> </ul>
Section 30-4, ROH Water Conservation Measures	City and County of Honolulu	<ul style="list-style-type: none"> <li>-all non-residential properties shall be equipped with low-flow kitchen faucets, lavatory faucets, showerheads, and ultra-low flush toilets and urinals (§30-4.2), unless the administrative authority determines that an exception should be made (§30-4.3)</li> <li>-non-residential properties that consume an average of 15,000 gallons of water per month or less are exempted from ultra-low flow flush toilet requirements, until the year after their water consumption exceeds 15,000 per month. (§30-4.6)</li> <li>-establishes a rebate program in which an owner of a residential property who has purchased and installed an ultra-low flush toilet to replace an existing non-ultra-low flush one after June 9, 1998, and whose property is connected to the city's sewer or water system shall be entitled to a rebate of \$100.00 per toilet. (30-4.7) This rebate program terminated on July 1, 2008.</li> </ul>
Chapter 16.20A, MCC Plumbing Code	Maui DPW	<ul style="list-style-type: none"> <li>-establishes maximum rates of water flow or discharge for plumbing fixtures and devices in order to promote water conservation. (§16.20A.680(a))</li> <li>-After December 31, 1992, only low flow plumbing fixtures and devices specified in this section shall be installed in the county of Maui (§16.20A.680(c)). Beginning December 31, 1992, it is unlawful to sell or install any plumbing fixtures or devices not specified in this section (§16.20A.680(d)).</li> </ul>
Chapter 17, HCC Plumbing	Hawaii DPW	<ul style="list-style-type: none"> <li>- modifies the Uniform Plumbing Code to require the use of low flow plumbing fixtures. (§17-47(15))</li> </ul>
Chapter 27, HCC Floodplain Management	Hawaii DPW	<ul style="list-style-type: none"> <li>On-site cesspools and septic systems shall be located to avoid impairment to them or contamination from them during flooding (§27-19(b))</li> </ul>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 342D, HRS Water Pollution	DOH	-prohibits discharge of any pollutant into State waters -allows DOH to institute a civil action for injunctive relief to prevent violation of State water quality standards (§342D-11) -under the statute, DOH may request the court to order nonpoint source polluters to implement all required management measures

### Operating Onsite Disposal Systems Management Measure

- (1) Establish and implement policies and systems to ensure that existing OSDS are operated and maintained to prevent the discharge of pollutants to the surface of the ground and to the extent practicable reduce the discharge of pollutants into ground waters that are closely hydrologically connected to surface waters. Where necessary to meet these objectives, encourage the reduced use of garbage disposals, encourage the use of low-volume plumbing fixtures, and reduce total phosphorus loadings to the OSDS by 15% (if the use of low-level phosphate detergents has not been required or widely adopted by OSDS users). Establish and implement policies that require an OSDS to be repaired, replaced, or modified where the OSDS fails, or threatens or impairs surface waters;
- (2) Inspect OSDS at a frequency adequate to ascertain whether OSDS are failing;
- (3) Consider replacing or upgrading OSDS to treat influent so that total nitrogen loadings in the effluent are reduced by 50%. This provision applies only:
  - (a) where conditions indicate that nitrogen-limited surface waters may be adversely affected by significant groundwater nitrogen loadings from OSDS, and
  - (b) where nitrogen loadings from OSDS are delivered to groundwater that is closely hydrologically connected to surface water.

#### Responsible Agencies and Authorities

DOH is the lead agency in implementing this management measure because it administers the regulatory programs for wastewater systems and safe drinking water. The county building departments administer the plumbing codes.

Chapter 11-62, HAR, administered by DOH, outlines the requirements for locating, building and operating wastewater treatment systems and individual wastewater systems. It requires that no wastewater system (including OSDSs) be operated in such a way that it creates or contributes to: wastewater spill, overflow, or discharge onto the ground or surface waters; or contamination, pollution or endangerment of drinking water [§11-62-06(g)]. In addition, OSDS owners are required to follow the procedures in maintenance manuals that must be submitted to DOH for approval.

Chapter 11-62, HAR, also provides for the establishment of Critical Wastewater Disposal Areas (CWDAs), where the disposal of wastewater has or may cause adverse effects on human health or the environment due to existing hydrogeological conditions. CWDAs are established based on one or more of the following concerns: high water table; impermeable soil or rock formation; steep terrain; flood

zone; protection of coastal waters and inland surface waters; high rate of cesspool failures; and protection of groundwater resources. CWDAs were designated for each county in 1990 and updated in 1997. Within CWDAs, DOH may impose more stringent requirements for wastewater systems and cesspools are severely restricted or prohibited.

Although nitrogen-limited surface waters have not been specifically identified in Hawaii, Section 11-62-05, HAR (Critical Wastewater Disposal Areas) provides the Director of the DOH the discretion to require a higher degree of treatment for individual wastewater systems due to several concerns. One of the highlighted concerns in Section 11-62-05(a), HAR, is the “protection of coastal waters and inland surface waters.” The rule also allows the Director to “impose more stringent requirements than those specified in these rules for wastewater systems located or proposed to be located within any designated critical wastewater disposal area” and provides the director with the ability to impose “meeting higher effluent standards for wastewater systems” (Chapter 11-62-05(b)). The currently designated CWDAs cover the majority of the state, and these areas correspond with areas that would be most susceptible to nutrient enrichment by encompassing the coastal fringe and areas with a close groundwater to surface water connection. Chapter 11-62-05, HAR, also provides the Director the discretion to expand the CWDAs, and this can be used to modify CWDA boundaries if data demonstrate that a particular area requires denitrifying OSDS.

Since the initial management measure submission, the State has made progress in eliminating new individual cesspools<sup>2</sup>. Efforts to ban the use of new cesspools statewide have been made through revision to Chapter 11-62, HAR. The rule either bans or severely restricts the use of cesspools throughout the state. New cesspools are completely banned on the islands of Oahu and Kauai. On the islands of Maui, Molokai, and Hawaii, new cesspools for individual homes only are allowed in certain areas. These areas are designated in Critical Wastewater Disposal Area maps. The CWDA maps also delineate areas where cesspools are completely banned. The maps are based upon development density, groundwater development, potential contamination of coastal waters and the use of OSDS. Although the current rule still allows some new cesspools in limited areas, there are a number of items that either prohibit new cesspools or require that existing cesspools be upgraded. They include:

- Not allowing a new dwelling to be connected to an existing cesspool serving an existing dwelling;
- Requiring an existing cesspool system to meet current wastewater rules if there is a change in building usage or characteristics of the wastewater. For example, an existing cesspool must be upgraded if a non-dwelling using a cesspool is converted to a dwelling or a commercial building (e.g., office space) is converted to a food establishment;
- Current rules do not allow two new dwellings to be served by a cesspool; and
- Current rules do not allow non-dwellings generating nondomestic-like wastewater to discharge wastewater into a new cesspool.

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<sup>2</sup> The U.S. Environmental Protection Agency (EPA) promulgated Underground Injection Control (UIC) regulations on December 7, 1999, which prohibit the construction of new large capacity cesspools (LCCs) nationwide, effective April 5, 2000. Existing large capacity cesspools must be replaced by an alternative wastewater system and closed by April 5, 2005. The regulations do not contain any provisions for an extension to the deadline. In Hawaii, where the UIC program has not been delegated, EPA implements the regulations.

All counties require the use of low flow plumbing fixtures.

Two of the counties have regulations that address the pumping or treating of cesspools and septic tanks. In the City and County of Honolulu, Chapter 14-7, ROH, states that an occupant or owner of residential property may request to have a cesspool serviced by the county. It also requires that owners maintain their cesspools in a safe and serviceable condition, and that any cesspool requiring one or more pumping per week for a period of three weeks shall be replaced or rehabilitated within 90 days. In Maui County, Chapter 14.29, MCC, provides for owners of legal cesspools or septic tanks to request pumping services no more than twice a year. Any cesspool or septic system that requires more frequent pumping shall be rehabilitated or replaced. In Kauai and Hawaii counties, private pumpers and haulers of wastewater must be permitted by the county and maintain records and information on the numbers, locations, and volumes of all OSDs pumped.

The document *Onsite Wastewater Treatment Survey and Assessment* (March 2008) was prepared for the Hawaii CZM Program and DOH by the University of Hawaii's Water Resources Research Center and Engineering Solutions, Inc. to provide information to promote the effective use of onsite wastewater treatment systems in rural and urban settings. This document is intended for landowners, prospective homeowners, small developers and their architect/engineers, and regulators on the selection and operation of appropriate onsite wastewater systems for smaller residential applications in areas where no public sewers are available in Hawaii. The survey aims to provide this audience with information on a range of feasible, permanent, and reliable onsite wastewater treatment and disposal options that conform to current environmental regulations within the State of Hawaii. The document also describes the systems in terms of design and installation, operation and maintenance, cost, and field constraints to use; analyzes the onsite wastewater systems with respect to field conditions required for optimal performance, and identifies system modifications that would be necessary for effective use/development under Hawaii conditions.

### **Implementation Tools**

<b>Regulatory or Non-Regulatory Mechanism</b>	<b>Responsible Agency</b>	<b>Description</b>
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Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 11-62, HAR Wastewater Systems	DOH	<ul style="list-style-type: none"> <li>-provides for the establishment of Critical Wastewater Disposal Areas (CWDAs) where DOH may impose more stringent requirements for wastewater systems and proposed cesspools shall be severely restricted or prohibited (§11-62-05)</li> <li>-CWDAs are established based on the following criteria: high water table; impermeable soil or rock formation; steep terrain; flood zone; protection of coastal waters and inland surface waters; high rate of cesspool failures; and protection of groundwater resources (§11-62-05)</li> <li>-requires proper operation and maintenance of wastewater systems (§11-62-06(e))</li> <li>-no person shall cause or allow any wastewater system to create or contribute to any of the following: human illness; public health hazard; nuisance; unsanitary condition; wastewater spill, overflow, or discharge into surface waters or onto the ground; harborage of vectors; foul or noxious odors; public safety hazard; or contamination, pollution or endangerment of drinking water (§11-62-06(g))</li> <li>-outlines specific requirements for wastewater treatment works (§11-62-23.1)</li> <li>-outlines specific requirements for individual wastewater systems (§11-62-31.1)</li> <li>-owner of individual wastewater system shall certify that it will be operated and maintained in accordance with all provisions of the operation and maintenance manual. The certification shall include a statement that upon sale or transfer of ownership, the sale or transfer will include the appropriate transfer documents and provisions binding the new owner to the operation and maintenance manual. (§11-62-31.1(e))</li> <li>-pumpers and haulers of wastewater from OSDS must maintain records, including location of wastewater system pumped, name of owner, date of pumping, type and volume of wastewater pumped, results of any test analyses, disposal site of pumped wastewater, for submittal to DOH (§11-62-62)</li> </ul>
<i>Onsite Wastewater Treatment Survey and Assessment (March 2008)</i>	CZM Program, DOH	<ul style="list-style-type: none"> <li>-intended for landowners, prospective homeowners, or small developers and their architect/engineers, and regulators on the selection and operation of appropriate onsite wastewater systems for smaller residential applications in areas where no public sewers are available in Hawaii.</li> <li>- provide information on a range of feasible, permanent, and reliable onsite wastewater treatment and disposal options that conform to current environmental regulations within the State of Hawaii.</li> <li>- describes the systems in terms of design and installation, operation and maintenance, cost, and field constraints to use.</li> <li>- analyzes the onsite wastewater systems with respect to field conditions required for optimal performance, and identifies system modifications that would be necessary for effective use/development under Hawaii conditions.</li> </ul>
Chapter 342D, HRS Water Pollution	DOH	<ul style="list-style-type: none"> <li>-prohibits discharge of any pollutant into State waters</li> <li>-allows DOH to institute a civil action for injunctive relief to prevent violation of State water quality standards (§342D-11)</li> <li>-under the statute, DOH may request the court to order nonpoint source polluters to implement all required management measures</li> </ul>

## **Pollution Prevention**

### **Pollution Prevention Management Measure**

**Implement pollution prevention and education programs to reduce nonpoint source pollutants generated from the following activities, where applicable:**

- (a) The improper storage, use, and disposal of household hazardous chemicals, including automobile fluids, pesticides, paints, solvents, etc.;**
- (b) Lawn and garden activities, including the application and disposal of lawn and garden care products, and the improper disposal of leaves and yard trimmings;**
- (c) Turf management on golf courses, parks, and recreational areas;**
- (d) Improper operation and maintenance of onsite disposal systems;**
- (e) Discharge of pollutants into storm drains including floatables, waste oil, and litter;**
- (f) Commercial activities including parking lots, gas stations, and other entities not under NPDES purview; and**
- (g) Improper disposal of pet excrement.**

### **Responsible Agencies and Authorities**

DOH is the lead agency in implementing this management measure because it administers both regulatory and non-regulatory programs for pollution prevention, including litter control, solid waste management, special waste recycle, used oil disposal. DOH's Office of Solid Waste Management (OSWM) promotes and coordinates solid waste management at the State and county levels. It has facts sheets on its website about disposal of lead-based paint wastes, disposal of asbestos-containing waste materials, used lead-acid battery management, proper disposal of home health care waste, and reducing and recycling of green waste. It also published *The Hawaii Guide to Alternatives and Disposal of Household Hazardous Waste* (1996).

DOH's Hazardous Waste Section established a Pollution Prevention & Waste Minimization Program. The Program is dedicated to helping businesses find ways to reduce waste generation at the source, prevent pollution, and recycle the wastes that cannot be reduced. Methods for minimizing wastes include: better operating procedures to efficiently use material and avoid spills or cross contamination of waste streams; substitution of nonhazardous or less hazardous material for hazardous materials; process changes that reduce hazardous materials used and reduce waste generated; product redesign to avoid using hazardous materials that generate wastes; and recycling and reuse of hazardous and other wastes. The Hawaii Pollution Prevention & Waste Minimization Program offers a variety of services to businesses interested in reducing their generation of wastes and conserving their use of resources. Its website provides numerous pollution prevention bulletins on a variety of topics.

The Hawaii Electronic Waste Recycling Act was adopted by the Hawaii State Legislature during its First Special Legislative Session of 2008 and mandates recycling programs for computers, computer monitors and televisions (covered electronic devices or CEDs) to be operated by manufacturers. By January 1, 2009, manufacturers of CEDs sold in the state must register with DOH and pay an annual registration fee of \$5,000.

The counties administer ordinances that prohibit littering. Chapter 20, HCC, administered by the Hawaii County department of public works, prohibits littering on any highway, street, road, alley, sidewalk, sea beach, public park, or other public place in the county. Litter is broadly defined to include, among other things, dirt, paper, wrappings, cigarettes, yard clippings, leaves, wood, scrap metal, and any other waste materials. In Maui County, Chapter 20.20, MCC, administered by the local police department and department of public works, prohibits littering on public or private places, and public roadways, and prohibits people from allowing their pets to improperly excrete upon public and private property. Chapter 29-4, ROH, prohibits littering of any kind on private and public property in the City and County of Honolulu. In Kauai County, Chapter 20, KCC, administered by the department of public works, prohibits the throwing or depositing of litter in public places, which include public roads, bays, ponds, streams, lakes and other bodies of water.

The counties also administer ordinances addressing pet waste. Chapter 4, HCC, administered by the Hawaii County police department, prohibits pet owners from allowing their pets to defecate on public streets, including sidewalks, passageways, or bypasses, or on any play areas, parks, or places where people congregate or walk, or on any public property, or on any private property without the permission of the owner of the property, unless the pet owner immediately picks up and properly disposes of the feces. In Maui County, Chapter 6.04, MCC, administered by the office of the mayor, describes responsibilities of dog owners for disposing of animal waste and establishes penalties for failing to comply. In the City and County of Honolulu, Chapter 29-4, ROH, prohibits pet owners from allowing their pets to excrete any solid waste in any public place or on any private premises unless the owner of the offending animal promptly and voluntarily removes the animal waste.

DOH has published a variety of pollution prevention bulletins, fact sheets and other information to encourage the reduction of nonpoint source pollutants generated by households. These can be found on the DOH website at [hawaii.gov/health/environmental/waste/](http://hawaii.gov/health/environmental/waste/).

The University of Hawaii Cooperative Extension Service (CES) also provides technical assistance. In 2000, it developed a series of information worksheets for homeowners about pollution prevention. Hawaii's Pollution Prevention Information (HAPPI)-Home Series contains 16 worksheets on a variety of specific topics.

The City and County of Honolulu Department of Environmental Services (DES) has a variety of information on pollution prevention on its website [www.opala.org](http://www.opala.org) (for solid waste management), including household hazardous waste prevention tips, products and disposal guidelines, educational resources and tools, and recycling graphics, video, PowerPoint presentations, and music. At its stormwater website, [www.CleanWaterHonolulu.com](http://www.CleanWaterHonolulu.com), DES has established a pollution prevention program targeted at residents, businesses and students. The program has published a number of fact sheets and tip cards on a variety of relevant topics, and a booklet on backyard conservation. Its website also includes educational materials for students and educators.

The City and County of Honolulu DES also sponsors an Adopt-a-Stream/Adopt-a-Block Program, which provides a hands-on way for residents and local businesses to help keep pollutants off of City roads and connected waterbodies as part of a neighborhood cleanup. It also provides an opportunity for

committed community groups to look out for the watershed and provides a positive connection between government and the community whereby residents become engaged in small work projects to stencil storm drains with the message, “Dump No Waste, Protect Our Waters ... For Life,” remove litter, and distribute educational materials. Some stream teams also plant and get involved in water sampling. Current volunteers in the program include school organizations, businesses, civic organizations, and scouts. The University of Hawaii at Manoa Law Society has been with the program for over 10 years and Malama o Manoa nearly 10.

### **Implementation Tools**

<b>Regulatory or Non-Regulatory Mechanism</b>	<b>Responsible Agency</b>	<b>Description</b>
Chapter 339, HRS Litter Control	DOH, with enforcement through counties	-no person shall discard or otherwise dispose of litter in a public place, or on private property, or in the waters of the State except in a designated place, litter receptacle, or litter bag. (§339-4)
Chapter 342G, HRS Integrated Solid Waste Management	DOH	-establishes an Office of Solid Waste Management (OSWM) within DOH (§342G-12) -OSWM shall, among other things: promote the development of coordinated statewide solid waste management; promote source reduction, recycling, and bioconversion, through the provision of a comprehensive innovative and effective statewide public education and awareness program (§342G-14) -calls for the development and adoption of county integrated solid waste management plans (§342G-22) - establishes an Environmental Management Special Fund for partial funding of OSWM operations, for education, demonstration and marketing programs, and for training municipal solid waste operators (§342G-63) -provides for fines up to \$10,000 per offense (§342G-71) -establishes deposit beverage container fee, beginning on October 1, 2002 (342G-102)
Chapter 342H, HRS Solid Waste Pollution	DOH	-prohibits disposal of solid waste anywhere other than a permitted solid waste management system (§342H-30) -encourages the recycling of solid wastes, including animal wastes and selected non-hazardous industrial wastes, and the composting of animal manures and by-products for agricultural and horticultural purposes. The use of treated sludge effluent for fertilizer and other agricultural purposes shall also be encouraged. Composting of agricultural secondary organic resources under approved methods shall also be encouraged. (§342H-36)
Chapter 342I, HRS Special Wastes Recycling	DOH	-prohibits disposal of used lead acid battery, except by delivery to a lead acid battery retailer or wholesaler, a collection or recycling facility, or a secondary lead smelter (§342I-1) -prohibits disposal of electrolyte from any used lead acid battery onto the ground or into sewers, drainage systems, surface or ground waters, or ocean waters. (§342I-1.5)

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 342J, HRS Hazardous Waste	DOH	-prohibits discharge of new, used or recycled oil into sewers, drainage systems, surface or ground waters, watercourse, marine waters, or onto the ground. The prohibition does not apply to inadvertent, normal discharges from vehicles and equipment, or maintenance and repair activities, provided that appropriate measures are taken to minimize releases (§342J-52(b))
Chapter 11-58.1, HAR Solid Waste Management Control	DOH	-establishes minimum standards governing the design, construction, installation, operation and maintenance of solid waste disposal, recycling, reclamation and transfer systems (§11-58.1-01)
Chapter 342D, HRS Water Pollution	DOH	-prohibits discharge of any pollutant into State waters -allows DOH to institute a civil action for injunctive relief to prevent violation of State water quality standards (§342D-11) -under the statute, DOH may request the court to order nonpoint source polluters to implement all required management measures
Chapter 20, HCC Refuse	Hawaii DPW	-no person shall scatter, throw, drop, deposit, or place or cause to be scattered, thrown, dropped, deposited, or placed any litter on any highway, street, road, alley, sidewalk, beach, public park, or other public place in the County.(§20-2) -no person shall sweep into or deposit in any gutter, street, or other public place the accumulation of litter from any building or lot or from any public or private sidewalk or driveway (§20-3) -no person shall dump or place refuse in or upon any vacant lot, public place, or in or upon the premises of another (§20-41)
Chapter 4, HCC Animals	Hawaii County	No person who owns, harbors, keeps or has charge or control of any dog or other small domesticated animal shall cause, suffer, or allow such animal to soil, defile, defecate on, or commit any nuisance on any part of any street, including any sidewalk, passageway or bypath, or on any play area, park, or place where people congregate or walk, or on any public property, or on any private property, without the permission of the owner of the property. The restrictions in this section shall not apply to that portion of the roadway of any street which lies between and within three feet of the edges or curbs of the roadway, except at crosswalks or bus stops, provided that the person who owns, harbors, keeps or has charge or control of a domesticated animal shall immediately and securely enclose all feces deposited by the animal in a bag, wrapper, or other container, and dispose of the same all in a sanitary manner (§4-19)

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 20.20, MCC Litter Control	Maui County	<p>-it shall be the responsibility of owners or persons in control of any private property to maintain property free of litter at all times; provided, that this chapter shall not prohibit the storage of litter in litter receptacles for collection. (§20.20.040)</p> <p>-a person commits the offense of littering if the person discards litter upon a public place; discards litter upon private property; discards litter upon a public roadway; drives or moves any vehicle that causes litter to become deposited upon a public roadway; or permits an animal owned by such person or while in such person’s custody to excrete litter upon public or private property. (§20.20.050)</p> <p>-“Litter” means rubbish, waste material, garbage, trash, offal, or any debris of whatever kind or description that is likely to injure any person, animal, or vehicle, or that is prejudicial to the public health, safety, and welfare, whether or not it is of value, and includes, but is not limited to, improperly discarded paper, metal, plastic, glass, or solid waste. (§20.20.020)</p>
Chapter 6.04, MCC Animal Control	Maui County	<p>-an owner of a dog shall not allow the dog to cause a nuisance. The owner shall be held responsible for every behavior of such dog under the provisions of the chapter. (§6.04.040)</p> <p>-“Nuisance” means, among other things, a dog that damages, soils, defiles, or defecates on private property other than the owner’s or on public walks and recreation areas unless such waste is immediately removed and properly disposed of by the owner; causes unsanitary, dangerous, or offensive conditions. (§6.04.010)</p>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 29-4, ROH Litter Control	CCH Dept. of Planning and Permitting  Dept. of Parks and Recreation  Honolulu Police Dept.	-no person shall: (1) throw or deposit litter on any street or sidewalk and in any park or other public or private property within the city, except in public or private receptacles, and in such a manner that the litter will be prevented from being carried or deposited by the elements upon any part of the park, street, sidewalk or other public or private property. Where public or private receptacles are not provided, all such litter shall be carried away by the person responsible for its presence and properly disposed of; (2) sweep into or deposit in any gutter, street or other public place within the city the accumulation of litter from any building or lot or from any public or private sidewalk or driveway; (3) while a driver or passenger in a vehicle, throw or deposit litter upon any street or other public place within the city, or upon private property; (4) drive or move any truck or other vehicle within the city unless such vehicle is so constructed or loaded as to prevent any load, contents or litter from being blown or deposited from the vehicle upon any street, sidewalk, alley or other public place. Nor shall any person drive or move any truck or other vehicle within the city, the wheels or tires of which carry onto or deposit in any street, sidewalk, alley or other public place, litter of any kind. In the event that litter is unavoidably dropped or tracked onto a street, sidewalk, alley or other public place, it shall be the duty of the driver of the vehicle to have said litter removed as quickly as possible; (5) throw or deposit litter in any fountain, pond, lake, stream, bay or any other body of water in a park or elsewhere within the city; ... (8) throw or deposit litter on any occupied, open or vacant private property within the city, whether owned by such person or not, except that the owner or person in control of private property may maintain authorized private receptacles for litter collection in such a manner that litter will be prevented from being carried or deposited by the elements upon any street, sidewalk, alley or other public place or upon any private property; (9) permit an animal owned by such person or while in the person's custody to excrete any solid waste in any public place or on any private premises not the property of such owner; provided, however, that nothing herein shall affect the duty of the property owner or occupier to keep the premises free of litter and provided further that no violation shall occur if the owner of the offending animal promptly and voluntarily removes the animal waste; or (10) dump or dispose of any litter, refuse or other solid waste upon any public or private premises, including any watercourse or drainage facility whether publicly or privately owned within the city, except upon municipal disposal sites or private disposal sites established under Chapter 21. (§29-4.4)
Chapter 20, KCC	Kauai County	-prohibits the throwing or depositing of litter in public places, which include public roads, bays, ponds, streams, lakes, and other bodies of water.

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Pollution Prevention Bulletins <a href="http://hawaii.gov/health/environmental/waste/p2wastemin/index.html">hawaii.gov/health/environmental/waste/p2wastemin/index.html</a>	DOH Pollution Prevention and Waste Minimization Program	Hauler and Recycler's List (2007) Auto Body and Paint (2006) Auto Repair (2007) Fluorescent Lights (2007) Janitorial Cleaning (2007) Painting – Architectural (2008) Printing (2007) Regulatory Education – Hotels (2005) Textile Cleaning (2006)
<i>The Hawaii Guide to Alternatives &amp; Disposal of Household Hazardous Wastes</i> (1996) <a href="http://hawaii.gov/health/environmental/waste/sw/pdf/hhwguide.pdf">hawaii.gov/health/environmental/waste/sw/pdf/hhwguide.pdf</a>	DOH OSWM	-provides instructions on how to safely dispose of many household hazardous wastes. -provides information on how to reduce your use of hazardous products by making use of alternatives.
Fact Sheets and Publications <a href="http://hawaii.gov/health/environmental/waste/sw/index.html">http://hawaii.gov/health/environmental/waste/sw/index.html</a>	DOH OSWM	A series of fact sheets that provide information on public issues and instruction on responsible ways to reduce, recycle, and dispose of specific waste materials.
Hawaii's Pollution Prevention Information (HAPPI)-Home Series (2000)	University of Hawaii Cooperative Extension Service (CES)	16 information worksheets aimed at homeowners to address water pollution issues:  <i>Reducing Pollution Risks From Your Trash</i> (HAPPI Home #3) <i>Managing Hazardous Household Products</i> (HAPPI Home #4) <i>Think Before You Dump It: Safe Disposal of Hazardous Products</i> (HAPPI Home #5) <i>Alternatives to Hazardous Household Products</i> (HAPPI Home #6) <i>Lead In and Around the Home</i> (HAPPI Home #7) <i>Household Wastewater Treatment Systems</i> (HAPPI Home #11) <i>Runoff Control in Your Yard and Garden</i> (HAPPI Home #12) <i>Yard and Garden Nutrient Management</i> (HAPPI Home #13) <i>Yard and garden pest management</i> (HAPPI Home #14) <i>Motor Vehicle Maintenance</i> (HAPPI Home #15) <i>Pet Waste Management</i> (HAPPI Home #16)
Storm Water Management <a href="http://www.CleanWaterHonolulu.com">www.CleanWaterHonolulu.com</a>  Solid Waste Management <a href="http://www.Opala.org">www.Opala.org</a>	CCH Dept. of Environmental Services	Pollution Solutions fact sheets on yard waste, motor oil, animal waste, home and garden, storm drain stenciling, illegal connections, and how you can help.  There are also fact sheets for builders and contractors, and for restaurant and food industry.  Tip Cards on automobile fluids, car wash, floatables (in a number of languages), pesticides and fertilizers, pet waste, sediment, and yard waste.  Adopt-a-Stream/Adopt-a-Block program.



## Golf Course Management Measure

- (1) Develop and implement grading and site preparation plans to:**
  - (a) Design and install a combination of management and physical practices to settle solids and associated pollutants in runoff from heavy rains and/or from wind;**
  - (b) Prevent erosion and retain sediment, to the extent practicable, onsite during and after construction;**
  - (c) Protect areas that provide important water quality benefits and/or are environmentally-sensitive ecosystems;**
  - (d) Avoid construction, to the extent practicable, in areas that are susceptible to erosion and sediment loss;**
  - (e) Protect the natural integrity of waterbodies and natural drainage systems by establishing streamside buffers; and**
  - (f) Follow, to the extent practicable, the amended U.S. Golfing Association (USGA) guidelines for the construction of greens.**
- (2) Develop nutrient management guidelines appropriate to Hawaii for qualified superintendents to implement so that nutrients are applied at rates necessary to establish and maintain vegetation without causing leaching into ground and surface waters.**
- (3) Develop and implement an integrated pest management plan. Follow EPA guidelines for the proper storage and disposal of pesticides.**
- (4) Develop and implement irrigation management practices to match the water needs of the turf.**

### **Responsible Agencies and Authorities**

This management measure is currently implemented under existing regulations. A number of State and county agencies implement components of the management measure, depending on where the proposed golf course is to be located.

Typically, prospective golf course developments must undergo numerous permit processes, with their associated environmental assessments and extensive public review. Golf course developments in the Conservation District trigger a CDUP from DLNR; developments within the counties' Special Management Area (SMA) must seek an SMA permit from the respective county planning department. Chapter 343, HRS, and Chapter 11-200, HAR, both about the Environmental Impact Statement law, require the preparation of an EA and/or EIS for proposed activities that trigger the environmental review process. Some of the trigger conditions are as follows: (1) use of State or county lands or funds; (2) use within the conservation district; (3) use within a shoreline setback area; (4) use within the Waikiki special district; (5) use within an historic site; (6) reclassification of conservation lands; and (7) certain amendments to a county general plan.

Golf courses are only permitted in agricultural areas with soils other than class A or B. If proposed in an area with A and B lands, the development is reviewed by the County and the State's Land Use Commission (LUC). If proposed on soils classified as C, D, and E, then counties have sole jurisdiction at this time. While counties approve all golf courses in the urban district, State rules and policies also apply.

In urban areas, the counties have the lead in the control of erosion during site development and ensuring proper site planning and stormwater management to protect sensitive natural features, through their ordinances and rules related to zoning, subdivisions, drainage, and erosion and sediment control.

Generally, all development within the counties must conform to the policies outlined in the county general plans and specific community development plans. The county general plans provide a coordinated set of guidelines within each county for decision-making regarding future growth and development and protection of natural and cultural resources. The general plans also guide revisions and updates to the county codes. They are given the effect of law through adoption by the respective county councils. Generally, all the county general plans have policies related to protecting the county's natural resources and minimizing adverse effects resulting from the inappropriate location, use, or design of sites and structures; protecting wetlands and riparian areas; and designing drainage systems to minimize polluted runoff, retain streambank vegetation, and maintain habitat and aesthetic values.

The counties also administer the SMA permit process. SMAs are a subset of the State's coastal zone and include all lands and waters beginning at the shoreline and extending inland or *mauka* at least 100 yards. Many new developments fall within this more sensitive coastal area, and the SMA permit process ensures that these developments are consistent with Hawaii's coastal zone management program objectives and policies. Although each county has its own procedures for administering SMA permits, the requirements and review processes for SMA applications are similar for all four counties and are based on Chapter 205A-26, HRS ("Special management area guidelines"). Each county requires a permit applicant to describe the proposed development in terms of the CZM objectives and policies.

Under the authority of Chapter 149A, HRS, Department of Agriculture (DOA), Pesticides Branch, is the lead agency for implementing those measures that relate to regulating pesticides. Chapter 4-66, HAR, administered by DOA, relates to the registration, licensing, certification, recordkeeping, usage, and other activities related to the safe and effective use of pesticides. It requires that those who apply or directly supervise others who apply restricted use pesticides be certified. Certification requires some understanding of the environmental concerns of using pesticides. This requirement is implemented under the CES/DOA Pesticide Applicator Program. Certification is not required for those using pesticides that are not classified as "restricted use."

DOH administers programs for water pollution control and safe drinking water. Chapter 11-21, HAR, Cross-Connection and Back-Flow Control, administered by DOH, requires that a reduced pressure principal back-flow preventer or air gap separation be installed as part of any piping network in which fertilizers, pesticides and other chemicals or toxic contaminants are injected or siphoned into the irrigation system.

DOH developed *Guidelines Applicable to Golf Courses in Hawaii* (July 2002 – Version 6) to promote, protect, and enhance environmental quality and public health. These recommendations cover measures that could prevent groundwater and surface water pollution, soil contamination, chemical spills, noise and solid waste nuisances, and unsafe exposure to applied chemicals. The intent of these guidelines is to voluntarily foster environmental protection and safety.

Some golf courses use recycled (treated) wastewater for irrigation. Chapter 11-62, HAR, administered by DOH, allows for the use of recycled water with written approval by the director, provided the owner of the recycled water system submits an engineering report for approval which clearly identifies all BMPs to be implemented, an irrigation use plan, overflow control plan, management plan, public information and access plan, labeling plan, employee training plan, vector control plan, and groundwater monitoring plan. In making his decision, the director is guided by DOH's *Guidelines for the Treatment and Use of Recycled Water* (May 2002). R-2 and R-1 waters may be used for golf course irrigation.

Proposed golf course developments that may affect water quality and wetlands must obtain a permit from the USACOE under Section 404, CWA. These permit applicants are required to obtain Section 401, CWA, water quality certifications from DOH and Hawaii CZM federal consistency determinations prior to being issued a permit by the USACOE. NRCS and USFWS may review, comment, request conditions, or recommend denial of a Section 401 permit while the USACOE is reviewing the permit application.

### **Implementation Tools**

<b>Regulatory or Non-Regulatory Mechanism</b>	<b>Responsible Agency</b>	<b>Description</b>
Chapter 20.08, MCC Soil Erosion and Sedimentation Control	Maui County DPW	-all grading, grubbing and stockpiling activities shall provide BMPs to prevent damage by sedimentation to streams, watercourses, natural areas, and the property of others (§20.08.035) -requires permit for grading, grubbing or stockpiling (§20.08.040)
<i>Construction Best Management Practices (BMPs) for the County of Maui</i> (May 2001)	Maui DPW	-contains sections on erosion control planning, guidelines for the preparation of the erosion and sediment control plan, and BMP details and specifications. BMPs included are: surface roughening, temporary gravel construction entrance/exit, seeding, temporary diversions, grass-lined channels, temporary slope drains, level spreader, outlet stabilization structure, mats, nets and blankets, mulching, preservation of existing vegetation, protection of stockpiles, construction road stabilization, temporary excavated drop inlet protection, temporary fabric drop inlet protection, temporary block and gravel drop inlet protection, sod drop inlet protection, temporary sediment trap, sediment basin, sediment fence, dust control, good neighbor barriers, check dam, solid waste management, concrete waste management, and vehicle fuel and maintenance management. Under each BMP, information is provided on its purpose and applicability, planning considerations, construction specifications, and maintenance.
Chapter 22-7, KCC Grading, Grubbing and Stockpiling	Kauai County DPW	-requires permit for grading, grubbing or stockpiling (§22-7.8) -all grading, grubbing and stockpiling activities shall incorporate BMPs to prevent damage by sedimentation to streams, watercourses, natural areas, and the property of others (§22-7.5) -all disturbed areas shall be stabilized with erosion and sediment control measures

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
<i>Interim Construction Best Management Practices (BMPs) for Sediment and Erosion Control for the County of Kauai (April 2004)</i>	Kauai County DPW	-BMP manual is similar to that of Maui County above -provides a guide for the selection of site-specific BMPs that need to be employed in all grading, grubbing, and stockpiling work as mandated by the Kauai County grading ordinance.
Chapter 10, HCC Soil Erosion and Sediment Control	Hawaii County DPW	-requires permit for grading and grubbing of land, and stockpiling of material in excess of 500 cubic yards. -all grading, grubbing and stockpiling permits and operations must conform to erosion and sedimentation control standards and guidelines (§10-26) Hawaii County is currently in the process of revising its grading ordinance to make it consistent with the other counties.
Sections 14-13 -- 14-16, ROH Grading, Soil Erosion and Sediment Control	City and County of Honolulu	-requires permit for grading, grubbing or stockpiling (§14-14.1) -specifies conditions and special requirements of permits (§14-15) -establishes penalties for violations (§14-16)
Chapter 340E, HRS Safe Drinking Water  Chapter 11-21, HAR Cross Connection and Backflow Control  Chapter 11-23, HAR Underground Injection Control	DOH	-authorizes the director to promulgate and enforce regulations relating to cross-connection and backflow prevention control and establishing an underground injection control program (§340E-2) -provides guidelines relating to backflow prevention devices for irrigation systems (§11-21-7) -a reduced pressure principal backflow preventor or air gap separation is required before any piping network in which fertilizers, pesticides and other chemicals or toxic contaminants are injected or siphoned into the irrigation system. (§11-21-7(a)(4)) -provides criteria for exempting aquifers from underground source of drinking water status (§11-23-04)
Chapter 11-54, HAR Water Quality Standards	DOH	-defines classifications of water uses. The objective of “class 1, inland waters” is that they remain in their natural state as nearly as possible with an absolute minimum of pollution from any human-caused source. Waste discharge into these waters is prohibited. Any conduct that results in a demonstrable increase in levels of point or nonpoint source contamination in class 1 waters is prohibited. Class 1 waters include all standing and/or flowing waters, and elevated and/or low wetlands: (i) within the natural reserves, preserves, sanctuaries, and refuges established by DLNR under Chapter 195, HRS, or similar reserves for the protection of aquatic life; (ii) in national and state parks; (iii) in state or federal fish and wildlife refuges; (iv) which have been identified as a unique or critical habitat for threatened or endangered species by the USFWS; and (v) in protective Conservation District subzones designated under Chapter 13-5, HAR. (§11-54-3(b)(1)) -similarly, the objective of “class AA, marine waters” is that these waters remain in their natural pristine state as nearly as possible with an absolute minimum of pollution or alteration of water quality from any human-caused source or actions. Approximately 63% of Hawaii’s coastline abuts Class AA marine waters. (§11-54-3(c)(1))

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 11-55, HAR Water Pollution Control	DOH	<p><u>-NPDES General Permit:</u> The NPDES General Permit Authorizing Discharges of Storm Water Associated with Construction Activity covers discharges of stormwater runoff associated with construction activities, including clearing, grading, and excavation that result in the disturbance of one acre or more of total land area. This general permit also covers activities that disturb less than one acre of total land area that is part of a larger common plan if the larger common plan will ultimately disturb one acre or more of total land area. This general permit covers all areas of the State except for discharges in or to state waters classified by DOH as "class 1, inland waters," "class AA, marine waters," and some other restricted areas. For these state waters, an individual NPDES permit is required. (§11-55-04; 11-55-34.02; Appendix C)</p> <p><u>-NPDES Individual Permit:</u> For discharges of stormwater associated with construction activities that result in the disturbance of one acre or more of total land area that do not qualify for a general permit because they affect "class 1, inland waters" or "class AA, marine waters," a NPDES Individual Permit is required. (§11-55-04; §11-55-15)</p>
Chapter 149A, HRS Hawaii Pesticides Law  Chapter 4-66, HAR Pesticides	DOA	<p>-it is unlawful for a person to use any pesticide in a manner inconsistent with its label; to use, store, transport, or discard any pesticide in a manner that would have unreasonable adverse effects on the environment; to use or apply restricted use pesticides unless the person is a certified pesticide applicator or under the direct supervision of a certified pesticide applicator; or to fill with water, through a hose, pipe, or other similar transmission system, any tank, implement, apparatus, or equipment used to disperse pesticides, unless the transmission system is equipped with an air gap or a reduced pressure principle backflow device meeting the requirements under §340E-2, HRS. (§149A-31)</p> <p>-no pesticide shall be stored, displayed, place for sale or transported where food and food containers, feed, water for human or animal consumption, or any other items are likely to become contaminated and may create a hazard or cause injury to humans, vegetation, crops, livestock, wildlife, beneficial insects and aquatic life (§4-66-54)</p> <p>-an applicator applying restricted use pesticides shall be certified as a commercial pesticide applicator or a private pesticide applicator (§4-66-56)</p> <p>-Category 3 commercial pesticide applicator certification is necessary for persons using or supervising the use of restricted use pesticides to control pests of ornamental trees, shrubs, flowers, and turf (§4-66-56(b)(3))</p> <p>- Category 5 commercial pesticide applicator certification is necessary for persons using or supervising the use of restricted use pesticides purposefully applied to standing or running water (§4-66-56(b)(5))</p> <p>- Category 11 commercial pesticide applicator certification is necessary for persons using or supervising the use of restricted use pesticides applied through an irrigation system (§4-66-56(b)(11))</p>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 11-62, HAR Wastewater Systems	DOH	<p>-DOH seeks to advance the use of recycled water and wastewater sludge consistent with public health and safety and environmental quality. DOH acknowledges that when properly treated and used, all recycled water and wastewater sludge are valuable resources with environmental and economic benefits and can be used to conserve the State's precious resources. The director acknowledges that the most highly treated recycled water and exceptional quality wastewater sludge can be used for a wide variety of applications with the appropriate restrictions when best management practices and other requirements of this chapter are met. (§11-62-01)</p> <p>-prohibits the discharge of wastewater to the ground, except for R-1 water from a recycled water system that is implementing BMPs approved by the director. The burden of proof is on the recycled water system's owner or operator to demonstrate that the spill qualifies for this exception (§11-62-06(g)(6))</p> <p>-treatment works producing R-1 or R-2 water for recycled water systems shall provide continuous disinfection of the effluent and meet daily fecal coliform and continuous turbidity monitoring requirements as specified (§11-62-26)</p> <p>-no recycled water system shall be constructed, used, or modified without written approval by the director; in reviewing recycled water systems and in addition to these rules, the director shall be guided by the Reuse Guidelines (§11-62-27)</p> <p>-before using recycled water, the owner of the recycled water system shall submit to the director for approval an engineering report which clearly identifies all BMPs to be implemented, an irrigation use plan, overflow control plan, management plan, public information and access plan, labeling plan, employee training plan, vector control plan, and groundwater monitoring plan (§11-62-27)</p>
Chapter 183C, HRS Conservation District  Chapter 13-5, HAR Conservation District	DLNR	<p>-the legislature finds that lands within the state land use conservation district contain important natural resources essential to the preservation of the State's fragile natural ecosystems and the sustainability of the State's water supply (§183C-1)</p> <p>-DLNR shall establish zones within the conservation district and permitted uses within those zones (§183C-4)</p> <p>-DLNR regulates land use in the conservation district through the issuance of permits (CDUPs) (§183C-6)</p> <p>-5 subzones within the conservation district are established by DLNR: protective (P), limited (L), resource (R), General (G), and Special (S). (§13-5-10)</p>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
<p>Chapter 343, HRS Environmental Impact Statements</p> <p>Chapter 11-200, HAR Environmental Impact Statement Rules</p>	OEQC	<p>-states that an environmental review process will integrate the review of environmental concerns with existing planning processes of the State and counties and alert decision makers to significant environmental effects which may result from the implementation of certain actions (§343-1)</p> <p>-the following actions, among others, shall trigger an EA: (1) use of State or county lands or funds; (2) use within the conservation district; (3) use within a shoreline setback area; (4) use within the Waikiki special district; (5) use within an historic site; (6) certain amendments to county general plans; and (7) reclassification of conservation lands (§343-5)</p> <p>-provides agencies and persons with procedures, specifications of contents of EAs and EISs, and criteria and definitions of statewide application ((§11-200-1)</p>
Chapter 205A, HRS Coastal Zone Management	OP-CZM	<p>-establishes coastal zone management objectives and policies (§205A-2)</p> <p>-the objectives and policies of the chapter and any guidelines enacted by the legislature shall be binding upon actions within the coastal zone management area by all agencies, within the scope of their authority (§205A-4(b))</p> <p>-all agencies shall ensure that their rules comply with the objectives and policies of the chapter (§205A-5)</p> <p>-establishes special controls on developments within an area along the shoreline to avoid permanent losses of valuable resources (§205A-21, -26).</p> <p>-no development is allowed in any county within these special management areas (SMAs) without a permit (§205A-28). The county planning departments administer the SMA permit process.</p> <p>-no development is approved unless it is found that the development, among other things, will not have any substantial adverse environmental or ecological effect; is consistent with the objectives, policies, and SMA guidelines of the chapter; and is consistent with the county general plan and zoning. (§205A-26)</p>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
<p>Chapter 15-150, HAR Special Management Areas/Shoreline Areas</p> <p>Chapter 12-202, MCC SMA Rules for Maui Planning Commission</p> <p>Chapter 12-302, MCC SMA Rules for Molokai Planning Commission</p> <p>Chapter 12-402, MCC SMA Rules for Lanai Planning Commission</p> <p>Chapter 25, ROH Special Management Area</p> <p>Rule 9, Hawaii County Planning Commission</p> <p>SMA Rules and Regulations of the County of Kauai</p>	<p>OP for SMAs of CDDs</p> <p>County planning commissions</p>	<p>-provides guidelines for use by OP for the review of developments proposed in the SMA of community development districts (CDDs); development in the SMA of CDDs must be consistent with the objectives and policies established in Section 205A-2, HRS (§15-150-6)</p> <p>-county rules for administering the SMA permits and shoreline setback provisions within each county/island</p>
<p>Chapter 342D, HRS Water Pollution</p>	<p>DOH</p>	<p>-prohibits discharge of any pollutant into State waters</p> <p>-allows DOH to institute a civil action for injunctive relief to prevent violation of State water quality standards (§342D-11)</p> <p>-under the statute, DOH may request the court to order nonpoint source polluters to implement all required management measures</p>



## **Roads, Highways, and Bridges**

### **Management Measure for Planning, Siting, and Developing Roads and Highways**

Plan, site, and develop roads and highways to:

- (1) Protect areas that provide important water quality benefits or are particularly susceptible to erosion or sediment loss;**
- (2) Limit land disturbance such as clearing, grading and cut and fill to reduce erosion and sediment loss; and**
- (3) Limit disturbance of natural drainage features and vegetation.**

### **Responsible Agencies and Authorities**

In Hawaii, roads and highways are usually developed by the State or county government, with State, county and/or Federal funds, or by private entities as part of a subdivision or other large development. Privately-constructed roads and highways usually must meet standards set by the State and/or county because they are transferred over to the State or county as public roadways upon completion of construction. (In Hawaii, the county is the most local form of government - the Hawaii State Constitution does not provide for any other form of municipalities - so local roads are county roads.) Privately-constructed roads that remain private must still comply with counties requirements for erosion and sediment control, stormwater management, drainage, zoning and subdivisions.

Typically, prospective development, including roads, highways and bridges, must undergo numerous permit processes, with their associated environmental assessments and extensive public review. Chapter 343, HRS, and Chapter 11-200, HAR, both about the Environmental Impact Statement law, require the preparation of an EA and/or EIS for proposed activities that trigger the environmental review process. Some of these trigger conditions are as follows: (1) use of State or county lands or funds; (2) use within the conservation district; (3) use within a shoreline setback area; (4) use within the Waikiki special district; (5) use within an historic site; (6) reclassification of conservation lands; and (7) certain amendments to a county general plan.

Construction of roads, highways and bridges will normally trigger the Chapter 343, HRS, process because of the use of State or county funds and/or lands. In determining whether an action may have a significant effect on the environment, the approving State or county agency shall consider every phase of a proposed action, the expected consequences, both primary and secondary, and the cumulative as well as the short-term and long-term effects of the action. In most instances, an action will be determined to have a significant effect on the environment if it detrimentally affects water quality or affects an environmentally sensitive area such as a flood plain, beach, erosion-prone area, estuary, fresh water, or coastal waters. Mitigation measures must be identified to address these detrimental effects.

Chapter 19-127.1, HAR, administered by DOT, addresses the design, construction and maintenance of public streets and highways. It applies to all persons and agencies who design, construct, and maintain facilities which are, or are intended to become, public streets and highways in the State. The chapter establishes design, construction and maintenance guidelines that should be followed in the construction, reconstruction, and maintenance of all highways, streets, or roads undertaken either by

State or county authorities or by individuals intending to dedicate the facilities to governmental authorities.

The Hawaii DOT Standard Specifications are used for highway design and construction for Hawaii's transportation infrastructure. The current specifications in use are dated 1994, though many sections (technical provisions) have been revised since then. The updated 2005 *Standard Specifications for Road and Bridge Construction* requires written, site-specific BMPs describing activities to minimize water pollution and soil erosion into State waters, drainage or sewer systems, and a plan indicating location of the BMPs, areas of soil disturbance, areas where vegetative practices are to be implemented, and drainage patterns. It requires contractors to follow guidelines in the *Construction Best Management Practices Field Manual* (dated January 2008) in developing, installing and maintaining BMPs for all projects. The BMPs included in this manual focus on the areas of site management, erosion control, and sediment control.

Chapter 23, HCC, provides requirements for street design in subdivisions in Hawaii County. It requires the location, width, and grade of a street to conform to the County general plan and to be considered in its relation to existing and planned streets, to topographical conditions, to public convenience and safety, and to the proposed use of land to be served by the street. When an existing street adjacent to or within a tract is not of the width required by this chapter, additional rights-of-way shall be provided at the time of subdivision. Preliminary and final plats must show the location of lots, streets, water mains, and storm drainage systems, and are subject to technical review by the county director of public works, State DOH, and district engineer for DOT when the subdivision involves State highways. The ordinance also provides requirements for dedicable streets and standards for non-dedicable streets. Subdivisions, including roads, must maintain pre-development runoff conditions. Pre- and post-development runoffs are calculated using the County "Storm Drainage Standard." The minimum criteria used for runoff calculations are a 1-hour, 10-year storm event. This requirement inhibits conveyance of development runoff into natural drainage systems. Chapter 22, HCC, "County Streets," defines and regulates construction within a county street. It states that no driveway approach shall interfere with the proper runoff of waters into, or passage of waters through existing drainage culverts, swales, ditches, watercourses, defiles, or depressions.

Maui County's subdivision ordinance, Chapter 18, MCC, is similar to Hawaii County's. It specifies minimum standards for roads. In addition, there are specific requirements for roadside swales in order to prevent erosion, and roadway drainage systems in order to protect and preserve existing natural drainage ways and to assure that waters are drained from the subdivision in a manner that will not cause erosion outside of the subdivision to any greater extent than would occur in the absence of the subdivision and improvements.

Kauai's subdivision ordinance, Chapter 9, KCC, requires that all street design and improvements be constructed in accordance with DPW standards. All streets shall be designed to preserve natural features and topography and minimize need for protection of the natural environment; to require the creation of the minimum feasible amount of land coverage and the disturbance to the soil; to create conditions of proper drainage; and to provide for proper landscaping. All private streets must conform to the requirements of public streets. Chapter 9, KCC, also provides general standards for storm

drainage, which include protecting natural drainage channels and assuring that waters drained from a subdivision do not generate more pollution than would occur in the absence of the subdivision or cause erosion outside of the subdivision.

The subdivision ordinance for the City and County of Honolulu, Chapter 22, ROH, also provides standards for roads within subdivisions. Furthermore, it states that no street or roadway in any subdivision or consolidation which has not been laid out, improved and approved in conformity the subdivision regulations shall be taken over, received by dedication or otherwise accepted as public highways.

Generally, all development within the counties must conform to the policies outlined in the county general plans and specific community development plans. The county general plans provide a coordinated set of guidelines within each county for decision-making regarding future growth and development and protection of natural and cultural resources. The general plans also guide revisions and updates to the county codes. They are given the effect of law through adoption by the respective county councils. Generally, all the county general plans have policies related to protecting the county's natural resources and minimizing adverse effects resulting from the inappropriate location, use, or design of sites, structures and roads; protecting wetlands and riparian areas; and designing drainage systems to minimize polluted runoff, retain streambank vegetation, and maintain habitat and aesthetic values.

County general plans are implemented through the specific community development plans, budgeting and CIPs guided by the goals, objectives and policies of the general plans and community development plans, county laws amended to be consistent with the intent of the general plan components, and approval or disapproval of developments and projects seeking zoning and other development approvals based on how they support the visions expressed in the general plans. The county planning departments prepare annual reports to monitor progress towards achieving general plan goals, objectives and policies. The annual reports are submitted to the mayors and county councils for review. General plans are subject to periodic review and amendment, as specified by county procedures, with significant opportunities for input by the public.

All counties have ordinances that provide for cluster development and flexible design standards, though these are not well-publicized. While it appears that economics may be the driving factor in the development of these provisions, since clustering results in a cost savings with respect to infrastructure, these ordinances may also allow for innovative stormwater management techniques, reduced street and sidewalk widths, and other management measures to attenuate runoff from developments. While these ordinances do not explicitly promote the minimizing of impervious surfaces, they may permit the use of pervious pavements and other management measures that are not currently allowed under regular zoning and subdivision provisions.

Three of the four counties (City and County of Honolulu, Kauai, and Maui) have updated their grading and grubbing ordinances to incorporate minimum BMPs. Generally, these ordinances include similar language that states "regardless of whether a permit is required...or an exemption.... is applicable, all grading, grubbing and stockpiling activities shall incorporate BMPs to the maximum extent practicable

to prevent damage by sedimentation to streams, watercourses, natural areas, and the property of others.” The minimum BMPs relate to drainage, vegetation, erosion control, and sediment control, among other things, and require phasing and limiting areas of disturbance, and vegetative stabilization. The ordinances provide for the adoption of a BMP manual. The remaining county, Hawaii County, is currently in the process of revising its grading ordinance to make it consistent with the other counties.

Kauai County adopted a new drainage ordinance in 2001. It established new drainage principles and policies through the adoption of a Storm Water Runoff System Manual. It applies to all lands in Kauai and to all stormwater facilities constructed within the County rights-of-way, to easements dedicated to public use, and to privately-owned systems that are part of the required infrastructure improvements for a subdivision. In Hawaii County, all urban developments (with very few exceptions) have been mandated to maintain pre-development runoff conditions. Pre- and post- development runoffs are calculated using the County “Storm Drainage Standard.” The minimum criteria used for runoff calculations are a 1-hour, 10-year storm event. This requirement inhibits conveyance of development runoff into natural drainage systems. Maui County Department of Public Works is in the process of revising its drainage rules to incorporate stormwater pollution control measures and BMPs. The changes are based on the City and County of Honolulu’s ordinance (Chapter 14, ROH) and will include a new section addressing storm water quality. The new requirements will apply to all residential, commercial, public facilities and transportation development projects requiring building permits. BMPs must either detain stormwater for a length of time that allows pollutants to settle, or use filtration or infiltration methods.

The counties also administer the SMA permit process. SMAs are a subset of the State’s coastal zone and include all lands and waters beginning at the shoreline and extending inland or *mauka* at least 100 yards. Many new developments fall within this more sensitive coastal area, and the SMA permit process ensures that these developments are consistent with Hawaii’s coastal zone management program objectives and policies. Although each county has its own procedures for administering SMA permits, the requirements and review processes for SMA applications are similar for all four counties and are based on Chapter 205A-26, HRS (“Special management area guidelines”). Each county requires a permit applicant to describe the proposed development in terms of the CZM objectives and policies.

If development activity will disturb one acre or more of total land area, then a NPDES permit is required from DOH. This permit process is described in Chapter 11-55, HAR, “Water Pollution Control.” A County grading permit is required for any grading and grubbing work before a NPDES permit can be issued. The grading permit allows the grading, while the NPDES permit regulates stormwater runoff from the construction site.

DOH has general regulatory authority over water pollution control.

**Implementation Tools**

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 19-127.1, HAR Design, Construction, and Maintenance of Public Streets and Highways	DOT	<p>-chapter applies to all persons and agencies who design, construct, and maintain facilities which are, or are intended to become, public streets and highways in the State. Existing public streets and highways which do not conform to the guidelines set forth in this chapter shall not be affected (as of 1994), but any replacements or upgrading made to these streets and highways, or major portions thereof, shall conform to this chapter. (§19-127.1-1)</p> <p>-design practices for which guidelines are not expressly established in this chapter shall conform to the highway design, street operational practices and street light standards set forth in the ANSI standard, AASHTO guides and the manual (Hawaii Statewide Uniform Design Manual for Streets and Highways and Standard Plans). (§19-127.1-3)</p> <p>-design guidelines established in this chapter should be followed as closely as is practicable in the construction and reconstruction of all highways, streets, or roads undertaken either by state or county authorities in the state or by individuals intending to dedicate the facilities to governmental authorities. (§19-127.1-4)</p> <p>-construction and maintenance guidelines established in this chapter should be followed as closely as is practicable in the construction, reconstruction and maintenance of all highways, streets, or roads undertaken either by state or county authorities in the state or by individuals intending to dedicate the facilities to governmental authorities. (§19-127.1-12)</p>
<i>Standard Specifications for Road and Bridge Construction</i> (2005)	DOT	<p>-Section 107.13 relates to pollution control and protection of archeological, historical, and burial sites. It specifies that contractors must “exercise precaution to prevent silting and pollution of oceans, rivers, streams, lakes, and reservoirs and other bodies and conveyances of water,” following the guidelines in CCH’s “Best Management Practices Manual for Construction Sites in Honolulu”, in developing, installing, and maintaining BMPs for all projects; CCH’s “Rules for Soil Erosion Standards and Guidelines” for all projects on Oahu; and appropriate soil erosion guidelines for Maui, Kauai, and Hawaii projects.</p> <p>-Section 201 addresses clearing and grubbing. It requires that all BMP measures be in place before clearing and grubbing start (201.03(B)). It also specifies how clearing and grubbing should take place to preserve and protects trees within established Tree Protection Zones.</p>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
<p><i>Standard Specifications for Road and Bridge Construction</i> (2005), continued</p>	<p>DOT</p>	<p>-Section 209 provides specifications about temporary water pollution, dust, and erosion control. It requires a written site-specific plan describing activities to minimize water pollution and soil erosion into State waters, drainage or sewer systems. Plan should indicate location of water pollution, dust and erosion control devices, details of BMPs to be installed or utilized; areas of soil disturbance in cut and fill; materials storage areas; and areas where vegetative practices are to be implemented. (209.03(A)(2)) Requires project to follow guidelines in the <i>Construction Best Management Practices Field Manual</i> (dated January 2008) in developing, installing and maintaining BMPs for all projects. Requires projects to follow CCH's "Rules for Soil Erosion Standards and Guidelines" for all projects on Oahu, and the respective soil erosion guidelines for Maui, Kauai, and Hawaii projects.</p> <p>-Section 209.03(B) specifically addresses construction requirements. It states the following:</p> <ul style="list-style-type: none"> <li>• Do not begin field work until rain gauge is installed and site specific BMPs are in place.</li> <li>• Modify and resubmit plans to correct conditions that develop during construction which were unforeseen during the design and pre-construction phases.</li> <li>• Limit maximum surface area of earth material exposed at any time to 300,000 square feet.</li> <li>• Protect temporarily or permanently disturbed soil surface from rainfall impact, runoff and wind before end of workday.</li> <li>• Protect exposed or disturbed surface area with mulches, grass seeds or hydromulch.</li> <li>• BMP measures shall be in place and operational (such as shaping the earthwork to control and direct the runoff) at the end of workday.</li> <li>• Install and maintain either or both stabilized construction entrances and wheel washes to minimize tracking of dirt and mud onto roadways.</li> <li>• Protect ditches, channels, and other drainageways leading away from cuts and fills at all times.</li> <li>• Cover exposed surface of materials completely with tarpaulin or similar device when transporting aggregate, soil, excavated material or material that may be source of fugitive dust.</li> <li>• Properly maintain all BMP features on a specified scheduled.</li> </ul>
<p><i>Construction Best Management Practices Field Manual</i> (January 2008)</p>	<p>DOT</p>	<p>-purpose of this manual is to provide guidance on BMP installation and maintenance procedures for construction activities.</p> <p>-intended for use by DOT Highways staff involved in construction projects (contract, in-house, maintenance, and encroachment) and consultants or contractors involved in projects which require work within DOT Highways rights-of-way or projects which connect or discharge to DOT Highways MS4 system on Oahu.</p>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
<i>Construction Best Management Practices Field Manual</i> (January 2008), continued	DOT	The BMPs included in this manual focus on the areas of site management, erosion control, and sediment control. Site Management (SM) BMPs include preventative measures implemented during the planning or construction stage of a project. They are established practices and procedures to control potential pollutants at their source. Erosion Control (EC) BMPs are devices installed or constructed by the contractor on disturbed soil to protect the ground surface from erosion due to wind, rain, or runoff. Sediment Control (SC) BMPs are measures to intercept and detain sediment-laden runoff prior to discharge off-site or to the storm sewer system. These devices detain runoff to promote infiltration and/or sedimentation.

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 23, HCC Subdivision	Hawaii County	<p>-provides requirements for street design in subdivisions, establishes minimum rights-of-way and pavement widths</p> <p>-the creation of a street shall be in compliance with requirements for subdivision (§23-39)</p> <p>-the location, width, and grade of a street shall conform to the County general plan and shall be considered in its relation to existing and planned streets, to topographical conditions, to public convenience and safety, and to the proposed use of land to be served by the street. Where the location is not shown in the County general plan, the arrangement of a street in a subdivision shall either:</p> <p style="padding-left: 40px;">(a) Provide for the continuation or appropriate projection of existing principal streets in surrounding areas; or</p> <p style="padding-left: 40px;">(b) Conform to a plan for the neighborhood which has been approved or adopted by the director to meet a particular situation where topographical or other conditions make continuance or conformance to existing streets impractical. (§23-40)</p> <p>-when an existing street adjacent to or within a tract is not of the width required by this chapter additional rights-of-way shall be provided at the time of subdivision. (§23-46)</p> <p>-no private street or alley shall be approved unless they are improved as specified under the chapter. (§23-53)</p> <p>-provisions for sewage disposal, conceptual drainage and flood control must be provided with the preliminary plat. The drainage map shall include the approximate location of areas subject to inundation or storm water overflow and all areas covered by waterways, including ditches, gullies, streams and drainage courses within or abutting the subdivision. (§23-66)</p> <p>-within one year after tentative approval of the preliminary plat by the director, the subdivider shall have the subdivision surveyed and shall prepare a final plat which conforms with the preliminary plat as tentatively approved. The subdivider shall submit to the director eight copies of the final plat, prepared in conformity with these regulations, together with four additional copies of a general layout map, which was originally attached to the construction drawings and specifications (where required) showing the location of lots, streets, water mains and storm drainage systems. (§23-72)</p> <p>-within 30 days after receipt of the final plat and other data, the director shall submit copies of the final plat and other data to the director of public works, manager, State department of health and district engineer when the subdivision involves State highways for review of the final plat with the director. (§23-73)</p>
Chapter 23, HCC Subdivision, continued	Hawaii County	<p>-the owner of the subdivision shall submit an agreement to the director that specifies that the subdivider shall make, install, and complete all required improvements and utilities to the satisfaction of the director of public works and when appropriate, the department of water supply. (§23-82)</p> <p>-provides requirements for dedicable streets. (§23-86)</p> <p>-provides standards for non-dedicable streets and provides that a maintenance escrow fund be established by the subdivider. (§23-87)</p>



Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 23, HCC Subdivision	Hawaii County	<p>-subdivider shall construct a storm water disposal system to contain runoff caused by the subdivision improvements within the boundaries of the subdivision, up to the expected one-hour, ten year storm event, as shown in Plate 1 of DPW’s “Storm Drainage Standards”, dated October 1970, or any approved revisions, unless those standards specify a greater recurrence interval, in which case, the greater interval shall be used. The amount of expected runoff shall be calculated according to DPW’s “Storm Drainage Standards”, dated October 1970, or any approved revisions thereto, or by any nationally-recognized method meeting with the approval of the director of public works. Runoff calculations shall include the effects of all required subdivision improvements, and lot improvements that may be allowed by existing zoning. Storm water shall be disposed into drywells, infiltration basins, or other infiltration methods. The subdivision shall not alter the general drainage pattern above or below the subdivision. Subdivider shall also comply with the requirements of Chapter 27, HCC (§23-92).</p>
Title 18, MCC Subdivisions	Maui County DPW	<p>-the location, width and grade of all streets shall conform to the general plan and shall be considered in their relation to existing and planned streets, to topographical conditions, to public convenience and safety, and in their appropriate relation to the proposed use of land to be served by such streets. (§18.16.040)</p> <p>-when existing streets within, adjacent to, or providing access to a subdivision do not meet county width requirements, additional rights-of-way shall be provided as follows:</p> <p>A. Where substandard existing streets are within the boundaries of a subdivision, the subdivider shall provide additional rights-of-way according to county standards for those portions of the substandard streets within the subdivision;</p> <p>B. Where substandard existing streets are adjacent to a subdivision, the subdivider shall provide additional rights-of-way for those portions of the streets adjacent to the subdivision such that the distances from the centerlines of the streets to the boundaries of the subdivided lots fronting the streets are equal to one-half of the rights-of-way widths as required by the general plan or county standards. (§18.16.060)</p> <p>-upon a finding by the director that unusual geographical conditions exist in a subdivision, private streets serving no more than three lots may be permitted unless other parts of this title specifically provide otherwise. Private streets shall not be a means for circumventing the need for a standard street. Private streets shall not be dedicated and the county is prohibited from accepting such streets. County services shall be provided at the intersecting public street, and the owners of the private street shall be responsible for its maintenance. Private streets shall be improved to the minimum width specified by ordinance. (§18.16.150)</p>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Title 18, MCC Subdivisions, continued	Maui County DPW	<p>-all swale areas of streets without curb and gutters that exceed five percent in grade shall be planted in grass or designed to prevent erosion according to the standards on file in the department of public works. No open ditches or channels, other than normal roadside swales, shall be permitted within the street right-of-way. Where necessary within the subdivision, drainage ditches and channels shall be designed to meet existing and surrounding conditions; otherwise, the flow should be kept as natural as possible. (§18.20.120)</p> <p>-drainage systems in all subdivisions shall be planned, designed and constructed in accordance with standards of DPW or consistent with generally accepted engineering practices certified by an engineer so as to meet the following: 1. Protect and preserve existing natural drainage ways to the extent feasible; 2. Design a drainage system to be compatible with surrounding conditions; 3. Provide a system by which water within the subdivision will be removed using the natural drainage area where feasible with a minimum disruption to existing drainage patterns and without causing unnecessary harm to adjoining areas; 4. Analyze drainage requirements for each subdivision individually and take every means to insure the ability to subdivide the land within its zoning; 5. Assure that waters are drained from the subdivision in such a manner that they will not cause erosion outside of the subdivision to any greater extent than would occur in the absence of subdivision and improvements thereto; 6. Provide for the crossing of water courses by culverts rather than spanning where possible. (§18.12.130)</p> <p>-where interior drainage systems within an area are improved, a storm drainage system shall be required in all subdivisions within that area where surface runoff cannot be adequately conveyed. (§18.12.130)</p>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 9, KCC Subdivision	Kauai County DPW	<p>-the location and alignment of streets within the subdivision shall conform to the County General Plan and Development Plans proposed by the Planning Commission and adopted by the Council. (§9-2.3)</p> <p>-all streets shall be designed so as to:</p> <ul style="list-style-type: none"> <li>(A) preserve natural features and topography and minimize need for protection of the natural environment;</li> <li>(D) require the creation of the minimum feasible amounts of land coverage and the minimum feasible disturbance to the soil;</li> <li>(F) create conditions of proper drainage; and</li> <li>(G) provide for proper landscaping. (§9-2.3)</li> </ul> <p>-all private streets shall conform to the requirements of the public streets. (§9-2.3)</p> <p>-provides general standards for storm drainage:</p> <ul style="list-style-type: none"> <li>(1) Protect and preserve existing natural drainage channels to the greatest extent feasible.</li> <li>(2) Protect the subdivision from flood hazards.</li> <li>(3) Provide a system by which water within the subdivision will be removed without causing damage or harm to the natural environment, or to property or persons within the subdivision or to adjoining areas.</li> <li>(4) Assure that waters drained from the subdivision are substantially free of pollutants, including sedimentary materials, of any greater quantity than would occur in the absence of subdivision and improvement, in order to protect the water courses and shorelines.</li> </ul>
Chapter 9, KCC Subdivision, continued	Kauai County DPW	<ul style="list-style-type: none"> <li>(5) Assure that waters are drained from the subdivision in a manner that they will not cause erosion outside of the subdivision to any greater extent than would occur in the absence of subdivision and improvement, in order to protect the water courses and shorelines. (§9-2.6)</li> </ul>
Chapter 22, ROH Subdivision of Land	City and County of Honolulu	<p>-planning commission shall adopt rules and regulations governing the subdivision or consolidation of land (§22-3.5(a))</p> <p>-these regulations may include provisions for the minimum right-of-way and pavement widths of streets or roadways within the subdivision to serve the subdivision or to provide access thereto, the extent to which and the manner in which streets and other ways shall be graded and improved, and requirements and standards of construction for street lighting, sidewalks and shoulder areas, curbs, gutters, sanitary sewers, storm drains, flood control, street name signs, traffic signs, and other utilities and facilities to be provided or installed to and within a subdivision or consolidation, as conditions precedent to the approval of a subdivision or consolidation map (§22-3.5(d))</p> <p>-no street or roadway in any subdivision or consolidation which has not been laid out, improved and approved in conformity with this article and the subdivision regulations shall be taken over, received by dedication or otherwise accepted as public highways (§22-3.9)</p>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
2000 Kauai General Plan	Kauai County	<p><u>3.4.2. Relevant Policies related to Watersheds, Streams and Water Quality</u></p> <p>In developing County roads and drainage facilities and in administering the grading, flood control, and drainage regulations, the County of Kauai shall carry out the following policies.</p> <p>(a) <u>New Development</u></p> <p>(4) Reduce average annual post-development sediment in runoff (total suspended solids), so that it is no greater than pre-development levels.</p> <p>(5) Maintain post-development peak runoff rate and average volume at levels similar to pre-development.</p> <p>(6) Work with other government agencies and community organizations to seek ways of reducing all types of nonpoint source water pollutants.</p> <p>(b) <u>Site Development</u>. Plan, design and develop sites to:</p> <p>(6) Protect areas that provide important water quality benefits – i.e., wetlands;</p> <p>(7) Protect areas that are particularly susceptible to erosion and sediment loss – i.e., stream banks;</p> <p>(8) Promote the use of permeable surfaces for driveways and parking and limit increases of impervious areas;</p> <p>(9) Limit land disturbance activities such as clearing and grading, and cut and fill to reduce erosion and sediment loss; and</p> <p>(10) Avoid disturbance of natural drainage features and vegetation.</p> <p>(c) <u>Construction Site Erosion and Sediment Control</u></p> <p>(1) Reduce erosion and, to the extent practicable, retain sediment onsite during and after construction.</p> <p>(2) Prior to land disturbance, prepare and implement an approved erosion and sediment control plan or similar administrative document that contains erosion and sediment control provisions.</p>
2000 Kauai General Plan, continued	Kauai County	<p><u>7.1.5. Relevant Policies related to Regional Highways and Roads</u></p> <p>(a) Use General Plan policies concerning rural character, preservation of historic and scenic resources, and scenic roadway corridors as part of the criteria for long-range highway planning and design. The goal of efficient movement of through traffic should be weighed against community goals and policies relating to community character, livability, and natural beauty.</p> <p>(b) Consider transportation alternatives to increasing the size and capacity of roadways. Alternatives include increased utilization of public transit.</p> <p>(e) Reserve corridors for future roadways as shown on the General Plan Land Use Map. The corridors are conceptual only and are subject to environmental assessment and evaluation of alternative alignments.</p> <p><u>7.1.6 Implementing Actions related to Regional Highways and Roads</u></p> <p>(a) In preparing the Long-Range Land Transportation Plan for Kauai, the State DOT should screen projects in the following ways:</p> <p>(1) Consider County policies about preserving rural character and roadway design and propose alternative transportation improvements.</p>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
<p><i>County of Hawaii General Plan (2005)</i></p>	<p>Hawaii County</p>	<p><u>4.3 Relevant Policies related to Environmental Quality:</u></p> <p>k. require implementation of the management measures contained in Hawaii’s coastal nonpoint pollution control program as a condition of land use permitting;</p> <p><u>13.2.3. Relevant Policies related to Transportation Roadways:</u></p> <p>d. Support the development of programs to identify and improve hazardous and substandard sections of roadway and drainage problems.</p> <p>g. There shall be coordinated planning of Federal, State, and County street systems to meet program goals of the other elements such as historic, recreational, environmental quality, and land use.</p> <p>j. Transportation and drainage systems shall be integrated where feasible.</p> <p>l. adopt street design standards that accommodate, where appropriate, flexibility in the design of streets to preserve the rural character of an area and encourage a pedestrian-friendly design, including landscaping and planted medians;</p> <p>m. develop minimum street standards for homestead and other currently substandard roadways that are offered for dedication to the County to ensure minimal levels of public safety.</p>
<p><i>Maui County 2030 General Plan Update: Countywide Policy Plan (January 2008)</i></p>	<p>Maui County</p>	<p><u>Objective:</u> Provide an effective, affordable and convenient ground transportation system that is environmentally sustainable.</p> <p><u>Policies:</u></p> <p>e. ensure that roadway systems are safe, efficient, and maintained in good condition;</p> <p>g. design new roads and roadway improvements to retain and enhance the existing character and scenic resources of the communities through which they pass;</p> <p>l. provide safer, better looking, and more efficient roadway designs;</p> <p>m. evaluate all alternatives to preserve quality of life before widening roads.</p> <p><u>Objective:</u> Improve and expand the planning and management of transportation systems.</p> <p><u>Policies:</u></p> <p>c. require new developments to contribute their pro-rata share of local and regional infrastructure costs;</p> <p>e. support the revision of roadway design criteria and standards so that roads are compatible with surrounding neighborhoods and the character of rural areas;</p> <p>f. ensure that transportation facilities are built in advance of or concurrent with planned development.</p> <p><u>Objective:</u> Design all developments to be in harmony with the environment and protect each community’s sense of place.</p> <p><u>Policies:</u></p> <p>g. adequately landscape developments and roadways to enhance the urban environment;</p> <p>h. integrate public transit, equestrian, pedestrian, bicycle facilities, and public rights-of-way as design elements in new and existing communities.</p>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
various Development Plans and Sustainable Communities Plans of the City and County of Honolulu	City and County of Honolulu	<p>-Primary Urban Center Development Plan (2004) includes in its guidelines “establish riparian zones for all streams to prevent the encroachment of buildings and structures and to establish and enforce policies for the protection and enhancement of stream habitats and water quality.”</p> <p>-East Honolulu Sustainable Communities Plan (April 1999) states “preserve the aesthetic and biological values of significant streams, wetlands, natural gulches and other drainageways, by providing appropriate setbacks as part of the open space system.”</p> <p>-One of the guidelines in the Koolaupoko Sustainable Communities Plan (August 2000) is to “incorporate erosion control measures and BMPs, as cited in Hawaii’s Coastal Nonpoint Pollution Control Program Management Plan to prevent pollution of wetlands, streams, estuaries, and nearshore waters.”</p> <p>-Koolau Loa Sustainable Communities Plan (October 1999) has several policies related to the protection of wetlands and riparian areas: “minimize soil erosion, runoff of pesticides, fertilizers and other non-point source contaminants into streams, wetlands, and marine habitats with strategies such as stream setbacks, erosion control devices, integrated pest management plans, and revegetation of disturbed areas”; and “where feasible, establish setbacks along rivers, streams, and shoreline areas to preserve these resources and protective buffer zones around biologically sensitive areas to minimize habitat disturbances.”</p>
various Development Plans and Sustainable Communities Plans of the City and County of Honolulu, continued	City and County of Honolulu	<p>-Waianae Sustainable Communities Plan (July 2000) recommends establishing Stream Conservation Corridors for the protection of streams and stream floodplains.</p>
Chapter 19, MCC Zoning	Maui Planning Dept.	<p>-provides for Planned Development on urban zoned lands greater than 3 acres or outside the urban district on lands greater than 10 acres, allowing for greater building densities but retaining not less than 20% of total area in common protected open space; rules specify allowed densities (§19.32)</p> <p>- permits cluster housing developments in order to allow development of housing sites which would otherwise be difficult to develop under conventional county subdivision standards, to allow flexibility in housing types, to encourage innovative site design and efficient open space, and to minimize grading, among other things. Cluster housing may be constructed in all residential and apartment districts, provided minimum land area and density requirements are met. (§19.83)</p> <p>-Maui County limits conversion of areas susceptible to erosion and sediment loss through requirements of specific Project Districts (§19.70 - 19.81). Most of these restrictions are with respect to steeply sloping lands.</p>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 8, KCC Comprehensive Zoning Ordinance	Kauai Planning Dept.	<p>-provides for a Project Development District where the permit process facilitates comprehensive site planning and design on lands greater than one acre in the Commercial, Resort, and Industrial Use districts or lands large enough to qualify for more than ten dwelling units in the Residential, Open or Agricultural districts. (§8-18)</p> <p>-establishes constraint districts to implement the objectives of the six development restriction zones established in its county general plan. Some activities in these districts are prohibited, while others are restricted or require special management measures. These progressive constraint or overlay districts address:</p> <ul style="list-style-type: none"> <li>• Drainage: protect the function of natural and existing watercourses as part of the system for surface water collection and dispersal; and maintain the quality of surface and marine waters (§8-11);</li> <li>• Flood: maintain the characteristics of flood plain areas which contribute to ground water recharge, storm water storage, silt retention, and marine water quality (§8-12);</li> <li>• Shore Areas: regulate development in shore and water areas to protect and maintain physical, biological, and scenic resources (§8-13);</li> <li>• Slope (greater than 20%): minimize erosion and siltation of downstream waters; ensure safety from downstream flooding; and protect ecologic functions (§8-14);</li> <li>• Soils: regulate development on soils that are unstable, have inadequate drainage characteristics, or require abnormal structural solutions because of load bearing or drainage characteristics (§8-15); and</li> <li>• Tsunami: limit development in areas subject to extraordinary ocean wave action (§8-16).</li> </ul>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 25, HCC Zoning	Hawaii Planning Dept.	<p>-provides for Cluster Plan Development, in which exceptions are made to the density requirements of the single-family residential (RS) district on lands greater than two acres so that permitted density of dwelling units contemplated by the minimum building site requirements is maintained on an overall basis and desirable open space, tree cover, recreational areas, or scenic vistas are preserved. (§25-6-20)</p> <p>-provides for Project Districts, which are intended to provide for a flexible and creative planning approach rather than specific land use designations for quality developments on lands greater than 50 acres, establishing a continuity in land uses and designs while providing for a comprehensive network of infrastructural facilities and systems. (§25-6-40)</p> <p>-an application for plan approval for new structures and additions to existing structures shall be accompanied by a site drainage plan under §27-20 approved by the director of public works, where plan approval is required under §25-2-71(a), (c)(2) and (c)(5), (d), (e), or (f). The site drainage plan shall comply with §27-20(a) and (b) and §27-24, and shall include a storm water disposal system to contain runoff caused by the proposed development, within the site boundaries, up to the expected one-hour, ten year storm event, as shown in DPW’s “Storm Drainage Standards,” dated October 1970, or any approved revision, unless those standards specify a greater recurrence interval. (§25-2-72(3))</p>



Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 21, ROH Land Use Ordinance	CCH Planning Dept.	<p>The City and County of Honolulu’s zoning code provides for a variety of special districts which allow clustering and other innovative site planning practices:</p> <ul style="list-style-type: none"> <li>-Country Clusters to encourage the retention of large tracts of open space or agricultural lands which contribute to rural character by clustering dwellings within larger parcels of land (§21-3.60-1);</li> <li>-Flexible Site-Design for Housing to provide for cluster housing and planned development housing, two development options which offer more flexible site design opportunities than conventional subdivisions (§21-8.50);</li> <li>-Cluster Housing allows development of housing sites which would otherwise be difficult to develop under conventional city subdivision standards, allows flexibility in housing types, and encourages innovative site design and efficient open space (§21-8.50-1); and</li> <li>-Planned Development Housing, which allows for higher-density and mixed residential development on large parcels of land, along with innovative site design and efficient open space (§21-8.50-4).</li> </ul> <p>-Cluster and planned development housing are expressly prohibited, without adequate management measures, in areas subject to the following conditions: flooding, poor drainage, unstable subsurface, groundwater or seepage conditions, inundation or erosion by seawater, land slides or similar hazards, and adverse earth or rock formation or topography. (§21-8.50-11)</p> <p>The City and County of Honolulu provides some overlay districts that, while primarily focused on ensuring public safety, also by default restrict siting of development within susceptible natural areas. These include a flood hazard district (§21-9.10), floodway district (§21-9.10-5), flood fringe district (§21-9.10-6), coastal high hazard district (§21-9.10-7), and general floodplain district (§21-9.10-8). In addition, preservation districts are established to preserve and manage major open space and recreational lands and lands of scenic and other natural resource value.</p>
MC-15-4 Rules for the Design of Storm Drainage Facilities in the County of Maui (1995)	Maui County DPW	<p>-In general, natural gullies, waterways, streams and tributaries shall not be replaced with a closed system except at roadway crossings. For natural drainageways with contributory areas greater than 100 acres, the engineer shall determine, dimension and designate the 100 year flooded width as a drainage reserve in the drainage report and on the final subdivision map, if applicable. (§15-04-06(a)(5))</p> <p>-additional storm runoff from a new development shall be disposed of at an appropriate drainage outlet or drainage system so as not to create any additional adverse effects to adjacent or downstream properties (§15-04-06(a)(13))</p>
MC-15-?? (draft) Rules for the Design of Stormwater Treatment Best Management Practices	Maui County DPW	<p>-Maui County DPW is in the process of developing administrative rules to incorporate stormwater pollution control measures and BMP requirements for any development. The new requirements will apply to all residential, commercial, public facilities and transportation development projects requiring building permits. BMPs must either detain stormwater for a length of time that allows pollutants to settle, or use filtration or infiltration methods. Chapters 18, MCC, “Subdivision” and 16.26, MCC, “Building Code” must be amended first to grant the authority for this new proposed administrative rule.</p>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 27, HCC Floodplain Management	Hawaii County DPW	<p>-no building permit, certificate of occupancy, or grading permit shall be issued, no structure shall be occupied, and no development or subdivision shall be approved without the approval of the director of public works with respect to compliance with the provisions of this chapter (§27-14, HCC)</p> <p>-all developments requiring a site drainage plan under §25-2-72(3) shall submit such a plan for review and approval by the director of public works. The site drainage plan shall comply with §27-20(a) and (b) and §27-24, and shall include a storm water disposal system to contain runoff caused by the proposed development, within the site boundaries, up to the expected one-hour, ten year storm event, as shown in DPW's "Storm Drainage Standards," dated October 1970, or any approved revision, unless those standards specify a greater recurrence interval. The amount of expected runoff shall be calculated according to DPW's "Storm Drainage Standards," dated October 1970, or any approved revision, or by any nationally-recognized method meeting with the approval of the director of public works. Runoff calculations shall include the effects of all improvements. (§27-20(e))</p> <p>-storm water shall be disposed into drywells, infiltration basins, or other approved infiltration methods. The development shall not alter the general drainage pattern above or below the development. (§27-20(f))</p> <p>-DPW's "Storm Drainage Standard," October 1970 edition, or latest revision, is incorporated into and made a part of this chapter (§27-26)</p>
Section 14-12, ROH Drainage, Flood and Pollution Control	CCH	<p>-in certain parts of Oahu, no building permit can be issued without approval of the chief engineer as to the adequacy of drainage, considering topographic conditions, rainfall, runoff, land use, depth and width of drainage channels, size of other drainage facilities, and past history of flooding. In these cases, drainage plans for the improvement or construction facilities must be submitted to the chief engineer for approval (§14-12.3 through 14-12.5)</p> <p>-before approval of any subdivision, the chief engineer shall check the subdivision plans against the areas of possible inundation in the watershed areas described in §14-12.3. Any lot wholly or partially within the "possible flood area" must be noted as such on the subdivision map. The developer shall pay the entire cost of the drainage facilities to satisfy the anticipated drainage requirements (§14-12.9)</p> <p>-the chief engineer may require the construction of permanent detention or retention drainage structures or other engineering control facilities to contain or divert storm water runoff to satisfy the anticipated drainage requirement of all surface waters which may flow through or over the proposed subdivision, or to meet any conditions of the city's NPDES permit. (§14-12.9)</p>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Section 1 of Ordinance No. 778, A Bill for an Ordinance to Establish a New Article 16 in Chapter 22, KCC, Relating to the Establishment of Drainage Principles and Policies through the Adoption of a Storm Water Runoff System Manual, adopted 11/16/2001.	Kauai	-establishes new drainage principles and policies through the adoption of a Storm Water Runoff System Manual. It applies to all lands on Kauai and to all stormwater facilities constructed within the County rights-of-way, to easements dedicated to public use, and to privately-owned systems that are part of the required infrastructure improvements for a subdivision. The ordinance requires: maintenance of pre-development flow rates for developments to mitigate an increase in storm runoff as a results of construction of structures, roadways, and other impermeable surfaces, regulation of illicit discharges, minimizing of pollutants into streams by providing BMPs for erosion and sediment control for construction work, and establishment of hydrological and hydraulic methodology and criteria design for drainage systems for more frequent storms.
Chapter 22, HCC County Streets	Hawaii County DPW	-defines and regulates construction within a county street -repair, restoration or replacement of County streets, highways and sidewalks shall comply with applicable specifications and plans on file in the department of public works.(§22-4.4 (k)) -no driveway approach shall interfere with the proper runoff of surface waters into, or passage of waters through existing drainage culverts, swales, ditches, watercourses, defiles, or depressions. When in the construction of a driveway approach, the proper runoff of surface waters and other waters require the construction of a drainage structure other than a swale, such drainage structure shall be designed by an engineer and subject to the approval of the director. (§22-4.9(3))
Chapter 20.08, MCC Soil Erosion and Sedimentation Control	Maui County DPW	-all grading, grubbing and stockpiling activities shall provide BMPs to prevent damage by sedimentation to streams, watercourses, natural areas, and the property of others (§20.08.035) -requires permit for grading, grubbing or stockpiling (§20.08.040)
<i>Construction Best Management Practices (BMPs) for the County of Maui (May 2001)</i>	Maui DPW	-contains sections on erosion control planning, guidelines for the preparation of the erosion and sediment control plan, and BMP details and specifications. BMPs included are: surface roughening, temporary gravel construction entrance/exit, seeding, temporary diversions, grass-lined channels, temporary slope drains, level spreader, outlet stabilization structure, mats, nets and blankets, mulching, preservation of existing vegetation, protection of stockpiles, construction road stabilization, temporary excavated drop inlet protection, temporary fabric drop inlet protection, temporary block and gravel drop inlet protection, sod drop inlet protection, temporary sediment trap, sediment basin, sediment fence, dust control, good neighbor barriers, check dam, solid waste management, concrete waste management, and vehicle fuel and maintenance management. Under each BMP, information is provided on its purpose and applicability, planning considerations, construction specifications, and maintenance.
Chapter 22-7, KCC Grading, Grubbing and Stockpiling	Kauai County DPW	-requires permit for grading, grubbing or stockpiling (§22-7.8) -all grading, grubbing and stockpiling activities shall incorporate BMPs to prevent damage by sedimentation to streams, watercourses, natural areas, and the property of others (§22-7.5) -all disturbed areas shall be stabilized with erosion and sediment control measures

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
<i>Interim Construction Best Management Practices (BMPs) for Sediment and Erosion Control for the County of Kauai (April 2004)</i>	Kauai County DPW	-contains sections on erosion control planning, guidelines for the preparation of the erosion and sediment control plan, and BMP details and specifications, similar to Maui County's BMP manual.
Chapter 10, HCC Soil Erosion and Sediment Control	Hawaii County DPW	-requires permit for grading and grubbing of land, and stockpiling of material in excess of 500 cubic yards. -all grading, grubbing and stockpiling permits and operations must conform to erosion and sedimentation control standards and guidelines (§10-26) Hawaii County is currently in the process of revising its grading ordinance to make it consistent with the other counties.
Sections 14-13 -- 14-16, ROH Grading, Soil Erosion and Sediment Control	City and County of Honolulu	-requires permit for grading, grubbing or stockpiling (§14-14.1) -specifies conditions and special requirements of permits (§14-15) -establishes penalties for violations (§14-16)
Chapter 11-55, HAR Water Pollution Control	DOH	- <u>NPDES General Permit</u> : The NPDES General Permit Authorizing Discharges of Storm Water Associated with Construction Activity covers discharges of stormwater runoff associated with construction activities, including clearing, grading, and excavation that result in the disturbance of one acre or more of total land area. This general permit also covers activities that disturb less than one acre of total land area that is part of a larger common plan if the larger common plan will ultimately disturb one acre or more of total land area. This general permit covers all areas of the State except for discharges in or to state waters classified by DOH as "class 1, inland waters," "class AA, marine waters," and some other restricted areas. For these state waters, an individual NPDES permit is required. (§11-55-04; 11-55-34.02; Appendix C) - <u>NPDES Individual Permit</u> : For discharges of stormwater associated with construction activities that result in the disturbance of one acre or more of total land area that do not qualify for a general permit because they affect "class 1, inland waters" or "class AA, marine waters," a NPDES Individual Permit is required. (§11-55-04; §11-55-15)

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 11-54, HAR Water Quality Standards	DOH	<p>-defines classifications of water uses. The objective of “class 1, inland waters” is that they remain in their natural state as nearly as possible with an absolute minimum of pollution from any human-caused source. Waste discharge into these waters is prohibited. Any conduct that results in a demonstrable increase in levels of point or nonpoint source contamination in class 1 waters is prohibited. Class 1 waters include all standing and/or flowing waters, and elevated and/or low wetlands: (i) within the natural reserves, preserves, sanctuaries, and refuges established by DLNR under Chapter 195, HRS, or similar reserves for the protection of aquatic life; (ii) in national and state parks; (iii) in state or federal fish and wildlife refuges; (iv) which have been identified as a unique or critical habitat for threatened or endangered species by the USFWS; and (v) in protective Conservation District subzones designated under Chapter 13-5, HAR. (§11-54-3(b)(1))</p> <p>-Similarly, the objective of “class AA, marine waters” is that these waters remain in their natural pristine state as nearly as possible with an absolute minimum of pollution or alteration of water quality from any human-caused source or actions. Approximately 63% of Hawaii’s coastline abuts Class AA marine waters. (§11-54-3(c)(1))</p>
Chapter 343, HRS Environmental Impact Statements  Chapter 11-200, HAR Environmental Impact Statement Rules	OEQC	<p>-states that an environmental review process will integrate the review of environmental concerns with existing planning processes of the State and counties and alert decision makers to significant environmental effects which may result from the implementation of certain actions (§343-1)</p> <p>-the following actions, among others, shall trigger an EA: (1) use of State or county lands or funds; (2) use within the conservation district; (3) use within a shoreline setback area; (4) use within the Waikiki special district; (5) use within an historic site; (6) certain amendments to county general plans; and (7) reclassification of conservation lands (§343-5)</p> <p>-provides agencies and persons with procedures, specifications of contents of EAs and EISs, and criteria and definitions of statewide application ((§11-200-1)</p>
Chapter 15-150, HAR Special Management Areas/Shoreline Areas  Chapter 12-202, MCC SMA Rules for Maui Planning Commission  Chapter 12-302, MCC SMA Rules for Molokai Planning Commission  Chapter 12-402, MCC SMA Rules for Lanai Planning Commission  Chapter 25, ROH Special Management Area	<p>OP for SMAs of CDDs</p> <p>County planning commissions</p>	<p>provides guidelines for use by OP for the review of developments proposed in the SMA of community development districts (CDDs); development in the SMA of CDDs must be consistent with the objectives and policies established in Section 205A-2, HRS (§15-150-6)</p> <p>-county rules for administering the SMA permits and shoreline setback provisions within each county/island</p>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Rule 9, Hawaii County Planning Commission  SMA Rules and Regulations of the County of Kauai	County planning commissions	-county rules for administering the SMA permits and shoreline setback provisions within each county/island
Chapter 205A, HRS Coastal Zone Management	OP-CZM	<p>-establishes coastal zone management objectives and policies (§205A-2)</p> <p>-related policies include: ensure that new developments are compatible with their visual environment by designing and locating such developments to minimize the alteration of natural landforms and existing public views to and along the shoreline; encourage those developments that are not coastal dependent to locate in inland areas; promote water quantity and quality planning and management practices that reflect the tolerance of fresh water and marine ecosystems and maintain and enhance water quality through the development and implementation of point and nonpoint source water pollution control measures; control development in areas subject to storm wave, tsunami, flood, erosion, hurricane, wind, subsidence, and point and nonpoint source pollution hazards; ensure that developments comply with requirements of the Federal Flood Insurance Program; use, implement, and enforce existing law effectively in managing present and future coastal zone development; facilitate timely processing of applications for development permits and resolve overlapping or conflicting permit requirements; communicate the potential short and long-term impacts of proposed significant coastal developments early in their life cycle and in terms understandable to the public to facilitate public participation in the planning and review process; locate new structures inland from the shoreline setback to conserve open space, minimize interference with natural shoreline processes, and minimize loss of improvements due to erosion (§205A-2)</p> <p>-the objectives and policies of the chapter and any guidelines enacted by the legislature shall be binding upon actions within the coastal zone management area by all agencies, within the scope of their authority (§205A-4(b))</p> <p>-all agencies shall ensure that their rules comply with the objectives and policies of the chapter (§205A-5)</p> <p>-establishes special controls on developments within an area along the shoreline to avoid permanent losses of valuable resources (§205A-21, -26).</p> <p>-no development is allowed in any county within these special management areas (SMAs) without a permit (§205A-28). The county planning departments administer the SMA permit process.</p> <p>-no development is approved unless it is found that the development, among other things, will not have any substantial adverse environmental or ecological effect; is consistent with the objectives, policies, and SMA guidelines of the chapter; and is consistent with the county general plan and zoning. (§205A-26)</p>
Chapter 342D, HRS Water Pollution	DOH	<p>-prohibits discharge of any pollutant into State waters</p> <p>-allows DOH to institute a civil action for injunctive relief to prevent violation of State water quality standards (§342D-11)</p> <p>-under the statute, DOH may request the court to order nonpoint source polluters to implement all required management measures</p>

## Management Measure for Bridges

**Site, design, and maintain bridge structures so that sensitive and valuable aquatic ecosystems and areas providing important water quality benefits are protected from adverse effects.**

### Responsible Agencies and Authorities

Bridges are typically sited, designed, and constructed as part of a road or highway project. In Hawaii, road and highway bridges are usually developed by the State or county government, with State, county and/or Federal funds, or by private entities as part of a subdivision or other large development. Privately-constructed bridges usually must meet standards set by the State and/or county because they are transferred over to the State or county as public roadways upon completion of construction. (In Hawaii, the county is the most local form of government - the Hawaii State Constitution does not provide for any other form of municipalities - so local roads are county roads.) Privately-constructed roads, including bridges, that remain private must still comply with counties requirements for erosion and sediment control, stormwater management, drainage, zoning and subdivisions.

Typically, prospective development, including roads, highways and bridges, must undergo numerous permit processes, with their associated environmental assessments and extensive public review. Chapter 343, HRS, and Chapter 11-200, HAR, both about the Environmental Impact Statement law, require the preparation of an EA and/or EIS for proposed activities that trigger the environmental review process. Some of these trigger conditions are as follows: (1) use of State or county lands or funds; (2) use within the conservation district; (3) use within a shoreline setback area; (4) use within the Waikiki special district; (5) use within an historic site; (6) reclassification of conservation lands; and (7) certain amendments to a county general plan.

Construction of roads, highways and bridges will normally trigger the Chapter 343, HRS, process because of the use of State or county funds and/or lands. In determining whether an action may have a significant effect on the environment, the approving State or county agency shall consider every phase of a proposed action, the expected consequences, both primary and secondary, and the cumulative as well as the short-term and long-term effects of the action. In most instances, an action will be determined to have a significant effect on the environment if it detrimentally affects water quality or affects an environmentally sensitive area such as a flood plain, beach, erosion-prone area, estuary, fresh water, or coastal waters. Mitigation measures must be identified to address these detrimental effects.

Chapter 19-127.1, HAR, administered by DOT, addresses the design, construction and maintenance of public streets and highways. It applies to all persons and agencies who design, construct, and maintain facilities which are, or are intended to become, public streets and highways in the State. The chapter establishes design, construction and maintenance guidelines that should be followed in the construction, reconstruction, and maintenance of all highways, streets, or roads undertaken either by State or county authorities or by individuals intending to dedicate the facilities to governmental authorities.

DOT Standard Specifications are used for highway design and construction for Hawaii's transportation infrastructure. The current specifications in use are dated 1994, though many sections (technical provisions) have been revised since then. The updated 2005 *Standard Specifications for Road and Bridge Construction* requires written, site-specific BMPs describing activities to minimize water pollution and soil erosion into State waters, drainage or sewer systems, and a plan indicating location of the BMPs, areas of soil disturbance, areas where vegetative practices are to be implemented, and drainage patterns. It requires contractors to follow guidelines in the *Construction Best Management Practices Field Manual* (dated January 2008) in developing, installing and maintaining BMPs for all projects. The BMPs included in this manual focus on the areas of site management, erosion control, and sediment control.

Chapter 23, HCC, provides requirements for street design in subdivisions in Hawaii County. It requires the location, width, and grade of a street to conform to the County general plan and to be considered in its relation to existing and planned streets, to topographical conditions, to public convenience and safety, and to the proposed use of land to be served by the street. When an existing street adjacent to or within a tract is not of the width required by this chapter, additional rights-of-way shall be provided at the time of subdivision. Preliminary and final plats must show the location of lots, streets, water mains, and storm drainage systems, and are subject to technical review by the county director of public works, State DOH, and district engineer for the State DOT when the subdivision involves State highways. The ordinance also provides requirements for dedicable streets and standards for non-dedicable streets. Subdivisions, including roads, must maintain pre-development runoff conditions. Pre- and post- development runoffs are calculated using the County "Storm Drainage Standard." The minimum criteria used for runoff calculations are a 1-hour, 10-year storm event. This requirement inhibits conveyance of development runoff into natural drainage systems. Chapter 22, HCC, "County Streets," defines and regulates construction within a county street. It states that no driveway approach shall interfere with the proper runoff of waters into, or passage of waters through existing drainage culverts, swales, ditches, watercourses, defiles, or depressions.

Maui County's subdivision ordinance, Chapter 18, MCC, is similar to Hawaii County's. It specifies minimum standards for roads. In addition, there are specific requirements for roadside swales in order to prevent erosion, and roadway drainage systems in order to protect and preserve existing natural drainage ways and to assure that waters are drained from the subdivision in a manner that will not cause erosion outside of the subdivision to any greater extent than would occur in the absence of the subdivision and improvements.

Kauai's subdivision ordinance, Chapter 9, KCC, requires that all street design and improvements be constructed in accordance with DPW standards. All streets shall be designed to preserve natural features and topography and minimize need for protection of the natural environment; to require the creation of the minimum feasible amount of land coverage and the disturbance to the soil; to create conditions of proper drainage; and to provide for proper landscaping. All private streets must conform to the requirements of public streets. Chapter 9, KCC, also provides general standards for storm drainage, which include protecting natural drainage channels and assuring that waters drained from a subdivision do not generate more pollution than would occur in the absence of the subdivision or cause erosion outside of the subdivision.



The subdivision ordinance for the City and County of Honolulu, Chapter 22, ROH, also provides standards for roads within subdivisions. Furthermore, it states that no street or roadway in any subdivision or consolidation which has not been laid out, improved and approved in conformity the subdivision regulations shall be taken over, received by dedication or otherwise accepted as public highways.

Since Hawaii submitted its coastal nonpoint pollution control program to NOAA and EPA in 1996, three of the four counties (City and County of Honolulu, Kauai, and Maui) have updated their grading and grubbing ordinances to incorporate minimum BMPs. Generally, these ordinances include similar language that states “regardless of whether a permit is required...or an exemption.... is applicable, all grading, grubbing and stockpiling activities shall incorporate BMPs to the maximum extent practicable to prevent damage by sedimentation to streams, watercourses, natural areas, and the property of others.” The minimum BMPs relate to drainage, vegetation, erosion control, and sediment control, among other things, and require phasing and limiting areas of disturbance, and vegetative stabilization. The ordinances provide for the adoption of a BMP manual. The remaining county, Hawaii County, is currently in the process of revising its grading ordinance to make it consistent with the other counties.

Kauai County adopted a new drainage ordinance in 2001. It established new drainage principles and policies through the adoption of a Storm Water Runoff System Manual. It applies to all lands in Kauai and to all stormwater facilities constructed within the County rights-of-way, to easements dedicated to public use, and to privately-owned systems that are part of the required infrastructure improvements for a subdivision. In Hawaii County, all urban developments (with very few exceptions) have been mandated to maintain pre-development runoff conditions. Pre- and post- development runoffs are calculated using the County “Storm Drainage Standard.” The minimum criteria used for runoff calculations are a 1-hour, 10-year storm event. This requirement inhibits conveyance of development runoff into natural drainage systems. Maui County DPW is in the process of revising its drainage rules to incorporate stormwater pollution control measures and BMPs. The changes are based on the City and County of Honolulu’s ordinance (Chapter 14, ROH) and will include a new section addressing storm water quality. The new requirements will apply to all residential, commercial, public facilities and transportation development projects requiring building permits. BMPs must either detain stormwater for a length of time that allows pollutants to settle, or use filtration or infiltration methods.

The counties also administer the SMA permit process. SMAs are a subset of the State’s coastal zone and include all lands and waters beginning at the shoreline and extending inland or *mauka* at least 100 yards. Many new developments fall within this more sensitive coastal area, and the SMA permit process ensures that these developments are consistent with Hawaii’s coastal zone management program objectives and policies. Although each county has its own procedures for administering SMA permits, the requirements and review processes for SMA applications are similar for all four counties and are based on Chapter 205A-26, HRS (“Special management area guidelines”). Each county requires a permit applicant to describe the proposed development in terms of the CZM objectives and policies.

The U.S. Army Corps of Engineers (USACOE) has the authority to protect the waters of the United States, including wetlands and some streams, by regulating certain activities within those waters.

Section 404 of the Clean Water Act requires that anyone interested in placing dredged or fill material into waters of the United States must first obtain a permit from the Corps. Section 10 of the Rivers and Harbors Act of 1899 requires approval prior to the accomplishment of any work in or over navigable waters of the United States, or which affects the course, location, condition, or capacity of such waters. The law applies to any dredging or disposal of dredged materials, excavation, filling, rechannelization, or any other modification of a navigable water of the United States, and applies to all structures large or small. The initiation of a Section 404 permit process triggers a Section 401 water quality certification from DOH.

The State Water Code (Chapter 174C, HRS), adopted by the Hawaii Legislature in 1987 and amended in 2004, provides the regulatory framework to protect wetlands and other areas critical to water quality. The State, in its stewardship capacity, has management responsibility for all water resources of the State through CWRM – also known as the Water Commission. The Water Commission sets policies and approves water allocations for all water users. It issues permits to regulate the use of surface and ground water in the State. A stream channel alteration permit (SCAP) is required prior to undertaking a stream channel alteration in order to protect fishery, wildlife, recreational, aesthetic, scenic, and other beneficial instream uses. Routine streambed and drainageway maintenance activities are exempted from obtaining a permit.

The threshold for NPDES applicability decreased since Hawaii submitted its CNPCP. If development activity will disturb one acre or more of total land area, then a NPDES permit is required from DOH. This permit process is described in Chapter 11-55, HAR, “Water Pollution Control.” A County grading permit is required for any grading and grubbing work before a NPDES permit can be issued. The grading permit allows the grading, while the NPDES permit regulates stormwater runoff from the construction site.

The State and counties are responsible for maintenance of their respective roads, highways, and bridges. DOT has district offices in each county that provide engineering services and field inspections of transportation construction projects in conformance with approved plans and specifications; and maintenance, alteration and repair of State roads, highways, and related structures, including drainage facilities and bridges. The departments of public works for Hawaii, Maui, and Kauai counties have divisions that are responsible for maintenance of local roads, bridges, and drainages.

DOH has general regulatory authority over water pollution control.

## Implementation Tools

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 19-127.1, HAR Design, Construction, and Maintenance of Public Streets and Highways	DOT	<p>-chapter applies to all persons and agencies who design, construct, and maintain facilities which are, or are intended to become, public streets and highways in the State. Existing public streets and highways which do not conform to the guidelines set forth in this chapter shall not be affected (as of 1994), but any replacements or upgrading made to these streets and highways, or major portions thereof, shall conform to this chapter. (§19-127.1-1)</p> <p>-design practices for which guidelines are not expressly established in this chapter shall conform to the highway design, street operational practices and street light standards set forth in the ANSI standard, AASHTO guides and the manual (Hawaii Statewide Uniform Design Manual for Streets and Highways and Standard Plans). (§19-127.1-3)</p> <p>-design guidelines established in this chapter should be followed as closely as is practicable in the construction and reconstruction of all highways, streets, or roads undertaken either by state or county authorities in the state or by individuals intending to dedicate the facilities to governmental authorities. (§19-127.1-4)</p> <p>-construction and maintenance guidelines established in this chapter should be followed as closely as is practicable in the construction, reconstruction and maintenance of all highways, streets, or roads undertaken either by state or county authorities in the state or by individuals intending to dedicate the facilities to governmental authorities. (§19-127.1-12)</p>
<i>Construction Best Management Practices Field Manual (January 2008)</i>	DOT	<p>-purpose of this manual is to provide guidance on BMP installation and maintenance procedures for construction activities.</p> <p>-intended for use by DOT Highways staff involved in construction projects (contract, in-house, maintenance, and encroachment) and consultants or contractors involved in projects which require work within DOT Highways rights-of-way or projects which connect or discharge to DOT Highways MS4 system on Oahu.</p> <p>The BMPs included in this manual focus on the areas of site management, erosion control, and sediment control. Site Management (SM) BMPs include preventative measures implemented during the planning or construction stage of a project. They are established practices and procedures to control potential pollutants at their source. Erosion Control (EC) BMPs are devices installed or constructed by the contractor on disturbed soil to protect the ground surface from erosion due to wind, rain, or runoff. Sediment Control (SC) BMPs are measures to intercept and detain sediment-laden runoff prior to discharge off-site or to the storm sewer system. These devices detain runoff to promote infiltration and/or sedimentation.</p>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
<p><i>Standard Specifications for Road and Bridge Construction</i> (2005)</p>	<p>DOT</p>	<p>-Section 107.13 relates to pollution control and protection of archeological, historical, and burial sites. It specifies that contractors must “exercise precaution to prevent silting and pollution of oceans, rivers, streams, lakes, and reservoirs and other bodies and conveyances of water,” following the guidelines in CCH’s “Best Management Practices Manual for Construction Sites in Honolulu”, in developing, installing, and maintaining BMPs for all projects; CCH’s “Rules for Soil Erosion Standards and Guidelines” for all projects on Oahu; and appropriate soil erosion guidelines for Maui, Kauai, and Hawaii projects.</p> <p>-Section 201 addresses clearing and grubbing. It requires that all BMP measures be in place before clearing and grubbing start (201.03(B)). It also specifies how clearing and grubbing should take place to preserve and protects trees within established Tree Protection Zones.</p> <p>-Section 209 provides specifications about temporary water pollution, dust, and erosion control. It requires a written site-specific plan describing activities to minimize water pollution and soil erosion into State waters, drainage or sewer systems. Plan should indicate location of water pollution, dust and erosion control devices, details of BMPs to be installed or utilized; areas of soil disturbance in cut and fill; materials storage areas; and areas where vegetative practices are to be implemented. (209.03(A)(2)) Requires project to follow guidelines in the <i>Construction Best Management Practices Field Manual</i> (dated January 2008) in developing, installing and maintaining BMPs for all projects. Requires projects to follow CCH’s “Rules for Soil Erosion Standards and Guidelines” for all projects on Oahu, and the respective soil erosion guidelines for Maui, Kauai, and Hawaii projects.</p>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 23, HCC Subdivision	Hawaii County	<p>-provides requirements for street design in subdivisions, establishes minimum rights-of-way and pavement widths</p> <p>-the creation of a street shall be in compliance with requirements for subdivision (§23-39)</p> <p>-the location, width, and grade of a street shall conform to the County general plan and shall be considered in its relation to existing and planned streets, to topographical conditions, to public convenience and safety, and to the proposed use of land to be served by the street. Where the location is not shown in the County general plan, the arrangement of a street in a subdivision shall either:</p> <p style="padding-left: 40px;">(a) Provide for the continuation or appropriate projection of existing principal streets in surrounding areas; or</p> <p style="padding-left: 40px;">(b) Conform to a plan for the neighborhood which has been approved or adopted by the director to meet a particular situation where topographical or other conditions make continuance or conformance to existing streets impractical. (§23-40)</p> <p>-when an existing street adjacent to or within a tract is not of the width required by this chapter additional rights-of-way shall be provided at the time of subdivision. (§23-46)</p> <p>-no private street or alley shall be approved unless they are improved as specified under the chapter. (§23-53)</p> <p>-provisions for sewage disposal, conceptual drainage and flood control must be provided with the preliminary plat. The drainage map shall include the approximate location of areas subject to inundation or storm water overflow and all areas covered by waterways, including ditches, gullies, streams and drainage courses within or abutting the subdivision. (§23-66)</p>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 23, HCC Subdivision, continued	Hawaii County	<p>-within one year after tentative approval of the preliminary plat by the director, the subdivider shall have the subdivision surveyed and shall prepare a final plat which conforms with the preliminary plat as tentatively approved. The subdivider shall submit to the director eight copies of the final plat, prepared in conformity with these regulations, together with four additional copies of a general layout map, which was originally attached to the construction drawings and specifications (where required) showing the location of lots, streets, water mains and storm drainage systems. (§23-72)</p> <p>-within 30 days after receipt of the final plat and other data, the director shall submit copies of the final plat and other data to the director of public works, manager, State department of health and district engineer when the subdivision involves State highways for review of the final plat with the director. (§23-73)</p> <p>-the owner of the subdivision shall submit an agreement to the director that specifies that the subdivider shall make, install, and complete all required improvements and utilities to the satisfaction of the director of public works and when appropriate, the department of water supply. (§23-82)</p> <p>-provides requirements for dedicable streets. (§23-86)</p> <p>-provides standards for non-dedicable streets and provides that a maintenance escrow fund be established by the subdivider. (§23-87)</p> <p>-subdivider shall construct a storm water disposal system to contain runoff caused by the subdivision improvements within the boundaries of the subdivision, up to the expected one-hour, ten year storm event, as shown in Plate 1 of the DPW's "Storm Drainage Standards", dated October 1970, or any approved revisions, unless those standards specify a greater recurrence interval, in which case, the greater interval shall be used. The amount of expected runoff shall be calculated according to DPW's "Storm Drainage Standards", dated October 1970, or any approved revisions thereto, or by any nationally-recognized method meeting with the approval of the director of public works. Runoff calculations shall include the effects of all required subdivision improvements, and lot improvements that may be allowed by existing zoning. Storm water shall be disposed into drywells, infiltration basins, or other infiltration methods. The subdivision shall not alter the general drainage pattern above or below the subdivision. Subdivider shall also comply with the requirements of Chapter 27, HCC (§23-92).</p>
Title 18, MCC Subdivisions	Maui County DPW	<p>-the location, width and grade of all streets shall conform to the general plan and shall be considered in their relation to existing and planned streets, to topographical conditions, to public convenience and safety, and in their appropriate relation to the proposed use of land to be served by such streets. (§18.16.040)</p> <p>-when existing streets within, adjacent to, or providing access to a subdivision do not meet county width requirements, additional rights-of-way shall be provided as follows:</p> <p>A. Where substandard existing streets are within the boundaries of a subdivision, the subdivider shall provide additional rights-of-way according to county standards for those portions of the substandard streets within the subdivision;</p>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Title 18, MCC Subdivisions, continued	Maui County DPW	<p>B. Where substandard existing streets are adjacent to a subdivision, the subdivider shall provide additional rights-of-way for those portions of the streets adjacent to the subdivision such that the distances from the centerlines of the streets to the boundaries of the subdivided lots fronting the streets are equal to one-half of the rights-of-way widths as required by the general plan or county standards. (§18.16.060)</p> <p>-upon a finding by the director that unusual geographical conditions exist in a subdivision, private streets serving no more than three lots may be permitted unless other parts of this title specifically provide otherwise. Private streets shall not be a means for circumventing the need for a standard street. Private streets shall not be dedicated and the county is prohibited from accepting such streets. County services shall be provided at the intersecting public street, and the owners of the private street shall be responsible for its maintenance. Private streets shall be improved to the minimum width specified by ordinance. (§18.16.150)</p> <p>-all swale areas of streets without curb and gutters that exceed five percent in grade shall be planted in grass or designed to prevent erosion according to the standards on file in the department of public works. No open ditches or channels, other than normal roadside swales, shall be permitted within the street right-of-way. Where necessary within the subdivision, drainage ditches and channels shall be designed to meet existing and surrounding conditions; otherwise, the flow should be kept as natural as possible. (§18.20.120)</p> <p>-drainage systems in all subdivisions shall be planned, designed and constructed in accordance with standards of DPW or consistent with generally accepted engineering practices certified by an engineer so as to meet the following: 1. Protect and preserve existing natural drainage ways to the extent feasible; 2. Design a drainage system to be compatible with surrounding conditions; 3. Provide a system by which water within the subdivision will be removed using the natural drainage area where feasible with a minimum disruption to existing drainage patterns and without causing unnecessary harm to adjoining areas; 4. Analyze drainage requirements for each subdivision individually and take every means to insure the ability to subdivide the land within its zoning; 5. Assure that waters are drained from the subdivision in such a manner that they will not cause erosion outside of the subdivision to any greater extent than would occur in the absence of subdivision and improvements thereto; 6. Provide for the crossing of water courses by culverts rather than spanning where possible. (§18.12.130)</p> <p>-where interior drainage systems within an area are improved, a storm drainage system shall be required in all subdivisions within that area where surface runoff cannot be adequately conveyed. (§18.12.130)</p>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 9, KCC Subdivision	Kauai County DPW	<p>-the location and alignment of streets within the subdivision shall conform to the County General Plan and Development Plans proposed by the Planning Commission and adopted by the Council. (§9-2.3)</p> <p>-all streets shall be designed so as to:</p> <ul style="list-style-type: none"> <li>(A) preserve natural features and topography and minimize need for protection of the natural environment;</li> <li>(D) require the creation of the minimum feasible amounts of land coverage and the minimum feasible disturbance to the soil;</li> <li>(F) create conditions of proper drainage; and</li> <li>(G) provide for proper landscaping. (§9-2.3)</li> </ul> <p>-all private streets shall conform to the requirements of the public streets. (§9-2.3)</p> <p>-provides general standards for storm drainage:</p> <ul style="list-style-type: none"> <li>(1) Protect and preserve existing natural drainage channels to the greatest extent feasible.</li> <li>(2) Protect the subdivision from flood hazards.</li> <li>(3) Provide a system by which water within the subdivision will be removed without causing damage or harm to the natural environment, or to property or persons within the subdivision or to adjoining areas.</li> <li>(4) Assure that waters drained from the subdivision are substantially free of pollutants, including sedimentary materials, of any greater quantity than would occur in the absence of subdivision and improvement, in order to protect the water courses and shorelines.</li> <li>(5) Assure that waters are drained from the subdivision in a manner that they will not cause erosion outside of the subdivision to any greater extent than would occur in the absence of subdivision and improvement, in order to protect the water courses and shorelines. (§9-2.6)</li> </ul>
MC-15-4 Rules for the Design of Storm Drainage Facilities in the County of Maui (1995)	Maui County DPW	<p>-In general, natural gullies, waterways, streams and tributaries shall not be replaced with a closed system except at roadway crossings. For natural drainageways with contributory areas greater than 100 acres, the engineer shall determine, dimension and designate the 100 year flooded width as a drainage reserve in the drainage report and on the final subdivision map, if applicable. (§15-04-06(a)(5))</p> <p>-additional storm runoff from a new development shall be disposed of at an appropriate drainage outlet or drainage system so as not to create any additional adverse effects to adjacent or downstream properties (§15-04-06(a)(13))</p>
MC-15-?? (draft) Rules for the Design of Stormwater Treatment Best Management Practices	Maui County DPW	<p>-Maui County DPW is in the process of developing administrative rules to incorporate stormwater pollution control measures and BMP requirements for any development. The new requirements will apply to all residential, commercial, public facilities and transportation development projects requiring building permits. BMPs must either detain stormwater for a length of time that allows pollutants to settle, or use filtration or infiltration methods. Chapters 18, MCC, "Subdivision" and 16.26, MCC, "Building Code" must be amended first to grant the authority for this new proposed administrative rule.</p>



Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 27, HCC Floodplain Management	Hawaii County DPW	<p>-no building permit, certificate of occupancy, or grading permit shall be issued, no structure shall be occupied, and no development or subdivision shall be approved without the approval of the director of public works with respect to compliance with the provisions of this chapter (§27-14)</p> <p>-all developments requiring a site drainage plan under §25-2-72(3) shall submit such a plan for review and approval by the director of public works. The site drainage plan shall comply with §27-20(a) and (b) and §27-24, and shall include a storm water disposal system to contain runoff caused by the proposed development, within the site boundaries, up to the expected one-hour, ten year storm event, as shown in DPW's "Storm Drainage Standards," dated October 1970, or any approved revision, unless those standards specify a greater recurrence interval. The amount of expected runoff shall be calculated according to DPW's "Storm Drainage Standards," dated October 1970, or any approved revision, or by any nationally-recognized method meeting with the approval of the director of public works. Runoff calculations shall include the effects of all improvements. (§27-20(e))</p> <p>-storm water shall be disposed into drywells, infiltration basins, or other approved infiltration methods. The development shall not alter the general drainage pattern above or below the development. (§27-20(f))</p> <p>-DPW's "Storm Drainage Standard," October 1970 edition, or latest revision, is incorporated into and made a part of this chapter (§27-26)</p>
Section 14-12, ROH Drainage, Flood and Pollution Control	CCH	<p>-in certain parts of Oahu, no building permit can be issued without approval of the chief engineer as to the adequacy of drainage, considering topographic conditions, rainfall, runoff, land use, depth and width of drainage channels, size of other drainage facilities, and past history of flooding. In these cases, drainage plans for the improvement or construction facilities must be submitted to the chief engineer for approval (§14-12.3 through 14-12.5)</p> <p>-before approval of any subdivision, the chief engineer shall check the subdivision plans against the areas of possible inundation in the watershed areas described in §14-12.3. Any lot wholly or partially within the "possible flood area" must be noted as such on the subdivision map. The developer shall pay the entire cost of the drainage facilities to satisfy the anticipated drainage requirements (§14-12.9)</p> <p>-the chief engineer may require the construction of permanent detention or retention drainage structures or other engineering control facilities to contain or divert storm water runoff to satisfy the anticipated drainage requirement of all surface waters which may flow through or over the proposed subdivision, or to meet any conditions of the city's NPDES permit. (§14-12.9)</p>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Section 1 of Ordinance No. 778, A Bill for an Ordinance to Establish a New Article 16 in Chapter 22, KCC, Relating to the Establishment of Drainage Principles and Policies through the Adoption of a Storm Water Runoff System Manual, adopted 11/16/2001.	Kauai	-establishes new drainage principles and policies through the adoption of a Storm Water Runoff System Manual. It applies to all lands on Kauai and to all stormwater facilities constructed within the County rights-of-way, to easements dedicated to public use, and to privately-owned systems that are part of the required infrastructure improvements for a subdivision. The ordinance requires: maintenance of pre-development flow rates for developments to mitigate an increase in storm runoff as a results of construction of structures, roadways, and other impermeable surfaces, regulation of illicit discharges, minimizing of pollutants into streams by providing BMPs for erosion and sediment control for construction work, and establishment of hydrological and hydraulic methodology and criteria design for drainage systems for more frequent storms.
Chapter 20.08, MCC Soil Erosion and Sedimentation Control	Maui County DPW	-all grading, grubbing and stockpiling activities shall provide BMPs to prevent damage by sedimentation to streams, watercourses, natural areas, and the property of others (§20.08.035) -requires permit for grading, grubbing or stockpiling (§20.08.040)
<i>Construction Best Management Practices (BMPs) for the County of Maui (May 2001)</i>	Maui DPW	-contains sections on erosion control planning, guidelines for the preparation of the erosion and sediment control plan, and BMP details and specifications. BMPs included are: surface roughening, temporary gravel construction entrance/exit, seeding, temporary diversions, grass-lined channels, temporary slope drains, level spreader, outlet stabilization structure, mats, nets and blankets, mulching, preservation of existing vegetation, protection of stockpiles, construction road stabilization, temporary excavated drop inlet protection, temporary fabric drop inlet protection, temporary block and gravel drop inlet protection, sod drop inlet protection, temporary sediment trap, sediment basin, sediment fence, dust control, good neighbor barriers, check dam, solid waste management, concrete waste management, and vehicle fuel and maintenance management. Under each BMP, information is provided on its purpose and applicability, planning considerations, construction specifications, and maintenance.
Chapter 22-7, KCC Grading, Grubbing and Stockpiling	Kauai County DPW	-requires permit for grading, grubbing or stockpiling (§22-7.8) -all grading, grubbing and stockpiling activities shall incorporate BMPs to prevent damage by sedimentation to streams, watercourses, natural areas, and the property of others (§22-7.5) -all disturbed areas shall be stabilized with erosion and sediment control measures
<i>Interim Construction Best Management Practices (BMPs) for Sediment and Erosion Control for the County of Kauai (April 2004)</i>	Kauai County DPW	-contains sections on erosion control planning, guidelines for the preparation of the erosion and sediment control plan, and BMP details and specifications, similar to Maui County's BMP manual.
Chapter 10, HCC Soil Erosion and Sediment Control	Hawaii County DPW	-requires permit for grading and grubbing of land, and stockpiling of material in excess of 500 cubic yards. -all grading, grubbing and stockpiling permits and operations must conform to erosion and sedimentation control standards and guidelines (§10-26) Hawaii County is currently in the process of revising its grading ordinance to make it consistent with the other counties.

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Sections 14-13 -- 14-16, ROH Grading, Soil Erosion and Sediment Control	City and County of Honolulu	<p>-requires permit for grading, grubbing or stockpiling (§14-14.1)</p> <p>-specifies conditions and special requirements of permits (§14-15)</p> <p>-establishes penalties for violations (§14-16)</p>
Chapter 11-55, HAR Water Pollution Control	DOH	<p><u>-NPDES General Permit:</u> The NPDES General Permit Authorizing Discharges of Storm Water Associated with Construction Activity covers discharges of stormwater runoff associated with construction activities, including clearing, grading, and excavation that result in the disturbance of one acre or more of total land area. This general permit also covers activities that disturb less than one acre of total land area that is part of a larger common plan if the larger common plan will ultimately disturb one acre or more of total land area. This general permit covers all areas of the State except for discharges in or to state waters classified by DOH as "class 1, inland waters," "class AA, marine waters," and some other restricted areas. For these state waters, an individual NPDES permit is required. (§11-55-04; 11-55-34.02; Appendix C)</p> <p><u>-NPDES Individual Permit:</u> For discharges of stormwater associated with construction activities that result in the disturbance of one acre or more of total land area that do not qualify for a general permit because they affect "class 1, inland waters" or "class AA, marine waters," a NPDES Individual Permit is required. (§11-55-04; §11-55-15)</p>
Chapter 11-54, HAR Water Quality Standards	DOH	<p>-defines classifications of water uses. The objective of "class 1, inland waters" is that they remain in their natural state as nearly as possible with an absolute minimum of pollution from any human-caused source. Waste discharge into these waters is prohibited. Any conduct that results in a demonstrable increase in levels of point or nonpoint source contamination in class 1 waters is prohibited. Class 1 waters include all standing and/or flowing waters, and elevated and/or low wetlands: (i) within the natural reserves, preserves, sanctuaries, and refuges established by DLNR under Chapter 195, HRS, or similar reserves for the protection of aquatic life; (ii) in national and state parks; (iii) in state or federal fish and wildlife refuges; (iv) which have been identified as a unique or critical habitat for threatened or endangered species by the USFWS; and (v) in protective Conservation District subzones designated under Chapter 13-5, HAR. (§11-54-3(b)(1))</p> <p>-Similarly, the objective of "class AA, marine waters" is that these waters remain in their natural pristine state as nearly as possible with an absolute minimum of pollution or alteration of water quality from any human-caused source or actions. Approximately 63% of Hawaii's coastline abuts Class AA marine waters. (§11-54-3(c)(1))</p>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
<p>Chapter 343, HRS Environmental Impact Statements</p> <p>Chapter 11-200, HAR Environmental Impact Statement Rules</p>	OEQC	<p>-states that an environmental review process will integrate the review of environmental concerns with existing planning processes of the State and counties and alert decision makers to significant environmental effects which may result from the implementation of certain actions (§343-1)</p> <p>-the following actions, among others, shall trigger an EA: (1) use of State or county lands or funds; (2) use within the conservation district; (3) use within a shoreline setback area; (4) use within the Waikiki special district; (5) use within an historic site; (6) certain amendments to county general plans; and (7) reclassification of conservation lands (§343-5)</p> <p>-provides agencies and persons with procedures, specifications of contents of EAs and EISs, and criteria and definitions of statewide application (§11-200-1)</p>
<p>Chapter 343, HRS Environmental Impact Statements</p> <p>Chapter 11-200, HAR Environmental Impact Statement Rules, continued</p>	OEQC	<p>-in determining whether an action may have a significant effect on the environment, the agency shall consider every phase of a proposed action, the expected consequences, both primary and secondary, and the cumulative as well as the short-term and long-term effects of the action. In most instances, an action shall be determined to have a significant effect on the environment if it:</p> <ol style="list-style-type: none"> <li>1. Involves an irrevocable commitment to loss or destruction of any natural or cultural resource;</li> <li>2. Curtails the range of beneficial uses of the environment;</li> <li>3. Conflicts with the state's long-term environmental policies or goals and guidelines as expressed in Chapter 344, HRS, and any revisions thereof and amendments thereto, court decisions, or executive orders;</li> <li>4. Substantially affects the economic welfare, social welfare, and cultural practices of the community or State;</li> <li>5. Substantially affects public health;</li> <li>6. Involves substantial secondary impacts, such as population changes or effects on public facilities;</li> <li>7. Involves a substantial degradation of environmental quality;</li> <li>8. Is individually limited but cumulatively has considerable effect upon the environment or involves a commitment for larger actions;</li> <li>9. Substantially affects a rare, threatened, or endangered species, or its habitat;</li> <li>10. Detrimentally affects air or water quality or ambient noise levels;</li> <li>11. Affects or is likely to suffer damage by being located in an environmentally sensitive area such as a flood plain, tsunami zone, beach, erosion-prone area, geologically hazardous land, estuary, fresh water, or coastal waters;</li> <li>12. Substantially affects scenic vistas and viewplanes identified in county or state plans or studies; or,</li> <li>13. Requires substantial energy consumption. (§11-200-12)</li> </ol>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 205A, HRS Coastal Zone Management	OP-CZM	<ul style="list-style-type: none"> <li>-establishes coastal zone management objectives and policies (§205A-2)</li> <li>-related policies include: ensure that new developments are compatible with their visual environment by designing and locating such developments to minimize the alteration of natural landforms and existing public views to and along the shoreline; encourage those developments that are not coastal dependent to locate in inland areas; promote water quantity and quality planning and management practices that reflect the tolerance of fresh water and marine ecosystems and maintain and enhance water quality through the development and implementation of point and nonpoint source water pollution control measures; control development in areas subject to storm wave, tsunami, flood, erosion, hurricane, wind, subsidence, and point and nonpoint source pollution hazards; ensure that developments comply with requirements of the Federal Flood Insurance Program; use, implement, and enforce existing law effectively in managing present and future coastal zone development; facilitate timely processing of applications for development permits and resolve overlapping or conflicting permit requirements; communicate the potential short and long-term impacts of proposed significant coastal developments early in their life cycle and in terms understandable to the public to facilitate</li> </ul>
Chapter 205A, HRS Coastal Zone Management, continued	OP-CZM	<ul style="list-style-type: none"> <li>public participation in the planning and review process; locate new structures inland from the shoreline setback to conserve open space, minimize interference with natural shoreline processes, and minimize loss of improvements due to erosion (§205A-2)</li> <li>-the objectives and policies of the chapter and any guidelines enacted by the legislature shall be binding upon actions within the coastal zone management area by all agencies, within the scope of their authority (§205A-4(b))</li> <li>-all agencies shall ensure that their rules comply with the objectives and policies of the chapter (§205A-5)</li> <li>-establishes special controls on developments within an area along the shoreline to avoid permanent losses of valuable resources (§205A-21, -26).</li> <li>-no development is allowed in any county within these special management areas (SMAs) without a permit (§205A-28). The county planning departments administer the SMA permit process.</li> <li>-no development is approved unless it is found that the development, among other things, will not have any substantial adverse environmental or ecological effect; is consistent with the objectives, policies, and SMA guidelines of the chapter; and is consistent with the county general plan and zoning. (§205A-26)</li> </ul>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
<p>Chapter 15-150, HAR Special Management Areas/Shoreline Areas</p> <p>Chapter 12-202, MCC SMA Rules for Maui Planning Commission</p> <p>Chapter 12-302, MCC SMA Rules for Molokai Planning Commission</p> <p>Chapter 12-402, MCC SMA Rules for Lanai Planning Commission</p> <p>Chapter 25, ROH Special Management Area</p> <p>Rule 9, Hawaii County Planning Commission</p> <p>SMA Rules and Regulations of the County of Kauai</p>	<p>OP for SMAs of CDDs</p> <p>County planning commissions</p>	<p>-provides guidelines for use by OP for the review of developments proposed in the SMA of community development districts (CDDs); development in the SMA of CDDs must be consistent with the objectives and policies established in Section 205A-2, HRS (§15-150-6)</p> <p>-county rules for administering the SMA permits and shoreline setback provisions within each county/island</p>
<p>Chapter 174C, HRS Hawaii Water Code</p> <p>Chapter 13-169, HAR Protection of Instream Uses of Water</p>	<p>DLNR Commission on Water Resource Management</p>	<p>-the state water code shall be liberally interpreted to obtain maximum beneficial use of the waters of the State for purposes such as domestic uses, aquaculture uses, irrigation and other agricultural uses, power development, and commercial and industrial uses. However, adequate provision shall be made for the protection of traditional and customary Hawaiian rights, the protection and procreation of fish and wildlife, the maintenance of proper ecological balance and scenic beauty, and the preservation and enhancement of waters of the State for municipal uses, public recreation, public water supply, agriculture, and navigation. Such objectives are declared to be in the public interest. (§174C-2(c))</p> <p>- requires permit from the Water Commission prior to undertaking a stream channel alteration to protect fishery, wildlife, recreational, aesthetic, scenic, and other beneficial uses (§174C-71)</p> <p>-outlines the stream channel alteration permit (SCAP) process (§13-169-50 through 13-169-54)</p>
<p>Section 404, CWA</p>	<p>USACOE</p>	<p>The U.S. Army Corps of Engineers (USACOE) has the authority to protect the waters of the United States, including wetlands, by regulating certain activities within those waters. Section 404 of the Clean Water Act requires that anyone interested in placing dredged or fill material into waters of the United States must first obtain a permit from the Corps.</p>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Section 10, Rivers and Harbors Act of 1899	USACOE	-requires approval prior to the undertaking of any work in or over navigable waters of the U.S., or which affects the course, location, condition, or capacity of such waters. The law applies to any dredging or disposal of dredged materials, excavation, filling, rechannelization, or any other modification of a navigable water of the U.S., and applies to all structures, from the smallest floating dock to the largest commercial undertaking.
Section 401, CWA	DOH	<p>-DOH is authorized under Section 401 of the Federal Clean Water Act and §342D-53, HRS, to administer the Section 401 Water Quality Certification (WQC) program in Hawaii.</p> <p>- A WQC issued by the DOH is required by any owner applying for a Federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may result in any “discharge” into navigable waters. A 401 WQC certifies that the activity will not violate State water quality standards (Chapter 11-54, HAR).</p> <p>-The Section 404, CWA, permit process, administered by USACOE, would trigger a Section 401 WQC prior to issuance.</p>
Chapter 342D, HRS Water Pollution	DOH	<p>-prohibits discharge of any pollutant into State waters</p> <p>-allows DOH to institute a civil action for injunctive relief to prevent violation of State water quality standards (§342D-11)</p> <p>-under the statute, DOH may request the court to order nonpoint source polluters to implement all required management measures</p>

## Management Measure for Operation and Maintenance

**Incorporate pollution prevention procedures into the operation and maintenance of roads, highways, and bridges to reduce pollutant loadings to surface waters.**

### Responsible Agencies and Authorities

The State and counties are responsible for maintenance of their respective roads, highways, and bridges. DOT has district offices in each county that provide inspections, maintenance, alteration and repair of State roads, highways, and related structures, including drainage facilities and bridges. The departments of public works for the City and County of Honolulu, and Hawaii, Maui, and Kauai counties have divisions which are responsible for maintenance of local roads, bridges, and drainages.

Chapter 19-127.1, HAR, administered by DOT, addresses the design, construction and maintenance of public streets and highways. It applies to all persons and agencies who design, construct, and maintain facilities which are, or are intended to become, public streets and highways in the State. The chapter establishes maintenance guidelines that should be followed in the construction, reconstruction, and maintenance of all highways, streets, or roads undertaken either by State or county authorities or by individuals intending to dedicate the facilities to governmental authorities (§19-127.1-12).

DOT has embarked on a comprehensive Storm Water Management Program (SWMP) to reduce, to the maximum extent practicable, the amount of storm water containing pollutants entering and discharging from the DOT Highways municipal separate storm sewer system on Oahu (Oahu MS4). This initiative is being taken to comply with DOT's National Pollutant Discharge Elimination System (NPDES) Permit and the mandates of a Consent Decree due to non-compliance with previous NPDES permit requirements. The Oahu SWMP plan outlines the DOT program to address storm water pollution associated with operating the State highways-related network and facilities on Oahu.

DOT Standard Specifications are used for highway design and construction for Hawaii's transportation infrastructure. The current specifications in use are dated 1994, though many sections (technical provisions) have been revised since then. The updated 2005 *Standard Specifications for Road and Bridge Construction* requires written, site-specific BMPs describing activities to minimize water pollution and soil erosion into State waters, drainage or sewer systems, and a plan indicating location of the BMPs, areas of soil disturbance, areas where vegetative practices are to be implemented, and drainage patterns. It requires contractors to follow guidelines in the *Construction Best Management Practices Field Manual* (dated January 2008) in developing, installing and maintaining BMPs for all projects. The BMPs included in this manual focus on the areas of site management, erosion control, and sediment control. According to the Oahu SWMP Plan, DOT-Highways staff managing contract projects shall emphasize the importance of storm water pollution prevention to contractors during pre-construction or other project meetings.

DOT completed a *Storm Water Permanent Best Management Practices Manual* (February 2007). Permanent BMPs are designed to manage and treat storm water runoff prior to discharge from Oahu MS4 outfalls. The permanent BMP options include the following categories: (1) vegetated swales: dry



swales and wet swales; (2) infiltration facilities: infiltration trenches; infiltration basins and bio-retentions; (3) storm water wetlands: shallow wetlands, extended detention wetlands and pocket/pond wetlands; (4) storm water ponds: wet ponds, extended detention ponds and multi-pond system; (5) filtering systems: sand filters, and organic filters; and (6) proprietary hydrodynamic type devices. Maintenance of permanent BMPs will depend on their types and sizes. The Post-Construction SWMP includes a management system to ensure that permanent BMPs are subject to consistent inspections and maintenance.

As part of its SWMP, DOT also has a Pollution Prevention and Good Housekeeping Program for Oahu. Its sub-program for debris control includes BMP procedures for conducting inspections and cleaning of all appropriate facilities. Street sweeping and storm drain cleaning are integral parts of this sub-program to remove debris before it can be flushed into receiving waters. The chemical applications BMP sub-program is designed to reduce the contribution of pollutants from the use of herbicides and pesticides on DOT-Highways rights-of-way, landscaped areas, and maintenance and baseyard facilities. The chemical program addresses the proper application, storage, and disposal of these chemicals. All persons applying herbicides or pesticides within DOT-Highways rights-of-way or its other properties must have received training in proper chemical handling and application provided by DOT. The objective of the erosion control BMP sub-program is to reduce soil erosion from roadside areas within DOT-Highways rights-of-way on Oahu, including existing soil erosion problems that are not associated with current or planned construction projects. The final sub-program addresses maintenance facilities BMPs, with the purpose to operate DOT maintenance facilities and baseyards in a manner that prevents water quality impacts. This will be done by implementing BMPs for vehicle and equipment washing, maintenance and repair; vehicle and equipment fueling; material storage; spill response; and hazardous waste management.

According to Chapter 264, HRS, maintenance work on all roads upon which federal-aid funds<sup>3</sup> have been expended must be done under the direction and supervision of DOT or delegated by DOT to the counties. This maintenance work is funded by the state highway fund created by Section 248-8, HRS. Chapter 264, HRS, also establishes a state highway system consisting of federal-aid highways and other designated public highways. The maintenance for these roads may be undertaken by DOT or by the county in which the highway is situated, by government personnel or under contract. Chapter 46, HRS, addresses the repair and maintenance of public streets, roads, and highways whose ownership is in dispute between the State and a county. This statute authorizes the counties to repair and maintain these disputed public roads.

The county departments of public works maintain county roads, highways and bridges. The road maintenance divisions are responsible for patching potholes, roadside grading, maintaining vegetated roadsides and shoulders, minor resurfacing, repairing sidewalks, cleaning catch basins and culverts, and maintaining flood control and drainage facilities. The counties also have ordinances, administered by the departments of public works, that address controls on excavations and repairs to public highways, streets, alleys, sidewalks and other public places (Chapter 22, HCC; Chapter 18, KCC, Chapter

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<sup>3</sup> "Federal-aid funds" means funds appropriated by the Congress of the United States under or for the purposes of the Federal Highway Act, in which the State is entitled to share.

12.04 MCC; Chapter 14-17 ROH). Maintenance of old government roads, where there is no acknowledged government or private ownership, and disputed roads is performed by the counties, provided they have sufficient resources to undertake these responsibilities. In the City and County of Honolulu, DPW may maintain by either remedial patching, resurfacing or paving, subject to the availability of funds, those portions of private, non-dedicated and non-surrendered streets, roads and bridge decking which meet 11 specific criteria. The street or road cannot have the meaning of “private street” in Chapter 22, ROH, and must not exclude the general public.

County subdivision ordinances (Chapter 23, HCC; Chapter 18, MCC; Chapter 9, KCC; Chapter 22, ROH) require private (non-dedicated) roads and related infrastructure to be maintained by the developer. In addition, the City and County of Honolulu requires every property owner whose land abuts or adjoins a public street to continually maintain, and keep clean, passable and free from weeds and noxious growths, the sidewalk and gutter area which abuts or adjoins the property owner's property.

Under the authority of Chapter 149A, HRS, DOA, Pesticides Branch, is the lead agency for implementing those measures that relate to regulating pesticides. Chapter 4-66, HAR, administered by DOA, relates to the registration, licensing, certification, recordkeeping, usage, and other activities related to the safe and effective use of pesticides. It requires that those who apply or directly supervise others who apply restricted use pesticides be certified. Certification requires some understanding of the environmental concerns of using pesticides. This requirement is implemented under the CES/DOA Pesticide Applicator Program. Certification is not required for those using pesticides that are not classified as “restricted use.”

Hazardous waste products, such as lead-based paints, generated from the cleaning or maintenance of roads, highways, and bridges must be properly disposed, according to Chapter 342J, HRS.

DOH has general regulatory authority over water pollution control.

## Implementation Tools

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 19-127.1, HAR Design, Construction, and Maintenance of Public Streets and Highways	DOT	<p>-chapter applies to all persons and agencies who design, construct, and maintain facilities which are, or are intended to become, public streets and highways in the State. Existing public streets and highways which do not conform to the guidelines set forth in this chapter shall not be affected (as of 1994), but any replacements or upgrading made to these streets and highways, or major portions thereof, shall conform to this chapter. (§19-127.1-1)</p> <p>-design practices for which guidelines are not expressly established in this chapter shall conform to the highway design, street operational practices and street light standards set forth in the ANSI standard, AASHTO guides and the manual (Hawaii Statewide Uniform Design Manual for Streets and Highways and Standard Plans). (§19-127.1-3)</p> <p>-design guidelines established in this chapter should be followed as closely as is practicable in the construction and reconstruction of all highways, streets, or roads undertaken either by state or county authorities in the state or by individuals intending to dedicate the facilities to governmental authorities. (§19-127.1-4)</p> <p>-construction and maintenance guidelines established in this chapter should be followed as closely as is practicable in the construction, reconstruction and maintenance of all highways, streets, or roads undertaken either by state or county authorities in the state or by individuals intending to dedicate the facilities to governmental authorities. (§19-127.1-12)</p>
<i>Construction Best Management Practices Field Manual (January 2008)</i>	DOT	<p>-purpose of this manual is to provide guidance on BMP installation and maintenance procedures for construction activities.</p> <p>-intended for use by DOT Highways staff involved in construction projects (contract, in-house, maintenance, and encroachment) and consultants or contractors involved in projects which require work within DOT Highways rights-of-way or projects which connect or discharge to DOT Highways MS4 system on Oahu.</p> <p>The BMPs included in this manual focus on the areas of site management, erosion control, and sediment control. Site Management (SM) BMPs include preventative measures implemented during the planning or construction stage of a project. They are established practices and procedures to control potential pollutants at their source. Erosion Control (EC) BMPs are devices installed or constructed by the contractor on disturbed soil to protect the ground surface from erosion due to wind, rain, or runoff. Sediment Control (SC) BMPs are measures to intercept and detain sediment-laden runoff prior to discharge off-site or to the storm sewer system. These devices detain runoff to promote infiltration and/or sedimentation.</p>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
<i>Standard Specifications for Road and Bridge Construction</i> (2005)	DOT	<p>-Section 107.13 relates to pollution control and protection of archeological, historical, and burial sites. It specifies that contractors must “exercise precaution to prevent silting and pollution of oceans, rivers, streams, lakes, and reservoirs and other bodies and conveyances of water,” following the guidelines in CCH’s “Best Management Practices Manual for Construction Sites in Honolulu”, in developing, installing, and maintaining BMPs for all projects; CCH’s “Rules for Soil Erosion Standards and Guidelines” for all projects on Oahu; and appropriate soil erosion guidelines for Maui, Kauai, and Hawaii projects.</p> <p>- -Section 209 provides specifications about temporary water pollution, dust, and erosion control. It requires a written site-specific plan describing activities to minimize water pollution and soil erosion into State waters, drainage or sewer systems. Plan should indicate location of water pollution, dust and erosion control devices, details of BMPs to be installed or utilized; areas of soil disturbance in cut and fill; materials storage areas; and areas where vegetative practices are to be implemented. (209.03(A)(2)) Requires project to follow guidelines in the <i>Construction Best Management Practices Field Manual</i> (dated January 2008) in developing, installing and maintaining BMPs for all projects. Requires projects to follow CCH’s “Rules for Soil Erosion Standards and Guidelines” for all projects on Oahu, and the respective soil erosion guidelines for Maui, Kauai, and Hawaii projects.</p>
<i>Storm Water Permanent Best Management Practices (BMP) Manual</i> (February 2007)	DOT	<p>-all contract, in-house and/or encroachment projects are subject to DOT’s review to determine if stormwater permanent BMPs are required.</p> <p>-Any project (new or redevelopment) is required to install permanent BMPs for storm water management if it generates 1 or more acres of new permanent impervious surface. Any reconstruction of or new construction on existing impervious area exceeding 5,000 square feet shall be considered redevelopment.</p> <p>-applicable projects statewide are those within the DOT right-of-way or requiring a discharge/connection permit to DOT’s MS4.</p> <p>-projects with special conditions may be subject to the rules and criteria contained in this manual regardless of square footage of the new impervious surface. Special conditions are determined by DOT and may include DOT projects which drain to sensitive receiving waters (HDOH Water Quality Limited Segments (WQLS)), projects which drain to Class I Inland Waters, Class AA Marine Waters, and selected 303(d)- listed water bodies.</p>
Chapter 264, HRS Highways	DOT	<p>-maintenance work on all roads upon which federal-aid funds have been expended shall be performed under the direction and supervision of the director of transportation either by public employment or by contract, or the director may have the work performed by the county road department, by public employment or by contract, upon authorization of the council of the county concerned. Expenditures for the maintenance work shall be made from the state highway fund created by section 248-8. (§264-31)</p> <p>-establishes a state highway system which shall consist of federal-aid highways and other public highways which may be designated for inclusion in the system pursuant to section 264-42. (§264-41)</p>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 264, HRS Highways, continued	DOT	<p>-the director of transportation acting in cooperation with appropriate federal and county agencies, may designate for inclusion in the state highway system, such other public highways, including county highways, which are used primarily for through traffic and not for access to any specific property, whether residential, business, or other abutting property. (§264-42)</p> <p>-DOT shall acquire, subdivide, consolidate, construct, maintain, and administer all highways comprising the state highway system in accordance with all state and federal laws and exempt from county subdivision ordinances. (§264-43)</p> <p>-the maintenance of the state highway system may be performed either by public employment or by contract, or the director of transportation may have the maintenance performed by the county in which the highways are situated, by public employment or by contract, upon authorization of the legislative body of the county concerned. (§264-44)</p>
Chapter 46, HRS County Organization and Administration	counties	<p>(a) any provision of law to the contrary notwithstanding, any county and its authorized personnel may impose and enforce traffic laws and shall enforce chapters 286 and 291C on public streets, roads, or highways whose ownership is in dispute between the State and the county.</p> <p>(b) any provision of the law to the contrary notwithstanding, any county and its authorized personnel may repair or maintain, in whole or in part, public streets, roads, or highways whose ownership is in dispute between the State and the county.</p> <p>(c) no presumption that a county owns a particular street, road, or highway shall arise as a result of the county's performance of the activities allowed by subsection (a) or (b). (§46-15.9)</p>
Chapter 23, HCC Subdivision	Hawaii County	<p>-provides requirements for street design in subdivisions, establishes minimum rights-of-way and pavement widths</p> <p>-for nondedicable streets in a resort subdivision, the subdivider shall submit a recordable document with the director which shall describe all nondedicable streets, the ownership thereof and access rights thereon for all lots in the subdivision and the maintenance rights and responsibilities thereof. The document shall contain statements as follows: that nondedicable streets within the resort subdivision have not been built to the standards required for streets which are dedicable to the County of Hawaii; that such streets will accordingly not be accepted for dedication unless they are brought into compliance with the requirements for dedication as of the time they are offered for dedication; and that the County is not responsible for maintenance of such nondedicable streets. The document shall be in a form acceptable to the director of public works and corporation counsel. (§23-70(4))</p> <p>-provides standards for non-dedicable streets and provides that a maintenance escrow fund be established by the subdivider. (§23-87)</p>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Title 18, MCC Subdivisions	Maui County DPW	-upon a finding by the director that unusual geographical conditions exist in a subdivision, private streets serving no more than three lots may be permitted unless other parts of this title specifically provide otherwise. Private streets shall not be a means for circumventing the need for a standard street. Private streets shall not be dedicated and the county is prohibited from accepting such streets. County services shall be provided at the intersecting public street, and the owners of the private street shall be responsible for its maintenance. Private streets shall be improved to the minimum width specified by ordinance. (§18.16.150)
Chapter 9, KCC Subdivision	Kauai County DPW	-all private streets shall conform to the requirements of the public streets. (§9-2.3)
Chapter 22, ROH Subdivision of Land	CCH	-regulations governing the subdivision or consolidation of land may include provisions for the minimum right-of-way and pavement widths of streets or roadways within the subdivision to serve the subdivision or to provide access thereto, the extent to which and the manner in which streets and other ways shall be graded and improved, and requirements and standards of construction for street lighting, sidewalks and shoulder areas, curbs, gutters, sanitary sewers, storm drains, flood control, street name signs, traffic signs, and other utilities and facilities to be provided or installed, as conditions precedent to the approval of a subdivision or consolidation map. (§22-3.5) -no street or roadway in any subdivision or consolidation which has not been laid out, improved and approved in conformity with this article and the subdivision regulations shall be taken over, received by dedication or otherwise accepted as public highways (§22-3.9)
Chapter 12.04, MCC Street and Highway Excavations	Maui County DPW	-standard specifications outlining procedures to be followed in excavating and backfilling openings in county highways shall be prescribed by the director of public works (§12.04.030) -in doing any of the work specified in this chapter, the paving and/or other excavated material shall be kept separate and deposited in a manner that will occasion the least inconvenience to the public. In connection with the performance of the work covered by the permit, the permit holder shall provide proper surface drainage and safe passageway for travel; after the street opening, trench or other excavation has been completely backfilled and tamped, the site shall be thoroughly cleaned by the permit holder, and all excess excavation and other foreign matter caused by the excavation or otherwise by the permit holder, shall be removed and deposited in a designated area (§12.04.040)

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 22, HCC County Streets	Hawaii County DPW	<p>-repair, restoration or replacement of County streets, highways and sidewalks shall comply with applicable specifications and plans on file in the department of public works. (§22-4.4 (k))</p> <p>-every owner of land abutting on or adjoining any County street shall, at their own expense, maintain the sidewalk area and the portions of their properties that adjoin the sidewalks by trimming, cutting, pruning, mowing, sweeping or using other methods to control landscape plants, weeds, noxious growths, trash, debris or other materials that would damage the sidewalk area. (§22-4.6)</p> <p>-no driveway approach shall interfere with the proper runoff of surface waters into, or passage of waters through existing drainage culverts, swales, ditches, watercourses, defiles, or depressions. When in the construction of a driveway approach, the proper runoff of surface waters and other waters require the construction of a drainage structure other than a swale, such drainage structure shall be designed by an engineer and subject to the approval of the director. (§22-4.9(3))</p>
<p>Chapter 14-17, ROH Excavation and Repairs of Streets and Sidewalks</p> <p>Chapter 14-20, ROH Cleaning and Maintaining Sidewalks</p> <p>Chapter 14-32, ROH Maintenance of Private Streets and Roads</p>	CCH Dept. of Public Works	<p>-trench excavation and backfill shall be accomplished in accordance with the applicable provisions contained in the Standard Specifications for Public Works Construction dated September 1986 and Standard Details for Public Works Construction, dated September 1984, as amended, of the department of public works, City and County of Honolulu. (§14-17.3)</p> <p>-in dewatering trenches, the discharge shall not be drained directly onto the street or gutter. In urban areas and areas where a storm sewer system has been installed, the discharge shall be drained to the nearest storm sewer by the use of pipes or other suitable means acceptable to the chief engineer. If necessary the discharge shall be processed, filtered, ponded or otherwise treated to comply with the applicable provisions of Chapter 11-54, HAR, "Water Quality Standards" and Chapter 11-55, "Water Pollution Control" and any other applicable federal, state, and city and county ordinances and regulations concerning water pollution prior to its release into waterways or city storm sewer systems. (§14-17.3)</p> <p>-every property owner whose land abuts or adjoins a public street shall continually maintain, and keep clean, passable and free from weeds and noxious growths, the sidewalk and gutter area which abuts or adjoins the property owner's property (§14-20.1)</p> <p>-subject to the availability of funds, DPW may maintain by either remedial patching, resurfacing or paving those portions of private, nondedicated and nonsurrendered streets, roads and bridge decking which meet 11 specific criteria. The street or road cannot have the meaning of "private street" in Chapter 22 and must not exclude the general public. If they wish a private street or road to be maintained by the city, the persons collectively owning a 60 percent or more interest in the fee title or an appropriate roadway easement in the street or road shall initiate and submit a written request to the director and chief engineer for the maintenance of the street or road. (§14-32.2)</p>
Chapter 18, KCC Excavation and Repair of Streets and Sidewalks	Kauai County DPW	-addresses controls on excavations and repairs to public highways, streets, alleys, sidewalks and other public places

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 12.50, MCC Maintenance of Old Government Roads	Maui County DPW	-the council finds that there are old government roads in Maui County which are open to the general public and necessary for public transportation. The council further finds that no governmental entity or private person or entity claims ownership of these roads, many of which were not built to the County's design standards and are in need of surface maintenance. To protect the safety of motorists, bicyclists and pedestrians who use these roads, the council adopts this chapter authorizing the department of public works and waste management to provide surface maintenance for old government roads in Maui County, subject to the availability of appropriations, when and where it is deemed appropriate. This chapter shall not be construed as an admission of ownership nor as an acceptance by the council of any old government roads. (§12.50.010)
Chapter 149A, HRS Hawaii Pesticides Law  Chapter 4-66, HAR Pesticides	DOA	<p>-it is unlawful for a person to use any pesticide in a manner inconsistent with its label; to use, store, transport, or discard any pesticide in a manner that would have unreasonable adverse effects on the environment; to use or apply restricted use pesticides unless the person is a certified pesticide applicator or under the direct supervision of a certified pesticide applicator; or to fill with water, through a hose, pipe, or other similar transmission system, any tank, implement, apparatus, or equipment used to disperse pesticides, unless the transmission system is equipped with an air gap or a reduced pressure principle backflow device meeting the requirements under section 340E-2, HRS. (§149A-31)</p> <p>-no pesticide shall be stored, displayed, place for sale or transported where food and food containers, feed, water for human or animal consumption, or any other items are likely to become contaminated and may create a hazard or cause injury to humans, vegetation, crops, livestock, wildlife, beneficial insects and aquatic life (§4-66-54)</p> <p>-an applicator applying restricted use pesticides shall be certified as a commercial pesticide applicator or a private pesticide applicator (§4-66-56)</p> <p>-Category 3 commercial pesticide applicator certification is necessary for persons using or supervising the use of restricted use pesticides to control pests of ornamental trees, shrubs, flowers, and turf (§4-66-56(b)(3))</p> <p>- Category 5 commercial pesticide applicator certification is necessary for persons using or supervising the use of restricted use pesticides purposefully applied to standing or running water (§4-66-56(b)(5))</p> <p>- Category 11 commercial pesticide applicator certification is necessary for persons using or supervising the use of restricted use pesticides applied through an irrigation system (§4-66-56(b)(11))</p>
Chapter 342I, HRS Special Wastes Recycling	DOH	<p>-prohibits disposal of used lead acid battery, except by delivery to a lead acid battery retailer or wholesaler, a collection or recycling facility, or a secondary lead smelter (§342I-1)</p> <p>-prohibits disposal of electrolyte from any used lead acid battery onto the ground or into sewers, drainage systems, surface or ground waters, or ocean waters. (§342I-1.5)</p>



Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 342J, HRS Hazardous Waste	DOH	<p>-no person, including any federal agency, the State, or any of its political subdivisions, shall own, operate, or construct a hazardous waste management facility without first securing a permit issued by the director. In addition, no person shall treat, store or dispose of hazardous waste at an unpermitted hazardous waste management facility, unless otherwise permitted by law. (§342J-30)</p> <p>-prohibits discharge of new, used or recycled oil into sewers, drainage systems, surface or ground waters, watercourse, marine waters, or onto the ground. The prohibition does not apply to inadvertent, normal discharges from vehicles and equipment, or maintenance and repair activities, provided that appropriate measures are taken to minimize releases (§342J-52(b))</p>
Chapter 342D, HRS Water Pollution	DOH	<p>-prohibits discharge of any pollutant into State waters</p> <p>-allows DOH to institute a civil action for injunctive relief to prevent violation of State water quality standards (§342D-11)</p> <p>-under the statute, DOH may request the court to order nonpoint source polluters to implement all required management measures</p>

### Management Measure for Road, Highway, and Bridge Runoff Systems

**Develop and implement runoff management systems for existing roads, highways, and bridges to reduce runoff pollutant concentrations and volumes entering surface waters.**

- (1) Identify priority and watershed pollutant reduction opportunities (e.g., improvements to existing urban runoff control structures); and**
- (2) Establish schedules for implementing appropriate controls.**

### Responsible Agencies and Authorities

The State and counties are responsible for maintenance of their respective roads, highways, and bridges. DOT has district offices in each county that provide inspections, maintenance, alteration and repair of State roads, highways, and related structures, including drainage facilities and bridges. The departments of public works for Hawaii, Maui, and Kauai counties have divisions that are responsible for maintenance of local roads, bridges, and drainages.

## MARINAS AND RECREATIONAL BOATING

### Siting and Design

#### Marina Flushing Management Measure

Site and design marinas such that tides and/or currents will aid in flushing of the site or renew its water regularly.

#### Responsible Agencies and Authorities

DLNR is the lead agency for implementing this management measure. Since 1993, its Division of Boating and Ocean Recreation (DOBOR) has been responsible for managing and administering the ocean-based recreation and coastal areas programs pertaining to the ocean waters and navigable streams of the State (excluding commercial harbors); planning, developing, operating, administering and maintaining small boat harbors and other boating facilities; and regulating the use of these facilities. A 2004 amendment to Section 13-232-43, HAR, ensures that all improvements to a State boating facility or other property under the jurisdiction of DOBOR shall be constructed, maintained, operated, or modified to comply with EPA's *National Management Measures Guidance to Control Nonpoint Source Pollution from Marinas and Recreational Boating* (November 2001) or subsequent amendments.

DLNR, under its Office of Conservation and Coastal Lands (OCCL), also administers the State's Conservation District Use Application (CDUA) permit process, which is triggered by any proposed marina construction project because submerged lands are included within the State Conservation District. OCCL will require, as a condition of a Conservation District Use Permit, compliance with EPA's *National Management Measures Guidance to Control Nonpoint Source Pollution from Marinas and Recreational Boating* (November 2001) for both public and private marina developments .

Typically, prospective marina developments must undergo numerous permit processes, with their associated environmental assessments and extensive public review. Marina developments automatically trigger a CDUA because they involve submerged lands; marina developments that affect coastal lands within the counties' SMAs must seek an SMA permit. Chapter 343, HRS, and Chapter 11-200, HAR, both about the Environmental Impact Statement law, require the preparation of an EA and/or EIS for proposed activities that trigger the environmental review process. Some of the trigger conditions are as follows: (1) use of State or county lands or funds; (2) use within the conservation district; (3) use within a shoreline setback area; (4) use within the Waikiki special district; (5) use within an historic site; (6) reclassification of conservation lands; and (7) certain amendments to a county general plan. Preliminary surveys and assessment of future biological impacts are required.

DOH has general regulatory authority over water pollution control.

## Implementation Tools

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 13-232, HAR Sanitation and Fire Safety	DLNR- DOBOR	-no building structure, object, site improvement, landscape treatment, or other facility of any nature whatsoever shall be erected, constructed, reconstructed, altered, moved, installed, or demolished at a state boating facility or other property under the jurisdiction of the division of boating and ocean recreation except in accordance with a department permit or as provided by a lease or right of entry issued by the department. All improvements made pursuant to this section, including those improvements made prior to the effective date of these rules, shall be constructed, maintained, operated, or modified to comply with the Environmental Protection Agency's final approved guidelines for best management practices for marinas and recreational boating, i.e., the "National Management Measures Guidance to Control Nonpoint Source Pollution from Marinas and Recreational Boating. EPA, November 2001," or as subsequently amended. The department may require plans, specifications, and other pertinent data to accompany or supplement any application. (§13-232-43)
<i>National Management Measures to Control Nonpoint Source Pollution from Marinas and Recreational Boating (EPA 2001)</i>	EPA  DLNR- DOBOR	Technical guidance and reference document for use by State and local managers in the implementation of nonpoint source pollution management programs. It contains information on the best available, economically achievable means of reducing pollution of surface water runoff from marinas and recreational boating.
Chapter 183C, HRS Conservation District  Chapter 13-5, HAR Conservation District	DLNR	<ul style="list-style-type: none"> <li>-DLNR shall establish zones within the conservation district and permitted uses within those zones (§183C-4)</li> <li>-DLNR regulates land use in the conservation district through the issuance of permits (CDUPs) (§183C-6)</li> <li>-5 subzones within the conservation district are established by DLNR; lands and state marine waters seaward of the upper reaches of the wash of waves to the extent of the State's jurisdiction are included in the resource (R) subzone, unless placed in a protective (P) or limited (L) subzone (§13-5-13)</li> <li>-marine construction, dredging, filling or any combination thereof of submerged lands in the resource subzone requires a permit from the BLNR (§13-5-24)</li> <li>-permit application process and requirements are described in §13-5-31; applications for permits shall contain a draft EA or EIS</li> <li>-for uses on submerged lands and in state marine waters, the requirements of this chapter are satisfied by complying with provisions of HRS chapters 171 (public lands), 184 (state parks), 187A, 188, 189, and 190 (marine life management), 190D (ocean leasing), 195 (natural area reserve system), 195D (conservation of aquatic life and wildlife), or 200 (boating and ocean recreation) or their implementing rules (§13-5-30(d))</li> </ul>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
<p>Chapter 343, HRS Environmental Impact Statements</p> <p>Chapter 11-200, HAR Environmental Impact Statement Rules</p>	OEQC	<p>-states that an environmental review process will integrate the review of environmental concerns with existing planning processes of the State and counties and alert decision makers to significant environmental effects which may result from the implementation of certain actions (§343-1)</p> <p>-the following actions, among others, shall trigger an EA: (1) use of State or county lands or funds; (2) use within the conservation district; (3) use within a shoreline setback area; (4) use within the Waikiki special district; (5) use within an historic site; (6) certain amendments to county general plans; and (7) reclassification of conservation lands (§343-5)</p> <p>-provides agencies and persons with procedures, specifications of contents of EAs and EISs, and criteria and definitions of statewide application ((§11-200-1)</p>
Chapter 205A, HRS Coastal Zone Management	OP-CZM	<p>-Hawaii CZM Program reviews projects for consistency with CZM objectives and policies, and recommends public benefits packages for private marina developments</p> <p>-related policies include: Ensure that coastal dependent development such as harbors and ports, and coastal related development such as visitor industry facilities and energy generating facilities, are located, designed, and constructed to minimize adverse social, visual, and environmental impacts in the coastal zone management area; and Promote water quantity and quality planning and management practices that reflect the tolerance of fresh water and marine ecosystems and maintain and enhance water quality through the development and implementation of point and nonpoint source water pollution control measures. (§205A-2)</p> <p>-establishes special controls on developments within an area along the shoreline to avoid permanent losses of valuable resources (§205A-21, -26).</p>
Chapter 205A, HRS Coastal Zone Management, continued	OP-CZM	<p>-no development is allowed in any county within these special management areas (SMAs) without a permit (§205A-28). The county planning departments administer the SMA permit process.</p> <p>-no development is approved unless it is found that the development, among other things, will not have any substantial adverse environmental or ecological effect; will minimize dredging, filling or otherwise altering any bay, estuary, salt marsh, river mouth, slough or lagoon; and will not adversely affect water quality. (§205A-26)</p>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
<p>Chapter 15-150, HAR Special Management Areas/Shoreline Areas</p> <p>Chapter 12-202, MCC SMA Rules for Maui Planning Commission</p> <p>Chapter 12-302, MCC SMA Rules for Molokai Planning Commission</p> <p>Chapter 12-402, MCC SMA Rules for Lanai Planning Commission</p> <p>Chapter 25, ROH Special Management Area</p> <p>Rule 9, Hawaii County Planning Commission</p> <p>SMA Rules and Regulations of the County of Kauai</p>	<p>OP for SMAs of CDDs</p> <p>County planning commissions</p>	<p>-provides guidelines for use by OP for the review of developments proposed in the SMA of community development districts (CDDs); development in the SMA of CDDs must be consistent with the objectives and policies established in Section 205A-2, HRS (§15-150-6)</p> <p>-county rules for administering the SMA permits and shoreline setback provisions within each county/island</p>
<p>Chapter 171, HRS Mgt and Disposition of Public Lands</p>	<p>DLNR</p>	<p>-DLNR shall manage, administer, and exercise control over public lands, the water resources, ocean waters, navigable streams, coastal areas (excluding commercial harbor areas), and minerals and all other interests therein and exercise such powers of disposition thereof as may be authorized by law (§171-3)</p> <p>- describes methods to dispose of public lands, including lease, license, and permit by public auction (§171-14, -35, -37, -54, -55)</p> <p>-describes development of leasehold projects through a private developer (§171-60)</p>
<p>Chapter 200, HRS Ocean Recreation and Coastal Areas Programs</p>	<p>DLNR-DOBOR</p>	<p>-notwithstanding any law to the contrary, the board may lease fast lands within an existing state boating facility by public auction or by direct negotiation pursuant to §171-59, for private development, management, and operation. The permissible uses under any lease disposed of under this section shall be consistent with the purpose for which the land was set aside by the governor pursuant to §171-11. Permissible uses may include any use that will complement or support the maritime activities of state boating facilities.(§200-2.5)</p>
<p>Section 404, CWA</p>	<p>USACOE</p>	<p>The U.S. Army Corps of Engineers (USACOE) has the authority to protect the waters of the U.S., including wetlands, by regulating certain activities within those waters. Section 404 of the Clean Water Act requires that anyone interested in placing dredged or fill material into waters of the U.S. must first obtain a permit from the Corps.</p>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Section 10, Rivers and Harbors Act of 1899	USACOE	-requires approval prior to undertaking of any work in or over navigable waters of the U.S., or which affects the course, location, condition, or capacity of such waters. The law applies to any dredging or disposal of dredged materials, excavation, filling, rechannelization, or any other modification of a navigable water of the U.S., and applies to all structures, from the smallest floating dock to the largest commercial undertaking.
Section 401, CWA	DOH	-DOH is authorized under Section 401 of the Federal Clean Water Act and Section 342D-53, HRS, to administer the Section 401 Water Quality Certification (WQC) program in Hawaii. - A WQC issued by the DOH is required by any owner applying for a Federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may result in any “discharge” into navigable waters. A 401 WQC certifies that the activity will not violate State water quality standards (Chapter 11-54, HAR). -The Section 404, CWA, permit process, administered by USACOE, would trigger a Section 401 WQC prior to issuance.
Chapter 342D, HRS Water Pollution	DOH	-prohibits discharge of any pollutant into State waters -allows DOH to institute a civil action for injunctive relief to prevent violation of State water quality standards (§342D-11) -under the statute, DOH may request the court to order nonpoint source polluters to implement all required management measures

## Water Quality Assessment Management Measure

Assess water quality as part of marina siting and design.

### Responsible Agencies and Authorities

DLNR is the lead agency for implementing this management measure. Since 1993, DOBOR has been responsible for managing and administering the ocean-based recreation and coastal areas programs pertaining to the ocean waters and navigable streams of the State (excluding commercial harbors); planning, developing, operating, administering and maintaining small boat harbors and other boating facilities; and regulating the use of these facilities. A 2004 amendment to Section 13-232-43, HAR, ensures that all improvements to a State boating facility or other property under the jurisdiction of DOBOR shall be constructed, maintained, operated, or modified to comply with EPA’s *National Management Measures Guidance to Control Nonpoint Source Pollution from Marinas and Recreational Boating* (November 2001) or subsequent amendments.

DLNR, under OCCL, also administers the State’s CDUP process, which is triggered by any proposed marina construction project because submerged lands are included within the State Conservation District. OCCL will require, as a condition of a Conservation District Use Permit, compliance with EPA’s *National Management Measures Guidance to Control Nonpoint Source Pollution from Marinas and Recreational Boating* (November 2001) for both public and private marina developments .

Typically, prospective marina developments must undergo numerous permit processes, with their associated environmental assessments and extensive public review. Marina developments automatically trigger a CUA because they involve submerged lands; marina developments that affect coastal lands within the counties' SMAs must seek an SMA permit. Chapter 343, HRS, and Chapter 11-200, HAR, both about the Environmental Impact Statement law, require the preparation of an EA and/or EIS for proposed activities that trigger the environmental review process. Some of the trigger conditions are as follows: (1) use of State or county lands or funds; (2) use within the conservation district; (3) use within a shoreline setback area; (4) use within the Waikiki special district; (5) use within an historic site; (6) reclassification of conservation lands; and (7) certain amendments to a county general plan. Preliminary surveys and assessment of future biological impacts are required.

DOH has regulatory authority over water pollution control, NPDES permit process, and Section 401, CWA, water quality certification.

All State marine waters are classified as either Class A or Class AA. Section 11-54-03, HAR, states that "it is the objective of class AA waters that these waters remain in their natural pristine state as nearly as possible with an absolute minimum of pollution or alteration of water quality from any human-caused source or action." The objective of class A waters is that "their use for recreational purposes and aesthetic enjoyment be protected. Any other use shall be permitted as long as it is compatible with the protection and propagation of fish, shellfish, and wildlife, and with recreation in and on these waters. These waters shall not act as receiving waters for any discharge which has not received the best degree of treatment or control compatible with the criteria established for this class" (§11-54-03(c)(2)). Most of the State's marine waters are designated the more protective Class AA. Development of a marina in Class AA waters would be prohibited, unless a variance from Section 11-54, HAR, was obtained from DOH.

**Implementation Tools**

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 13-232, HAR Sanitation and Fire Safety	DLNR-DOBOR	-no building structure, object, site improvement, landscape treatment, or other facility of any nature whatsoever shall be erected, constructed, reconstructed, altered, moved, installed, or demolished at a state boating facility or other property under the jurisdiction of the division of boating and ocean recreation except in accordance with a department permit or as provided by a lease or right of entry issued by the department. All improvements made pursuant to this section, including those improvements made prior to the effective date of these rules, shall be constructed, maintained, operated, or modified to comply with EPA's final approved guidelines for BMPs for marinas and recreational boating, i.e., the "National Management Measures Guidance to Control Nonpoint Source Pollution from Marinas and Recreational Boating. EPA, November 2001," or as subsequently amended. The department may require plans, specifications, and other pertinent data to accompany or supplement any application. (§13-232-43)

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
<i>National Management Measures to Control Nonpoint Source Pollution from Marinas and Recreational Boating</i> (EPA 2001)	EPA  DLNR-DOBOR	Technical guidance and reference document for use by State and local managers in the implementation of nonpoint source pollution management programs. It contains information on the best available, economically achievable means of reducing pollution of surface water runoff from marinas and recreational boating.
Chapter 183C, HRS Conservation District  Chapter 13-5, HAR Conservation District	DLNR	<ul style="list-style-type: none"> <li>-DLNR shall establish zones within the conservation district and permitted uses within those zones (§183C-4)</li> <li>-DLNR regulates land use in the conservation district through the issuance of permits (CDUPs) (§183C-6)</li> <li>-5 subzones within the conservation district are established by DLNR; lands and state marine waters seaward of the upper reaches of the wash of waves to the extent of the State’s jurisdiction are included in the resource (R) subzone, unless placed in a protective (P) or limited (L) subzone (§13-5-13)</li> <li>-marine construction, dredging, filling or any combination thereof of submerged lands in the resource subzone requires a permit from the DLNR (§13-5-24)</li> <li>-permit application process and requirements are described in §13-5-31; applications for permits shall contain a draft EA or EIS</li> <li>-for uses on submerged lands and in state marine waters, the requirements of this chapter are satisfied by complying with provisions of HRS chapters 171 (public lands), 184 (state parks), 187A, 188, 189, and 190 (marine life management), 190D (ocean leasing), 195 (natural area reserve system), 195D (conservation of aquatic life and wildlife), or 200 (boating and ocean recreation) or their implementing rules (§13-5-30(d))</li> </ul>
Chapter 343, HRS Environmental Impact Statements  Chapter 11-200, HAR Environmental Impact Statement Rules	OEQC	<ul style="list-style-type: none"> <li>-states that an environmental review process will integrate the review of environmental concerns with existing planning processes of the State and counties and alert decision makers to significant environmental effects which may result from the implementation of certain actions (§343-1)</li> <li>-the following actions, among others, shall trigger an EA: (1) use of State or county lands or funds; (2) use within the conservation district; (3) use within a shoreline setback area; (4) use within the Waikiki special district; (5) use within an historic site; (6) certain amendments to county general plans; and (7) reclassification of conservation lands (§343-5)</li> <li>-provides agencies and persons with procedures, specifications of contents of EAs and EISs, and criteria and definitions of statewide application ((§11-200-1)</li> </ul>



Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 205A, HRS Coastal Zone Management	OP-CZM	<p>-Hawaii CZM Program reviews projects for consistency with CZM objectives and policies, and recommends public benefits packages for private marina developments</p> <p>-related policies include: Ensure that coastal dependent development such as harbors and ports, and coastal related development such as visitor industry facilities and energy generating facilities, are located, designed, and constructed to minimize adverse social, visual, and environmental impacts in the coastal zone management area; and Promote water quantity and quality planning and management practices that reflect the tolerance of fresh water and marine ecosystems and maintain and enhance water quality through the development and implementation of point and nonpoint source water pollution control measures. (§205A-2)</p>
Chapter 205A, HRS Coastal Zone Management, continued	OP-CZM	<p>-establishes special controls on developments within an area along the shoreline to avoid permanent losses of valuable resources (§205A-21, -26).</p> <p>-no development is allowed in any county within these special management areas (SMAs) without a permit (§205A-28). The county planning departments administer the SMA permit process.</p> <p>-no development is approved unless it is found that the development, among other things, will not have any substantial adverse environmental or ecological effect; will minimize dredging, filling or otherwise altering any bay, estuary, salt marsh, river mouth, slough or lagoon; and will not adversely affect water quality. (§205A-26)</p>
<p>Chapter 15-150, HAR Special Management Areas/Shoreline Areas</p> <p>Chapter 12-202, MCC SMA Rules for Maui Planning Commission</p> <p>Chapter 12-302, MCC SMA Rules for Molokai Planning Commission</p> <p>Chapter 12-402, MCC SMA Rules for Lanai Planning Commission</p> <p>Chapter 25, ROH Special Management Area</p> <p>Rule 9, Hawaii County Planning Commission</p> <p>SMA Rules and Regulations of the County of Kauai</p>	<p>OP for SMAs of CDDs</p> <p>County planning commissions</p>	<p>-provides guidelines for use by OP for the review of developments proposed in the SMA of community development districts (CDDs); development in the SMA of CDDs must be consistent with the objectives and policies established in Section 205A-2, HRS (§15-150-6)</p> <p>-county rules for administering the SMA permits and shoreline setback provisions within each county/island</p>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 171, HRS Mgt and Disposition of Public Lands	DLNR	<p>-DLNR shall manage, administer, and exercise control over public lands, the water resources, ocean waters, navigable streams, coastal areas (excluding commercial harbor areas), and minerals and all other interests therein and exercise such powers of disposition thereof as may be authorized by law (§171-3)</p> <p>- describes methods to dispose of public lands, including lease, license, and permit by public auction (§171-14, -35, -37, -54, -55)</p> <p>-describes development of leasehold projects through a private developer (§171-60)</p>
Chapter 200, HRS Ocean Recreation and Coastal Areas Programs	DLNR-DOBOR	<p>-notwithstanding any law to the contrary, the board may lease fast lands within an existing state boating facility by public auction or by direct negotiation pursuant to §171-59, for private development, management, and operation. The permissible uses under any lease disposed of under this section shall be consistent with the purpose for which the land was set aside by the governor pursuant to §171-11. Permissible uses may include any use that will complement or support the maritime activities of state boating facilities.(§200-2.5)</p>
Chapter 11-54, HAR Water Quality Standards	DOH	<p>-all State marine bottom ecosystems are classified as either Class I or Class II.</p> <p>-it is the objective of class I marine bottom ecosystems that they remain as nearly as possible in their natural pristine state with an absolute minimum of pollution from any human-induced source. Uses of marine bottom ecosystems in this class are passive human uses without intervention or alteration, allowing the perpetuation and preservation of the marine bottom in a most natural state... (§11-54-03(d)(1)).</p> <p>-the objective of class II marine bottom ecosystems is that their use for protection including propagation of fish, shellfish, and wildlife, and for recreational purposes not be limited in any way. Any actions that may permanently or completely modify, alter or degrade the marine bottom, including navigational structures such as harbors and ramps, may be allowed in class II bottoms provided approval is secured from DOH (§11-54-03(d)(2)).</p> <p>-the areas of class I and II bottoms are listed by marine bottom type in Section 11-54-07, HAR.</p>
Section 404, CWA	USACOE	<p>The U.S. Army Corps of Engineers (USACOE) has the authority to protect the waters of the U.S., including wetlands, by regulating certain activities within those waters. Section 404 of the Clean Water Act requires that anyone interested in placing dredged or fill material into waters of the U.S. must first obtain a permit from the Corps.</p>
Section 10, Rivers and Harbors Act of 1899	USACOE	<p>-requires approval prior to undertaking of any work in or over navigable waters of the U.S., or which affects the course, location, condition, or capacity of such waters. The law applies to any dredging or disposal of dredged materials, excavation, filling, rechannelization, or any other modification of a navigable water of the U.S., and applies to all structures, from the smallest floating dock to the largest commercial undertaking.</p>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Section 401, CWA	DOH	<p>-DOH is authorized under Section 401 of the Federal Clean Water Act and Section 342D-53, HRS, to administer the Section 401 Water Quality Certification (WQC) program in Hawaii.</p> <p>- A WQC issued by the DOH is required by any owner applying for a Federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may result in any “discharge” into navigable waters. A 401 WQC certifies that the activity will not violate State water quality standards (Chapter 11-54, HAR).</p> <p>-The Section 404, CWA, permit process, administered by USACOE, would trigger a Section 401 WQC prior to issuance.</p>
Chapter 342D, HRS Water Pollution	DOH	<p>-prohibits discharge of any pollutant into State waters</p> <p>-allows DOH to institute a civil action for injunctive relief to prevent violation of State water quality standards (§342D-11)</p> <p>-under the statute, DOH may request the court to order nonpoint source polluters to implement all required management measures</p>

## Habitat Assessment Management Measure

Site and design marinas to protect against adverse effects on coral reefs, shellfish resources, wetlands, submerged aquatic vegetation, or other important riparian and aquatic habitat areas as designated by local, State, or federal governments.

### Responsible Agencies and Authorities

DLNR is the lead agency for implementing this management measure. Since 1993, DOBOR has been responsible for managing and administering the ocean-based recreation and coastal areas programs pertaining to the ocean waters and navigable streams of the State (excluding commercial harbors); planning, developing, operating, administering and maintaining small boat harbors and other boating facilities; and regulating the use of these facilities. A 2004 amendment to Section 13-232-43, HAR, ensures that all improvements to a State boating facility or other property under the jurisdiction of DOBOR shall be constructed, maintained, operated, or modified to comply with EPA's *National Management Measures Guidance to Control Nonpoint Source Pollution from Marinas and Recreational Boating* (November 2001) or subsequent amendments.

DLNR, under OCCL, also administers the State's CDUP process, which is triggered by any proposed marina construction project because submerged lands are included within the State Conservation District. OCCL will require, as a condition of a Conservation District Use Permit, compliance with EPA's *National Management Measures Guidance to Control Nonpoint Source Pollution from Marinas and Recreational Boating* (November 2001) for both public and private marina developments .

Typically, prospective marina developments must undergo numerous permit processes, with their associated environmental assessments and extensive public review. Marina developments automatically trigger a CDUA because they involve submerged lands; marina developments that affect coastal lands within the counties' SMAs must seek an SMA permit. Chapter 343, HRS, and Chapter 11-200, HAR, both about the Environmental Impact Statement law, require the preparation of an EA and/or EIS for proposed activities that trigger the environmental review process. Some of the trigger conditions are as follows: (1) use of State or county lands or funds; (2) use within the conservation district; (3) use within a shoreline setback area; (4) use within the Waikiki special district; (5) use within an historic site; (6) reclassification of conservation lands; and (7) certain amendments to a county general plan. Preliminary surveys and assessment of future biological impacts are required.

DOH has regulatory authority over water pollution control, NPDES permit process, and Section 401, CWA, water quality certification.

All State marine bottom ecosystems are classified as either Class I or Class II. Section 11-54-03, HAR, states that "it is the objective of class I marine bottom ecosystems that they remain as nearly as possible in their natural pristine state with an absolute minimum of pollution from any human-induced source. Uses of marine bottom ecosystems in this class are passive human uses without intervention or alteration, allowing the perpetuation and preservation of the marine bottom in a most natural state." The objective of class II marine bottom ecosystems is that "their use for protection including propagation of fish, shellfish, and wildlife, and for recreational purposes not be limited in any way."

Any actions that may permanently or completely modify, alter or degrade the marine bottom, including navigational structures such as harbors and ramps, may be allowed in class II bottoms provided approval is secured from DOH. The areas of class I and II bottoms are listed by marine bottom type in Section 11-54-07, HAR.

### Implementation Tools

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 13-232, HAR Sanitation and Fire Safety	DLNR- DOBOR	-no building structure, object, site improvement, landscape treatment, or other facility of any nature whatsoever shall be erected, constructed, reconstructed, altered, moved, installed, or demolished at a state boating facility or other property under the jurisdiction of the division of boating and ocean recreation except in accordance with a department permit or as provided by a lease or right of entry issued by the department. All improvements made pursuant to this section, including those improvements made prior to the effective date of these rules, shall be constructed, maintained, operated, or modified to comply with EPA's final approved guidelines for BMPs for marinas and recreational boating, i.e., the "National Management Measures Guidance to Control Nonpoint Source Pollution from Marinas and Recreational Boating. EPA, November 2001," or as subsequently amended. The department may require plans, specifications, and other pertinent data to accompany or supplement any application. (§13-232-43)
<i>National Management Measures to Control Nonpoint Source Pollution from Marinas and Recreational Boating (EPA 2001)</i>	EPA  DLNR- DOBOR	Technical guidance and reference document for use by State and local managers in the implementation of nonpoint source pollution management programs. It contains information on the best available, economically achievable means of reducing pollution of surface water runoff from marinas and recreational boating.
Chapter 183C, HRS Conservation District  Chapter 13-5, HAR Conservation District	DLNR	<ul style="list-style-type: none"> <li>-DLNR shall establish zones within the conservation district and permitted uses within those zones (§183C-4)</li> <li>-DLNR regulates land use in the conservation district through the issuance of permits (CDUPs) (§183C-6)</li> <li>-5 subzones within the conservation district are established by DLNR; lands and state marine waters seaward of the upper reaches of the wash of waves to the extent of the State's jurisdiction are included in the resource (R) subzone, unless placed in a protective (P) or limited (L) subzone (§13-5-13)</li> <li>-marine construction, dredging, filling or any combination thereof of submerged lands in the resource subzone requires a permit from the BLNR (§13-5-24)</li> <li>-permit application process and requirements are described in §13-5-31; applications for permits shall contain a draft EA or EIS</li> <li>-for uses on submerged lands and in state marine waters, the requirements of this chapter are satisfied by complying with provisions of HRS chapters 171 (public lands), 184 (state parks), 187A, 188, 189, and 190 (marine life management), 190D (ocean leasing), 195 (natural area reserve system), 195D (conservation of aquatic life and wildlife), or 200 (boating and ocean recreation) or their implementing rules (§13-5-30(d))</li> </ul>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
<p>Chapter 343, HRS Environmental Impact Statements</p> <p>Chapter 11-200, HAR Environmental Impact Statement Rules</p>	OEQC	<p>-states that an environmental review process will integrate the review of environmental concerns with existing planning processes of the State and counties and alert decision makers to significant environmental effects which may result from the implementation of certain actions (§343-1)</p> <p>-the following actions, among others, shall trigger an EA: (1) use of State or county lands or funds; (2) use within the conservation district; (3) use within a shoreline setback area; (4) use within the Waikiki special district; (5) use within an historic site; (6) certain amendments to county general plans; and (7) reclassification of conservation lands (§343-5)</p> <p>-provides agencies and persons with procedures, specifications of contents of EAs and EISs, and criteria and definitions of statewide application (§11-200-1)</p>
Chapter 205A, HRS Coastal Zone Management	OP-CZM	<p>-Hawaii CZM Program reviews projects for consistency with CZM objectives and policies, and recommends public benefits packages for private marina developments</p> <p>-related policies include: Ensure that coastal dependent development such as harbors and ports, and coastal related development such as visitor industry facilities and energy generating facilities, are located, designed, and constructed to minimize adverse social, visual, and environmental impacts in the coastal zone management area; and Promote water quantity and quality planning and management practices that reflect the tolerance of fresh water and marine ecosystems and maintain and enhance water quality through the development and implementation of point and nonpoint source water pollution control measures. (§205A-2)</p> <p>-establishes special controls on developments within an area along the shoreline to avoid permanent losses of valuable resources (§205A-21, -26).</p> <p>-no development is allowed in any county within these special management areas (SMAs) without a permit (§205A-28). The county planning departments administer the SMA permit process.</p> <p>-no development is approved unless it is found that the development, among other things, will not have any substantial adverse environmental or ecological effect; will minimize dredging, filling or otherwise altering any bay, estuary, salt marsh, river mouth, slough or lagoon; and will not adversely affect water quality. (§205A-26)</p>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
<p>Chapter 15-150, HAR Special Management Areas/Shoreline Areas</p> <p>Chapter 12-202, MCC SMA Rules for Maui Planning Commission</p> <p>Chapter 12-302, MCC SMA Rules for Molokai Planning Commission</p> <p>Chapter 12-402, MCC SMA Rules for Lanai Planning Commission</p>	<p>OP for SMAs of CDDs</p> <p>County planning commissions</p>	<p>-provides guidelines for use by OP for the review of developments proposed in the SMA of community development districts (CDDs); development in the SMA of CDDs must be consistent with the objectives and policies established in Section 205A-2, HRS (§15-150-6)</p> <p>-county rules for administering the SMA permits and shoreline setback provisions within each county/island</p>
<p>Chapter 25, ROH Special Management Area</p> <p>Rule 9, Hawaii County Planning Commission</p> <p>SMA Rules and Regulations of the County of Kauai</p>	<p>County planning commissions</p>	<p>-county rules for administering the SMA permits and shoreline setback provisions within each county/island</p>
<p>Chapter 171, HRS Mgt and Disposition of Public Lands</p>	<p>DLNR</p>	<p>-DLNR shall manage, administer, and exercise control over public lands, the water resources, ocean waters, navigable streams, coastal areas (excluding commercial harbor areas), and minerals and all other interests therein and exercise such powers of disposition thereof as may be authorized by law (§171-3)</p> <p>- describes methods to dispose of public lands, including lease, license, and permit by public auction (§171-14, -35, -37, -54, -55)</p> <p>-describes development of leasehold projects through a private developer (§171-60)</p>
<p>Chapter 200, HRS Ocean Recreation and Coastal Areas Programs</p>	<p>DLNR-DOBOR</p>	<p>-notwithstanding any law to the contrary, the board may lease fast lands within an existing state boating facility by public auction or by direct negotiation pursuant to §171-59, for private development, management, and operation. The permissible uses under any lease disposed of under this section shall be consistent with the purpose for which the land was set aside by the governor pursuant to §171-11. Permissible uses may include any use that will complement or support the maritime activities of state boating facilities.(§200-2.5)</p>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 11-54, HAR Water Quality Standards	DOH	<p>-all State marine bottom ecosystems are classified as either Class I or Class II.</p> <p>-it is the objective of class I marine bottom ecosystems that they remain as nearly as possible in their natural pristine state with an absolute minimum of pollution from any human-induced source. Uses of marine bottom ecosystems in this class are passive human uses without intervention or alteration, allowing the perpetuation and preservation of the marine bottom in a most natural state... (§11-54-03(d)(1)).</p> <p>-the objective of class II marine bottom ecosystems is that their use for protection including propagation of fish, shellfish, and wildlife, and for recreational purposes not be limited in any way. Any actions that may permanently or completely modify, alter or degrade the marine bottom, including navigational structures such as harbors and ramps, may be allowed in class II bottoms provided approval is secured from DOH (§11-54-03(d)(2)).</p> <p>-the areas of class I and II bottoms are listed by marine bottom type in Section 11-54-07, HAR.</p>
Section 404, CWA	USACOE	The U.S. Army Corps of Engineers (USACOE) has the authority to protect the waters of the U.S., including wetlands, by regulating certain activities within those waters. Section 404 of the Clean Water Act requires that anyone interested in placing dredged or fill material into waters of the U.S. must first obtain a permit from the Corps.
Section 10, Rivers and Harbors Act of 1899	USACOE	-requires approval prior to undertaking any work in or over navigable waters of the U.S., or which affects the course, location, condition, or capacity of such waters. The law applies to any dredging or disposal of dredged materials, excavation, filling, rechannelization, or any other modification of a navigable water of the U.S., and applies to all structures, from the smallest floating dock to the largest commercial undertaking.
Section 401, CWA	DOH	<p>-DOH is authorized under Section 401 of the Federal Clean Water Act and Section 342D-53, HRS, to administer the Section 401 Water Quality Certification (WQC) program in Hawaii.</p> <p>- A WQC issued by the DOH is required by any owner applying for a Federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may result in any “discharge” into navigable waters. A 401 WQC certifies that the activity will not violate State water quality standards (Chapter 11-54, HAR).</p> <p>-The Section 404, CWA, permit process, administered by USACOE, would trigger a Section 401 WQC prior to issuance.</p>
Chapter 342D, HRS Water Pollution	DOH	<p>-prohibits discharge of any pollutant into State waters</p> <p>-allows DOH to institute a civil action for injunctive relief to prevent violation of State water quality standards (§342D-11)</p> <p>-under the statute, DOH may request the court to order nonpoint source polluters to implement all required management measures</p>



## Shoreline Stabilization Management Measure

Where shoreline erosion is a serious nonpoint source pollution problem, shorelines may need to be stabilized. Vegetative methods are strongly preferred. Structural methods may be necessary where vegetative methods cannot work and where they do not interfere with natural beach processes or harm other sensitive ecological areas.

### Responsible Agencies and Authorities

DLNR is the lead agency for implementing this management measure. Since 1993, DOBOR has been responsible for managing and administering the ocean-based recreation and coastal areas programs pertaining to the ocean waters and navigable streams of the State (excluding commercial harbors); planning, developing, operating, administering and maintaining small boat harbors and other boating facilities; and regulating the use of these facilities. A 2004 amendment to Section 13-232-43, HAR, ensures that all improvements to a State boating facility or other property under the jurisdiction of DOBOR shall be constructed, maintained, operated, or modified to comply with EPA's *National Management Measures Guidance to Control Nonpoint Source Pollution from Marinas and Recreational Boating* (November 2001) or subsequent amendments.

DLNR, under OCCL, also administers the State's CDUP process, which is triggered by any proposed marina construction project because submerged lands are included within the State Conservation District. OCCL will require, as a condition of a Conservation District Use Permit, compliance with EPA's *National Management Measures Guidance to Control Nonpoint Source Pollution from Marinas and Recreational Boating* (November 2001) for both public and private marina developments .

DOH has regulatory authority over water pollution control, NPDES permit process, and Section 401, CWA, water quality certification.

### Implementation Tools

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 13-232, HAR Sanitation and Fire Safety	DLNR- DOBOR	-no building structure, object, site improvement, landscape treatment, or other facility of any nature whatsoever shall be erected, constructed, reconstructed, altered, moved, installed, or demolished at a state boating facility or other property under the jurisdiction of the division of boating and ocean recreation except in accordance with a department permit or as provided by a lease or right of entry issued by the department. All improvements made pursuant to this section, including those improvements made prior to the effective date of these rules, shall be constructed, maintained, operated, or modified to comply with EPA's final approved guidelines for BMPs for marinas and recreational boating, i.e., the "National Management Measures Guidance to Control Nonpoint Source Pollution from Marinas and Recreational Boating. EPA, November 2001," or as subsequently amended. The department may require plans, specifications, and other pertinent data to accompany or supplement any application. (§13-232-43)

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
<i>National Management Measures to Control Nonpoint Source Pollution from Marinas and Recreational Boating</i> (EPA 2001)	EPA  DLNR-DOBOR	Technical guidance and reference document for use by State and local managers in the implementation of nonpoint source pollution management programs. It contains information on the best available, economically achievable means of reducing pollution of surface water runoff from marinas and recreational boating.
Chapter 183C, HRS Conservation District  Chapter 13-5, HAR Conservation District	DLNR	<ul style="list-style-type: none"> <li>-DLNR shall establish zones within the conservation district and permitted uses within those zones (§183C-4)</li> <li>-DLNR regulates land use in the conservation district through the issuance of permits (CDUPs) (§183C-6)</li> <li>-5 subzones within the conservation district are established by DLNR; lands and state marine waters seaward of the upper reaches of the wash of waves to the extent of the State’s jurisdiction are included in the resource (R) subzone, unless placed in a protective (P) or limited (L) subzone (§13-5-13)</li> <li>-marine construction, dredging, filling or any combination thereof of submerged lands in the resource subzone requires a permit from the BLNR (§13-5-24)</li> <li>-permit application process and requirements are described in §13-5-31; applications for permits shall contain a draft EA or EIS</li> <li>-for uses on submerged lands and in state marine waters, the requirements of this chapter are satisfied by complying with provisions of HRS chapters 171 (public lands), 184 (state parks), 187A, 188, 189, and 190 (marine life management), 190D (ocean leasing), 195 (natural area reserve system), 195D (conservation of aquatic life and wildlife), or 200 (boating and ocean recreation) or their implementing rules (§13-5-30(d))</li> </ul>
Chapter 205A, HRS Coastal Zone Management	OP-CZM	<ul style="list-style-type: none"> <li>-Hawaii CZM Program reviews projects for consistency with CZM objectives and policies, and recommends public benefits packages for private marina developments</li> <li>-related policies include: Ensure that coastal dependent development such as harbors and ports, and coastal related development such as visitor industry facilities and energy generating facilities, are located, designed, and constructed to minimize adverse social, visual, and environmental impacts in the coastal zone management area; and Promote water quantity and quality planning and management practices that reflect the tolerance of fresh water and marine ecosystems and maintain and enhance water quality through the development and implementation of point and nonpoint source water pollution control measures. (§205A-2)</li> <li>-establishes special controls on developments within an area along the shoreline to avoid permanent losses of valuable resources (§205A-21, -26).</li> <li>-no development is allowed in any county within these special management areas (SMAs) without a permit (§205A-28). The county planning departments administer the SMA permit process.</li> <li>-no development is approved unless it is found that the development, among other things, will not have any substantial adverse environmental or ecological effect; will minimize dredging, filling or otherwise altering any bay, estuary, salt marsh, river mouth, slough or lagoon; and will not adversely affect water quality. (§205A-26)</li> </ul>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 11-55, HAR Water Pollution Control	DOH	<p><u>-NPDES General Permit:</u> The NPDES General Permit Authorizing Discharges of Storm Water Associated with Construction Activity covers discharges of stormwater runoff associated with construction activities, including clearing, grading, and excavation that result in the disturbance of one acre or more of total land area. This general permit also covers activities that disturb less than one acre of total land area that is part of a larger common plan if the larger common plan will ultimately disturb one acre or more of total land area. This general permit covers all areas of the State except for discharges in or to state waters classified by DOH as "class 1, inland waters," "class AA, marine waters," and some other restricted areas. For these state waters, an individual NPDES permit is required. (§11-55-04; 11-55-34.02; Appendix C)</p> <p><u>-NPDES Individual Permit:</u> For discharges of stormwater associated with construction activities that result in the disturbance of one acre or more of total land area that do not qualify for a general permit because they affect "class 1, inland waters" or "class AA, marine waters," a NPDES Individual Permit is required. (§11-55-04; §11-55-15)</p>
Chapter 11-54, HAR Water Quality Standards	DOH	-the objective of "class AA, marine waters" is that these waters remain in their natural pristine state as nearly as possible with an absolute minimum of pollution or alteration of water quality from any human-caused source or actions. Approximately 63% of Hawaii's coastline abuts Class AA marine waters. (§11-54-3(c)(1))
Section 404, CWA	USACOE	The U.S. Army Corps of Engineers (USACOE) has the authority to protect the waters of the U.S., including wetlands, by regulating certain activities within those waters. Section 404 of the Clean Water Act requires that anyone interested in placing dredged or fill material into waters of the U.S. must first obtain a permit from the Corps.
Section 10, Rivers and Harbors Act of 1899	USACOE	-requires approval prior to undertaking any work in or over navigable waters of the U.S., or which affects the course, location, condition, or capacity of such waters. The law applies to any dredging or disposal of dredged materials, excavation, filling, rechannelization, or any other modification of a navigable water of the U.S., and applies to all structures, from the smallest floating dock to the largest commercial undertaking.
Section 401, CWA	DOH	<p>-DOH is authorized under Section 401 of the Federal Clean Water Act and Section 342D-53, HRS, to administer the Section 401 Water Quality Certification (WQC) program in Hawaii.</p> <p>- A WQC issued by the DOH is required by any owner applying for a Federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may result in any "discharge" into navigable waters. A 401 WQC certifies that the activity will not violate State water quality standards (Chapter 11-54, HAR).</p> <p>-The Section 404, CWA, permit process, administered by USACOE, would trigger a Section 401 WQC prior to issuance.</p>
Chapter 342D, HRS Water Pollution	DOH	<p>-prohibits discharge of any pollutant into State waters</p> <p>-allows DOH to institute a civil action for injunctive relief to prevent violation of State water quality standards (§342D-11)</p> <p>-under the statute, DOH may request the court to order nonpoint source polluters to implement all required management measures</p>

## Storm Water Runoff Management Measure

Implement effective runoff control strategies which include the use of pollution prevention activities and the proper design of hull maintenance areas.

Reduce the average annual loadings of total suspended solids (TSS) in runoff from hull maintenance areas by 80%. For the purposes of this measure, an 80% reduction of TSS is to be determined on an average annual basis.

### **Responsible Agencies and Authorities**

DLNR is the lead agency for implementing this management measure. Since 1993, DOBOR has been responsible for managing and administering the ocean-based recreation and coastal areas programs pertaining to the ocean waters and navigable streams of the State (excluding commercial harbors); planning, developing, operating, administering and maintaining small boat harbors and other boating facilities; and regulating the use of these facilities. A 2004 amendment to Section 13-232-43, HAR, ensures that all improvements to a State boating facility or other property under the jurisdiction of DOBOR shall be constructed, maintained, operated, or modified to comply with EPA's *National Management Measures Guidance to Control Nonpoint Source Pollution from Marinas and Recreational Boating* (November 2001) or subsequent amendments.

DLNR, under OCCL, also administers the State's CDUP process, which is triggered by any proposed marina construction project because submerged lands are included within the State Conservation District. OCCL will require, as a condition of a Conservation District Use Permit, compliance with EPA's *National Management Measures Guidance to Control Nonpoint Source Pollution from Marinas and Recreational Boating* (November 2001) for both public and private marina developments .

DOH has regulatory authority over water pollution control, NPDES permit process, and Section 401, CWA, water quality certification.

### **Implementation Tools**

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 13-232, HAR Sanitation and Fire Safety	DLNR- DOBOR	-no building structure, object, site improvement, landscape treatment, or other facility of any nature whatsoever shall be erected, constructed, reconstructed, altered, moved, installed, or demolished at a state boating facility or other property under the jurisdiction of the division of boating and ocean recreation except in accordance with a department permit or as provided by a lease or right of entry issued by the department. All improvements made pursuant to this section, including those improvements made prior to the effective date of these rules, shall be constructed, maintained, operated, or modified to comply with EPA's final approved guidelines for BMPs for marinas and recreational boating, i.e., the "National Management Measures Guidance to Control Nonpoint Source Pollution from Marinas and Recreational Boating. EPA, November 2001," or as subsequently amended. The department may require plans, specifications, and other pertinent data to accompany or supplement any application. (§13-232-43)

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
<i>National Management Measures to Control Nonpoint Source Pollution from Marinas and Recreational Boating (EPA 2001)</i>	EPA  DLNR-DOBOR	Technical guidance and reference document for use by State and local managers in the implementation of nonpoint source pollution management programs. It contains information on the best available, economically achievable means of reducing pollution of surface water runoff from marinas and recreational boating.
Chapter 183C, HRS Conservation District  Chapter 13-5, HAR Conservation District	DLNR	<ul style="list-style-type: none"> <li>-DLNR shall establish zones within the conservation district and permitted uses within those zones (§183C-4)</li> <li>-DLNR regulates land use in the conservation district through the issuance of permits (CDUPs) (§183C-6)</li> <li>-5 subzones within the conservation district are established by DLNR; lands and state marine waters seaward of the upper reaches of the wash of waves to the extent of the State’s jurisdiction are included in the resource (R) subzone, unless placed in a protective (P) or limited (L) subzone (§13-5-13)</li> <li>-marine construction, dredging, filling or any combination thereof of submerged lands in the resource subzone requires a permit from the DLNR (§13-5-24)</li> <li>-permit application process and requirements are described in §13-5-31; applications for permits shall contain a draft EA or EIS</li> <li>-for uses on submerged lands and in state marine waters, the requirements of this chapter are satisfied by complying with provisions of HRS chapters 171 (public lands), 184 (state parks), 187A, 188, 189, and 190 (marine life management), 190D (ocean leasing), 195 (natural area reserve system), 195D (conservation of aquatic life and wildlife), or 200 (boating and ocean recreation) or their implementing rules (§13-5-30(d))</li> </ul>
Chapter 205A, HRS Coastal Zone Management	OP-CZM	<ul style="list-style-type: none"> <li>-Hawaii CZM Program reviews projects for consistency with CZM objectives and policies, and recommends public benefits packages for private marina developments</li> <li>-related policies include: Ensure that coastal dependent development such as harbors and ports, and coastal related development such as visitor industry facilities and energy generating facilities, are located, designed, and constructed to minimize adverse social, visual, and environmental impacts in the coastal zone management area; and Promote water quantity and quality planning and management practices that reflect the tolerance of fresh water and marine ecosystems and maintain and enhance water quality through the development and implementation of point and nonpoint source water pollution control measures. (§205A-2)</li> <li>-establishes special controls on developments within an area along the shoreline to avoid permanent losses of valuable resources (§205A-21, -26).</li> <li>-no development is allowed in any county within these special management areas (SMAs) without a permit (§205A-28). The county planning departments administer the SMA permit process.</li> <li>-no development is approved unless it is found that the development, among other things, will not have any substantial adverse environmental or ecological effect; will minimize dredging, filling or otherwise altering any bay, estuary, salt marsh, river mouth, slough or lagoon; and will not adversely affect water quality. (§205A-26)</li> </ul>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Section 404, CWA	USACOE	The U.S. Army Corps of Engineers (USACOE) has the authority to protect the waters of the U.S., including wetlands, by regulating certain activities within those waters. Section 404 of the Clean Water Act requires that anyone interested in placing dredged or fill material into waters of the U.S. must first obtain a permit from the Corps.
Section 10, Rivers and Harbors Act of 1899	USACOE	-requires approval prior to undertaking any work in or over navigable waters of the U.S., or which affects the course, location, condition, or capacity of such waters. The law applies to any dredging or disposal of dredged materials, excavation, filling, rechannelization, or any other modification of a navigable water of the U.S., and applies to all structures, from the smallest floating dock to the largest commercial undertaking.
Section 401, CWA	DOH	-DOH is authorized under Section 401 of the Federal Clean Water Act and Section 342D-53, HRS, to administer the Section 401 Water Quality Certification (WQC) program in Hawaii. - A WQC issued by the DOH is required by any owner applying for a Federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may result in any “discharge” into navigable waters. A 401 WQC certifies that the activity will not violate State water quality standards (Chapter 11-54, HAR). -The Section 404, CWA, permit process, administered by USACOE, would trigger a Section 401 WQC prior to issuance.
Chapter 342D, HRS Water Pollution	DOH	-prohibits discharge of any pollutant into State waters -allows DOH to institute a civil action for injunctive relief to prevent violation of State water quality standards (§342D-11) -under the statute, DOH may request the court to order nonpoint source polluters to implement all required management measures

### Fueling Station Design Management Measure

Design fueling stations to allow for ease in cleanup of spills.

#### Responsible Agencies and Authorities

DLNR is the lead agency for implementing this management measure. Since 1993, DOBOR has been responsible for managing and administering the ocean-based recreation and coastal areas programs pertaining to the ocean waters and navigable streams of the State (excluding commercial harbors); planning, developing, operating, administering and maintaining small boat harbors and other boating facilities; and regulating the use of these facilities. A 2004 amendment to Section 13-232-43, HAR, ensures that all improvements to a State boating facility or other property under the jurisdiction of DOBOR shall be constructed, maintained, operated, or modified to comply with EPA’s *National Management Measures Guidance to Control Nonpoint Source Pollution from Marinas and Recreational Boating* (November 2001) or subsequent amendments.

DLNR, under OCCL, also administers the State’s CDUP process, which is triggered by any proposed marina construction project because submerged lands are included within the State Conservation District. OCCL will require, as a condition of a Conservation District Use Permit, compliance with EPA’s

*National Management Measures Guidance to Control Nonpoint Source Pollution from Marinas and Recreational Boating* (November 2001) for both public and private marina developments .

Typically, prospective marina developments must undergo numerous permit processes, with their associated environmental assessments and extensive public review. Marina developments automatically trigger a CDUA because they involve submerged lands; marina developments that affect coastal lands within the counties’ SMAs must seek an SMA permit. Chapter 343, HRS, and Chapter 11-200, HAR, both about the Environmental Impact Statement law, require the preparation of an EA and/or EIS for proposed activities that trigger the environmental review process. Some of the trigger conditions are as follows: (1) use of State or county lands or funds; (2) use within the conservation district; (3) use within a shoreline setback area; (4) use within the Waikiki special district; (5) use within an historic site; (6) reclassification of conservation lands; and (7) certain amendments to a county general plan. Preliminary surveys and assessment of future biological impacts are required.

DOH has regulatory authority over water pollution control, NPDES permit process, and Section 401, CWA, water quality certification.

**Implementation Tools**

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 13-232, HAR Sanitation and Fire Safety	DLNR-DOBOR	-no building structure, object, site improvement, landscape treatment, or other facility of any nature whatsoever shall be erected, constructed, reconstructed, altered, moved, installed, or demolished at a state boating facility or other property under the jurisdiction of the division of boating and ocean recreation except in accordance with a department permit or as provided by a lease or right of entry issued by the department. All improvements made pursuant to this section, including those improvements made prior to the effective date of these rules, shall be constructed, maintained, operated, or modified to comply with EPA's final approved guidelines for BMPs for marinas and recreational boating, i.e., the "National Management Measures Guidance to Control Nonpoint Source Pollution from Marinas and Recreational Boating. EPA, November 2001," or as subsequently amended. The department may require plans, specifications, and other pertinent data to accompany or supplement any application. (§13-232-43)
<i>National Management Measures to Control Nonpoint Source Pollution from Marinas and Recreational Boating</i> (EPA 2001)	EPA DLNR-DOBOR	Technical guidance and reference document for use by State and local managers in the implementation of nonpoint source pollution management programs. It contains information on the best available, economically achievable means of reducing pollution of surface water runoff from marinas and recreational boating.

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
<p>Chapter 183C, HRS Conservation District</p> <p>Chapter 13-5, HAR Conservation District</p>	DLNR	<p>-DLNR shall establish zones within the conservation district and permitted uses within those zones (§183C-4)</p> <p>-DLNR regulates land use in the conservation district through the issuance of permits (CDUPs) (§183C-6)</p> <p>-5 subzones within the conservation district are established by DLNR; lands and state marine waters seaward of the upper reaches of the wash of waves to the extent of the State’s jurisdiction are included in the resource (R) subzone, unless placed in a protective (P) or limited (L) subzone (§13-5-13)</p> <p>-marine construction, dredging, filling or any combination thereof of submerged lands in the resource subzone requires a permit from the DLNR (§13-5-24)</p> <p>-permit application process and requirements are described in §13-5-31; applications for permits shall contain a draft EA or EIS</p> <p>-for uses on submerged lands and in state marine waters, the requirements of this chapter are satisfied by complying with provisions of HRS chapters 171 (public lands), 184 (state parks), 187A, 188, 189, and 190 (marine life management), 190D (ocean leasing), 195 (natural area reserve system), 195D (conservation of aquatic life and wildlife), or 200 (boating and ocean recreation) or their implementing rules (§13-5-30(d))</p>
<p>Chapter 343, HRS Environmental Impact Statements</p> <p>Chapter 11-200, HAR Environmental Impact Statement Rules</p>	OEQC	<p>-states that an environmental review process will integrate the review of environmental concerns with existing planning processes of the State and counties and alert decision makers to significant environmental effects which may result from the implementation of certain actions (§343-1)</p> <p>-the following actions, among others, shall trigger an EA: (1) use of State or county lands or funds; (2) use within the conservation district; (3) use within a shoreline setback area; (4) use within the Waikiki special district; (5) use within an historic site; (6) certain amendments to county general plans; and (7) reclassification of conservation lands (§343-5)</p> <p>-provides agencies and persons with procedures, specifications of contents of EAs and EISs, and criteria and definitions of statewide application ((§11-200-1)</p>



Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 205A, HRS Coastal Zone Management	OP-CZM	<p>-Hawaii CZM Program reviews projects for consistency with CZM objectives and policies, and recommends public benefits packages for private marina developments</p> <p>-related policies include: Ensure that coastal dependent development such as harbors and ports, and coastal related development such as visitor industry facilities and energy generating facilities, are located, designed, and constructed to minimize adverse social, visual, and environmental impacts in the coastal zone management area; and Promote water quantity and quality planning and management practices that reflect the tolerance of fresh water and marine ecosystems and maintain and enhance water quality through the development and implementation of point and nonpoint source water pollution control measures. (§205A-2)</p> <p>-establishes special controls on developments within an area along the shoreline to avoid permanent losses of valuable resources (§205A-21, -26).</p> <p>-no development is allowed in any county within these special management areas (SMAs) without a permit (§205A-28). The county planning departments administer the SMA permit process.</p> <p>-no development is approved unless it is found that the development, among other things, will not have any substantial adverse environmental or ecological effect; will minimize dredging, filling or otherwise altering any bay, estuary, salt marsh, river mouth, slough or lagoon; and will not adversely affect water quality. (§205A-26)</p>
<p>Chapter 15-150, HAR Special Management Areas/Shoreline Areas</p> <p>Chapter 12-202, MCC SMA Rules for Maui Planning Commission</p> <p>Chapter 12-302, MCC SMA Rules for Molokai Planning Commission</p> <p>Chapter 12-402, MCC SMA Rules for Lanai Planning Commission</p>	<p>OP for SMAs of CDDs</p> <p>County planning commissions</p>	<p>-provides guidelines for use by OP for the review of developments proposed in the SMA of community development districts (CDDs); development in the SMA of CDDs must be consistent with the objectives and policies established in Section 205A-2, HRS (§15-150-6)</p> <p>-county rules for administering the SMA permits and shoreline setback provisions within each county/island</p>
<p>Chapter 25, ROH Special Management Area</p> <p>Rule 9, Hawaii County Planning Commission</p> <p>SMA Rules and Regulations of the County of Kauai</p>	County planning commissions	-county rules for administering the SMA permits and shoreline setback provisions within each county/island

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 200, HRS Ocean Recreation and Coastal Areas Programs	DLNR- DOBOR	-notwithstanding any law to the contrary, the board may lease fast lands within an existing state boating facility by public auction or by direct negotiation pursuant to §171-59, for private development, management, and operation. The permissible uses under any lease disposed of under this section shall be consistent with the purpose for which the land was set aside by the governor pursuant to §171-11. Permissible uses may include any use that will complement or support the maritime activities of state boating facilities.(§200-2.5)
Chapter 11-281, HAR Underground Storage Tanks (UST)	DOH	<ul style="list-style-type: none"> <li>-each UST must be properly designed, constructed, and installed, and any portion underground that routinely contains product must be protected from corrosion (§11-281-12)</li> <li>-to prevent spilling and overfilling associated with product transfer to an UST or tank system, operators must use spill and overfill prevention equipment (§11-281-14)</li> <li>-secondary containment systems must be designed, constructed and installed to prevent the release of regulated substances to the environment (§11-281-17)</li> <li>-permit is required for the installation and operation of an UST (§11-281-23)</li> <li>-operators must ensure that releases due to spilling or overfilling do not occur (§11-281-41)</li> <li>-operators of USTs must ensure that repairs will prevent releases due to structural failure or corrosion (§11-281-44)</li> <li>-operators must provide a method, or combination or methods, of release detection (§11-281-51)</li> </ul>
Chapter 342D, HRS Water Pollution	DOH	<ul style="list-style-type: none"> <li>-prohibits discharge of any pollutant into State waters</li> <li>-allows DOH to institute a civil action for injunctive relief to prevent violation of State water quality standards (§342D-11)</li> <li>-under the statute, DOH may request the court to order nonpoint source polluters to implement all required management measures</li> </ul>

## Sewage Facility Management Measure

**Install pumpout, dump station, and restroom facilities where needed at new and expanding marinas to reduce the release of sewage into surface waters. Design these facilities to allow ease of access and post signage to promote use by the boating public.**

### Responsible Agencies and Authorities

DLNR is the lead agency for implementing this management measure. Since 1993, DOBOR has been responsible for managing and administering the ocean-based recreation and coastal areas programs pertaining to the ocean waters and navigable streams of the State (excluding commercial harbors); planning, developing, operating, administering and maintaining small boat harbors and other boating facilities; and regulating the use of these facilities. A 2004 amendment to Section 13-232-43, HAR, ensures that all improvements to a State boating facility or other property under the jurisdiction of DOBOR shall be constructed, maintained, operated, or modified to comply with EPA's *National Management Measures Guidance to Control Nonpoint Source Pollution from Marinas and Recreational Boating* (November 2001) or subsequent amendments.

DLNR, under OCCL, also administers the State's CDUP process, which is triggered by any proposed marina construction project because submerged lands are included within the State Conservation District. OCCL will require, as a condition of a Conservation District Use Permit, compliance with EPA's *National Management Measures Guidance to Control Nonpoint Source Pollution from Marinas and Recreational Boating* (November 2001) for both public and private marina developments.

Typically, prospective marina developments must undergo numerous permit processes, with their associated environmental assessments and extensive public review. Marina developments automatically trigger a CDUA because they involve submerged lands; marina developments that affect coastal lands within the counties' SMAs must seek an SMA permit. Chapter 343, HRS, and Chapter 11-200, HAR, both about the Environmental Impact Statement law, require the preparation of an EA and/or EIS for proposed activities that trigger the environmental review process. Some of the trigger conditions are as follows: (1) use of State or county lands or funds; (2) use within the conservation district; (3) use within a shoreline setback area; (4) use within the Waikiki special district; (5) use within an historic site; (6) reclassification of conservation lands; and (7) certain amendments to a county general plan. Preliminary surveys and assessment of future biological impacts are required.

DOH has regulatory authority over water pollution control, NPDES permit process, and Section 401, CWA, water quality certification.

**Implementation Tools**

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 13-232, HAR Sanitation and Fire Safety	DLNR- DOBOR	<p>-no building structure, object, site improvement, landscape treatment, or other facility of any nature whatsoever shall be erected, constructed, reconstructed, altered, moved, installed, or demolished at a state boating facility or other property under the jurisdiction of the division of boating and ocean recreation except in accordance with a department permit or as provided by a lease or right of entry issued by the department. All improvements made pursuant to this section, including those improvements made prior to the effective date of these rules, shall be constructed, maintained, operated, or modified to comply with EPA's final approved guidelines for BMPs for marinas and recreational boating, i.e., the "National Management Measures Guidance to Control Nonpoint Source Pollution from Marinas and Recreational Boating. EPA, November 2001," or as subsequently amended. The department may require plans, specifications, and other pertinent data to accompany or supplement any application. (§13-232-43)</p> <p>-prohibits discharge of any untreated sewage from marine toilets directly or indirectly into the waters of a small boat harbor (§13-232-8(a))</p> <p>-no person on a vessel or contrivance equipped with a toilet shall use, or permit the use of that toilet on the waters of a small boat harbor unless the toilet is equipped with facilities in good operating condition that will adequately treat, hold, incinerate, or otherwise handle sewage in a manner that is capable of preventing water pollution. (§13-232-8(b))</p>
<i>National Management Measures to Control Nonpoint Source Pollution from Marinas and Recreational Boating (EPA 2001)</i>	EPA  DLNR- DOBOR	Technical guidance and reference document for use by State and local managers in the implementation of nonpoint source pollution management programs. It contains information on the best available, economically achievable means of reducing pollution of surface water runoff from marinas and recreational boating.
Chapter 183C HRS Conservation District  Chapter 13-5 HAR Conservation District	DLNR	<p>-DLNR shall establish zones within the conservation district and permitted uses within those zones (§183C-4)</p> <p>-DLNR regulates land use in the conservation district through the issuance of permits (CDUPs) (§183C-6)</p> <p>-5 subzones within the conservation district are established by DLNR; lands and state marine waters seaward of the upper reaches of the wash of waves to the extent of the State's jurisdiction are included in the resource (R) subzone, unless placed in a protective (P) or limited (L) subzone (§13-5-13)</p> <p>-marine construction, dredging, filling or any combination thereof of submerged lands in the resource subzone requires a permit from the BLNR (§13-5-24)</p>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
<p>Chapter 183C HRS Conservation District</p> <p>Chapter 13-5 HAR Conservation District, continued</p>	DLNR	<p>-permit application process and requirements are described in §13-5-31; applications for permits shall contain a draft EA or EIS</p> <p>-for uses on submerged lands and in state marine waters, the requirements of this chapter are satisfied by complying with provisions of HRS chapters 171 (public lands), 184 (state parks), 187A, 188, 189, and 190 (marine life management), 190D (ocean leasing), 195 (natural area reserve system), 195D (conservation of aquatic life and wildlife), or 200 (boating and ocean recreation) or their implementing rules (§13-5-30(d))</p>
<p>Chapter 343, HRS Environmental Impact Statements</p> <p>Chapter 11-200, HAR Environmental Impact Statement Rules</p>	OEQC	<p>-states that an environmental review process will integrate the review of environmental concerns with existing planning processes of the State and counties and alert decision makers to significant environmental effects which may result from the implementation of certain actions (§343-1)</p> <p>-the following actions, among others, shall trigger an EA: (1) use of State or county lands or funds; (2) use within the conservation district; (3) use within a shoreline setback area; (4) use within the Waikiki special district; (5) use within an historic site; (6) certain amendments to county general plans; and (7) reclassification of conservation lands (§343-5)</p> <p>-provides agencies and persons with procedures, specifications of contents of EAs and EISs, and criteria and definitions of statewide application ((§11-200-1)</p>
<p>Chapter 205A, HRS Coastal Zone Management</p>	OP-CZM	<p>-Hawaii CZM Program reviews projects for consistency with CZM objectives and policies, and recommends public benefits packages for private marina developments</p> <p>-related policies include: Ensure that coastal dependent development such as harbors and ports, and coastal related development such as visitor industry facilities and energy generating facilities, are located, designed, and constructed to minimize adverse social, visual, and environmental impacts in the coastal zone management area; and Promote water quantity and quality planning and management practices that reflect the tolerance of fresh water and marine ecosystems and maintain and enhance water quality through the development and implementation of point and nonpoint source water pollution control measures. (§205A-2)</p> <p>-establishes special controls on developments within an area along the shoreline to avoid permanent losses of valuable resources (§205A-21, -26).</p> <p>-no development is allowed in any county within these special management areas (SMAs) without a permit (§205A-28). The county planning departments administer the SMA permit process.</p> <p>-no development is approved unless it is found that the development, among other things, will not have any substantial adverse environmental or ecological effect; will minimize dredging, filling or otherwise altering any bay, estuary, salt marsh, river mouth, slough or lagoon; and will not adversely affect water quality. (§205A-26)</p>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
<p>Chapter 15-150, HAR Special Management Areas/Shoreline Areas</p> <p>Chapter 12-202, MCC SMA Rules for Maui Planning Commission</p> <p>Chapter 12-302, MCC SMA Rules for Molokai Planning Commission</p> <p>Chapter 12-402, MCC SMA Rules for Lanai Planning Commission</p> <p>Chapter 25, ROH Special Management Area</p> <p>Rule 9, Hawaii County Planning Commission</p> <p>SMA Rules and Regulations of the County of Kauai</p>	<p>OP for SMAs of CDDs</p> <p>County planning commissions</p>	<p>-provides guidelines for use by OP for the review of developments proposed in the SMA of community development districts (CDDs); development in the SMA of CDDs must be consistent with the objectives and policies established in Section 205A-2, HRS (§15-150-6)</p> <p>-county rules for administering the SMA permits and shoreline setback provisions within each county/island</p>
<p>Chapter 200, HRS Ocean Recreation and Coastal Areas Programs</p>	<p>DLNR-DOBOR</p>	<p>-notwithstanding any law to the contrary, the board may lease fast lands within an existing state boating facility by public auction or by direct negotiation pursuant to §171-59, for private development, management, and operation. The permissible uses under any lease disposed of under this section shall be consistent with the purpose for which the land was set aside by the governor pursuant to §171-11. Permissible uses may include any use that will complement or support the maritime activities of state boating facilities.(§200-2.5)</p>
<p>Chapter 13-235, HAR Offshore Mooring Rules and Areas</p>	<p>DLNR-DOBOR</p>	<p>-no person shall anchor, moor or stay aboard a vessel except those equipped with an approved marine sanitation device in proper working condition, or those vessels exempt from MSD requirements in accordance with USCG regulations (§13-235-14)</p>
<p>Chapter 342D, HRS Water Pollution</p>	<p>DOH</p>	<p>-prohibits discharge of any pollutant into State waters</p> <p>-allows DOH to institute a civil action for injunctive relief to prevent violation of State water quality standards (§342D-11)</p> <p>-under the statute, DOH may request the court to order nonpoint source polluters to implement all required management measures</p>

## **Marina and Boat Operation and Maintenance**

### **Solid Waste Management Measure**

**Properly dispose of solid wastes produced by the operation, cleaning, maintenance, and repair of boats to limit entry of solid wastes into surface waters.**

### **Responsible Agencies and Authorities**

DLNR is the lead agency for implementing this management measure. Since 1993, DOBOR has been responsible for managing and administering the ocean-based recreation and coastal areas programs pertaining to the ocean waters and navigable streams of the State (excluding commercial harbors); planning, developing, operating, administering and maintaining small boat harbors and other boating facilities; and regulating the use of these facilities. A 2004 amendment to Section 13-232-43, HAR, ensures that all improvements to a State boating facility or other property under the jurisdiction of DOBOR shall be constructed, maintained, operated, or modified to comply with EPA's *National Management Measures Guidance to Control Nonpoint Source Pollution from Marinas and Recreational Boating* (November 2001) or subsequent amendments. Chapter 13-232, HAR, also prohibits littering on land areas and in waters within a small boat harbor.

DLNR, under OCCL, also administers the State's CDUP process, which is triggered by any proposed marina construction project because submerged lands are included within the State Conservation District. OCCL will require, as a condition of a Conservation District Use Permit, compliance with EPA's *National Management Measures Guidance to Control Nonpoint Source Pollution from Marinas and Recreational Boating* (November 2001) for both public and private marina developments.

DOH has general regulatory authority over water pollution control and waste management.

## Implementation Tools

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 13-232, HAR Sanitation and Fire Safety	DLNR- DOBOR	<p>-no building structure, object, site improvement, landscape treatment, or other facility of any nature whatsoever shall be erected, constructed, reconstructed, altered, moved, installed, or demolished at a state boating facility or other property under the jurisdiction of the division of boating and ocean recreation except in accordance with a department permit or as provided by a lease or right of entry issued by the department. All improvements made pursuant to this section, including those improvements made prior to the effective date of these rules, shall be constructed, maintained, operated, or modified to comply with EPA's final approved guidelines for BMPs for marinas and recreational boating, i.e., the "National Management Measures Guidance to Control Nonpoint Source Pollution from Marinas and Recreational Boating. EPA, November 2001," or as subsequently amended. The department may require plans, specifications, and other pertinent data to accompany or supplement any application. (§13-232-43)</p> <p>-prohibits littering on land areas and in waters within a small boat harbor. Litter – defined as all types of debris and substances, whether liquid or solid, and materials such as garbage, refuse, rubbish, glass, cans, bottles, paper, wrappings, fish or animal carcasses, or any other nauseating or offensive matter or any machinery, appliance or automobile, or parts thereof – must be deposited in receptacles designated for the disposal of such materials. (§13-232-6; §13-232-7)</p>
<i>National Management Measures to Control Nonpoint Source Pollution from Marinas and Recreational Boating</i> (EPA 2001)	EPA  DLNR- DOBOR	Technical guidance and reference document for use by State and local managers in the implementation of nonpoint source pollution management programs. It contains information on the best available, economically achievable means of reducing pollution of surface water runoff from marinas and recreational boating.
Chapter 342I, HRS Special Wastes Recycling	DOH	<p>-prohibits disposal of used lead acid battery, except by delivery to a lead acid battery retailer or wholesaler, a collection or recycling facility, or a secondary lead smelter (§342I-1)</p> <p>-prohibits disposal of electrolyte from any used lead acid battery onto the ground or into sewers, drainage systems, surface or ground waters, or ocean waters. (§342I-1.5)</p>
Chapter 342D, HRS Water Pollution	DOH	<p>-prohibits discharge of any pollutant into State waters</p> <p>-allows DOH to institute a civil action for injunctive relief to prevent violation of State water quality standards (§342D-11)</p> <p>-under the statute, DOH may request the court to order nonpoint source polluters to implement all required management measures</p>



## Fish Waste Management Measure

Promote sound fish waste management through a combination of fish-cleaning restrictions, public education, and proper disposal of fish waste.

### Responsible Agencies and Authorities

DLNR is the lead agency for implementing this management measure. Since 1993, DOBOR has been responsible for managing and administering the ocean-based recreation and coastal areas programs pertaining to the ocean waters and navigable streams of the State (excluding commercial harbors); planning, developing, operating, administering and maintaining small boat harbors and other boating facilities; and regulating the use of these facilities. A 2004 amendment to Section 13-232-43, HAR, ensures that all improvements to a State boating facility or other property under the jurisdiction of DOBOR shall be constructed, maintained, operated, or modified to comply with EPA's *National Management Measures Guidance to Control Nonpoint Source Pollution from Marinas and Recreational Boating* (November 2001) or subsequent amendments. Chapter 13-232, HAR, also prohibits littering – which includes fish waste -- on land areas and in waters within a small boat harbor.

DLNR, under OCCL, also administers the State's CDUP process, which is triggered by any proposed marina construction project because submerged lands are included within the State Conservation District. OCCL will require, as a condition of a Conservation District Use Permit, compliance with EPA's *National Management Measures Guidance to Control Nonpoint Source Pollution from Marinas and Recreational Boating* (November 2001) for both public and private marina developments .

DOH has general regulatory authority over water pollution control and waste management.

**Implementation Tools**

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 13-232, HAR Sanitation and Fire Safety	DLNR- DOBOR	<p>-no building structure, object, site improvement, landscape treatment, or other facility of any nature whatsoever shall be erected, constructed, reconstructed, altered, moved, installed, or demolished at a state boating facility or other property under the jurisdiction of the division of boating and ocean recreation except in accordance with a department permit or as provided by a lease or right of entry issued by the department. All improvements made pursuant to this section, including those improvements made prior to the effective date of these rules, shall be constructed, maintained, operated, or modified to comply with EPA’s final approved guidelines for BMPs for marinas and recreational boating, i.e., the "National Management Measures Guidance to Control Nonpoint Source Pollution from Marinas and Recreational Boating. EPA, November 2001," or as subsequently amended. The department may require plans, specifications, and other pertinent data to accompany or supplement any application. (§13-232-43)</p> <p>-prohibits littering on land areas and in waters within a small boat harbor. Litter – defined as all types of debris and substances, whether liquid or solid, and materials such as garbage, refuse, rubbish, glass, cans, bottles, paper, wrappings, fish or animal carcasses, or any other nauseating or offensive matter or any machinery, appliance or automobile, or parts thereof – must be deposited in receptacles designated for the disposal of such materials. (§13-232-6; §13-232-7)</p>
<i>National Management Measures to Control Nonpoint Source Pollution from Marinas and Recreational Boating</i> (EPA 2001)	EPA  DLNR- DOBOR	Technical guidance and reference document for use by State and local managers in the implementation of nonpoint source pollution management programs. It contains information on the best available, economically achievable means of reducing pollution of surface water runoff from marinas and recreational boating.
Chapter 342D, HRS Water Pollution	DOH	<p>-prohibits discharge of any pollutant into State waters</p> <p>-allows DOH to institute a civil action for injunctive relief to prevent violation of State water quality standards (§342D-11)</p> <p>-under the statute, DOH may request the court to order nonpoint source polluters to implement all required management measures</p>

## Liquid Material Management Measure

**Provide and maintain appropriate storage, transfer, containment, and disposal facilities for liquid material, such as oil, harmful solvents, antifreeze, and paints, and encourage recycling of these materials.**

### Responsible Agencies and Authorities

DLNR is the lead agency for implementing this management measure. Since 1993, DOBOR has been responsible for managing and administering the ocean-based recreation and coastal areas programs pertaining to the ocean waters and navigable streams of the State (excluding commercial harbors); planning, developing, operating, administering and maintaining small boat harbors and other boating facilities; and regulating the use of these facilities. A 2004 amendment to Section 13-232-43, HAR, ensures that all improvements to a State boating facility or other property under the jurisdiction of DOBOR shall be constructed, maintained, operated, or modified to comply with EPA's *National Management Measures Guidance to Control Nonpoint Source Pollution from Marinas and Recreational Boating* (November 2001) or subsequent amendments. Chapter 13-232, HAR, also prohibits discharge of oil, spirits, gasoline, distillate, any petroleum product, or any other flammable material into the waters of a small boat harbor or designated offshore mooring area.

DLNR, under OCCL, also administers the State's CDUP process, which is triggered by any proposed marina construction project because submerged lands are included within the State Conservation District. OCCL will require, as a condition of a Conservation District Use Permit, compliance with EPA's *National Management Measures Guidance to Control Nonpoint Source Pollution from Marinas and Recreational Boating* (November 2001) for both public and private marina developments .

DOH has general regulatory authority over water pollution control and waste management.

**Implementation Tools**

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 13-232, HAR Sanitation and Fire Safety	DLNR- DOBOR	<p>-no building structure, object, site improvement, landscape treatment, or other facility of any nature whatsoever shall be erected, constructed, reconstructed, altered, moved, installed, or demolished at a state boating facility or other property under the jurisdiction of the division of boating and ocean recreation except in accordance with a department permit or as provided by a lease or right of entry issued by the department. All improvements made pursuant to this section, including those improvements made prior to the effective date of these rules, shall be constructed, maintained, operated, or modified to comply with EPA's final approved guidelines for BMPs for marinas and recreational boating, i.e., the "National Management Measures Guidance to Control Nonpoint Source Pollution from Marinas and Recreational Boating. EPA, November 2001," or as subsequently amended. The department may require plans, specifications, and other pertinent data to accompany or supplement any application. (§13-232-43)</p> <p>-requires that fueling of vessels at a small boat harbor where a marine fueling station has been established be accomplished only at that station, and specifies what the operator must do prior to, during, and after fueling a vessel. (§13-232-24)</p> <p>-prohibits dumping, discharging, or pumping of oil, spirits, gasoline, distillate, any petroleum product, or any other flammable material into the waters of a small boat harbor or designated offshore mooring area (§13-232-26)</p> <p>-prohibits littering on land areas and in waters within a small boat harbor. Litter – defined as all types of debris and substances, whether liquid or solid, and materials such as garbage, refuse, rubbish, glass, cans, bottles, paper, wrappings, fish or animal carcasses, or any other nauseating or offensive matter or any machinery, appliance or automobile, or parts thereof – must be deposited in receptacles designated for the disposal of such materials. (§13-232-6; §13-232-7)</p>
<i>National Management Measures to Control Nonpoint Source Pollution from Marinas and Recreational Boating</i> (EPA 2001)	EPA  DLNR- DOBOR	Technical guidance and reference document for use by State and local managers in the implementation of nonpoint source pollution management programs. It contains information on the best available, economically achievable means of reducing pollution of surface water runoff from marinas and recreational boating.

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 11-281, HAR Underground Storage Tanks (UST)	DOH	<ul style="list-style-type: none"> <li>-each UST must be properly designed, constructed, and installed, and any portion underground that routinely contains product must be protected from corrosion (§11-281-12)</li> <li>-to prevent spilling and overfilling associated with product transfer to an UST or tank system, operators must use spill and overfill prevention equipment (§11-281-14)</li> <li>-secondary containment systems must be designed, constructed and installed to prevent the release of regulated substances to the environment (§11-281-17)</li> <li>-permit is required for the installation and operation of an UST (§11-281-23)</li> <li>-operators must ensure that releases due to spilling or overfilling do not occur (§11-281-41)</li> <li>-operators of USTs must ensure that repairs will prevent releases due to structural failure or corrosion (§11-281-44)</li> <li>-operators must provide a method, or combination of methods, of release detection (§11-281-51)</li> </ul>
Chapter 342I, HRS Special Wastes Recycling	DOH	<ul style="list-style-type: none"> <li>-prohibits disposal of used lead acid battery, except by delivery to a lead acid battery retailer or wholesaler, a collection or recycling facility, or a secondary lead smelter (§342I-1)</li> <li>-prohibits disposal of electrolyte from any used lead acid battery onto the ground or into sewers, drainage systems, surface or ground waters, or ocean waters. (§342I-1.5)</li> </ul>
Chapter 342J, HRS Hazardous Waste	DOH	<ul style="list-style-type: none"> <li>-prohibits discharge of new, used or recycled oil into sewers, drainage systems, surface or ground waters, watercourse, marine waters, or onto the ground. The prohibition does not apply to inadvertent, normal discharges from vehicles and equipment, or maintenance and repair activities, provided that appropriate measures are taken to minimize releases (§342J-52(b))</li> </ul>
Chapter 342D, HRS Water Pollution	DOH	<ul style="list-style-type: none"> <li>-prohibits discharge of any pollutant into State waters</li> <li>-allows DOH to institute a civil action for injunctive relief to prevent violation of State water quality standards (§342D-11)</li> <li>-under the statute, DOH may request the court to order nonpoint source polluters to implement all required management measures</li> </ul>

### Petroleum Control Management Measure

**Reduce the amount of fuel and oil from boat bilges and fuel tank air vents entering marina and surface waters.**

#### Responsible Agencies and Authorities

DLNR is the lead agency for implementing this management measure. Since 1993, DOBOR has been responsible for managing and administering the ocean-based recreation and coastal areas programs pertaining to the ocean waters and navigable streams of the State (excluding commercial harbors); planning, developing, operating, administering and maintaining small boat harbors and other boating facilities; and regulating the use of these facilities. A 2004 amendment to Section 13-232-43, HAR, ensures that all improvements to a State boating facility or other property under the jurisdiction of DOBOR shall be constructed, maintained, operated, or modified to comply with EPA's *National*

*Management Measures Guidance to Control Nonpoint Source Pollution from Marinas and Recreational Boating* (November 2001) or subsequent amendments. Chapter 13-232, HAR, also prohibits discharge of oil, spirits, gasoline, distillate, any petroleum product, or any other flammable material into the waters of a small boat harbor or designated offshore mooring area; and requires any vessel equipped with an inboard motor which is moored in a small boat harbor or designated offshore mooring area to maintain an oil absorbent pad in the bilge to separate petroleum products from bilge water.

DLNR, under OCCL, also administers the State’s CDUP process, which is triggered by any proposed marina construction project because submerged lands are included within the State Conservation District. OCCL will require, as a condition of a Conservation District Use Permit, compliance with EPA’s *National Management Measures Guidance to Control Nonpoint Source Pollution from Marinas and Recreational Boating* (November 2001) for both public and private marina developments.

DOH has general regulatory authority over water pollution control and waste management.

**Implementation Tools**

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 13-232, HAR Sanitation and Fire Safety	DLNR- DOBOR	-no building structure, object, site improvement, landscape treatment, or other facility of any nature whatsoever shall be erected, constructed, reconstructed, altered, moved, installed, or demolished at a state boating facility or other property under the jurisdiction of the division of boating and ocean recreation except in accordance with a department permit or as provided by a lease or right of entry issued by the department. All improvements made pursuant to this section, including
Chapter 13-232, HAR Sanitation and Fire Safety, continued	DLNR- DOBOR	those improvements made prior to the effective date of these rules, shall be constructed, maintained, operated, or modified to comply with EPA's final approved guidelines for BMPs for marinas and recreational boating, i.e., the "National Management Measures Guidance to Control Nonpoint Source Pollution from Marinas and Recreational Boating. EPA, November 2001," or as subsequently amended. The department may require plans, specifications, and other pertinent data to accompany or supplement any application. (§13-232-43) -prohibits dumping, discharging, or pumping of oil, spirits, gasoline, distillate, any petroleum product, or any other flammable material into the waters of a small boat harbor or designated offshore mooring area (§13-232-26(a)) -any vessel equipped with an inboard motor which is moored in a small boat harbor or designated offshore mooring area shall maintain an oil absorbent pad in the bilge to separate petroleum products from bilge water. This requirement shall be included as an inspection item for the initial or annual vessel inspection that is a prerequisite for obtaining a regular mooring permit as prescribed by §13-231-45. (§13-232-26(b)) -requires that fueling of vessels at a small boat harbor where a marine fueling station has been established be accomplished only at that station, and specifies what the operator must do prior to, during, and after fueling a vessel. (§13-232-24)

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
<i>National Management Measures to Control Nonpoint Source Pollution from Marinas and Recreational Boating</i> (EPA 2001)	EPA  DLNR- DOBOR	Technical guidance and reference document for use by State and local managers in the implementation of nonpoint source pollution management programs. It contains information on the best available, economically achievable means of reducing pollution of surface water runoff from marinas and recreational boating.
Chapter 342J, HRS Hazardous Waste	DOH	-prohibits discharge of new, used or recycled oil into sewers, drainage systems, surface or ground waters, watercourse, marine waters, or onto the ground. The prohibition does not apply to inadvertent, normal discharges from vehicles and equipment, or maintenance and repair activities, provided that appropriate measures are taken to minimize releases (§342J-52(b))
Chapter 342D, HRS Water Pollution	DOH	-prohibits discharge of any pollutant into State waters -allows DOH to institute a civil action for injunctive relief to prevent violation of State water quality standards (§342D-11) -under the statute, DOH may request the court to order nonpoint source polluters to implement all required management measures

## Boat Cleaning Management Measure

**For boats that are in the water, perform cleaning operations to minimize, to the extent practicable, the release to surface waters of harmful cleaners, solvents and paint from in-water hull cleaning.**

### **Responsible Agencies and Authorities**

DLNR is the lead agency for implementing this management measure. Since 1993, DOBOR has been responsible for managing and administering the ocean-based recreation and coastal areas programs pertaining to the ocean waters and navigable streams of the State (excluding commercial harbors); planning, developing, operating, administering and maintaining small boat harbors and other boating facilities; and regulating the use of these facilities. A 2004 amendment to Section 13-232-43, HAR, ensures that all improvements to a State boating facility or other property under the jurisdiction of DOBOR shall be constructed, maintained, operated, or modified to comply with EPA's *National Management Measures Guidance to Control Nonpoint Source Pollution from Marinas and Recreational Boating* (November 2001) or subsequent amendments.

DLNR, under OCCL, also administers the State's CDUP process, which is triggered by any proposed marina construction project because submerged lands are included within the State Conservation District. OCCL will require, as a condition of a Conservation District Use Permit, compliance with EPA's *National Management Measures Guidance to Control Nonpoint Source Pollution from Marinas and Recreational Boating* (November 2001) for both public and private marina developments.

DOH has general regulatory authority over water pollution control and waste management.



**Implementation Tools**

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 13-232, HAR Sanitation and Fire Safety	DLNR- DOBOR	<p>-no building structure, object, site improvement, landscape treatment, or other facility of any nature whatsoever shall be erected, constructed, reconstructed, altered, moved, installed, or demolished at a state boating facility or other property under the jurisdiction of the division of boating and ocean recreation except in accordance with a department permit or as provided by a lease or right of entry issued by the department. All improvements made pursuant to this section, including those improvements made prior to the effective date of these rules, shall be constructed, maintained, operated, or modified to comply with EPA's final approved guidelines for BMPs for marinas and recreational boating, i.e., the "National Management Measures Guidance to Control Nonpoint Source Pollution from Marinas and Recreational Boating. EPA, November 2001," or as subsequently amended. The department may require plans, specifications, and other pertinent data to accompany or supplement any application. (§13-232-43)</p> <p>-prohibits dumping, discharging, or pumping of oil, spirits, gasoline, distillate, any petroleum product, or any other flammable material into the waters of a small boat harbor or designated offshore mooring area (§13-232-26(a))</p> <p>-prohibits littering on land areas and in waters within a small boat harbor. Litter – defined as all types of debris and substances, whether liquid or solid, and materials such as garbage, refuse, rubbish, glass, cans, bottles, paper, wrappings, fish or animal carcasses, or any other nauseating or offensive matter or any machinery, appliance or automobile, or parts thereof – must be deposited in receptacles designated for the disposal of such materials. (§13-232-6; §13-232-7)</p>
<i>National Management Measures to Control Nonpoint Source Pollution from Marinas and Recreational Boating</i> (EPA 2001)	EPA  DLNR- DOBOR	Technical guidance and reference document for use by State and local managers in the implementation of nonpoint source pollution management programs. It contains information on the best available, economically achievable means of reducing pollution of surface water runoff from marinas and recreational boating.
Chapter 342D, HRS Water Pollution	DOH	<p>-prohibits discharge of any pollutant into State waters</p> <p>-allows DOH to institute a civil action for injunctive relief to prevent violation of State water quality standards (§342D-11)</p> <p>-under the statute, DOH may request the court to order nonpoint source polluters to implement all required management measures</p>

## Public Education Management Measure

Public education/outreach/training programs should be instituted for boaters, as well as marina owners and operators, to prevent improper disposal of polluting material.

### Responsible Agencies and Authorities

DLNR is the lead agency for implementing this management measure. Since 1993, DOBOR has been responsible for managing and administering the ocean-based recreation and coastal areas programs pertaining to the ocean waters and navigable streams of the State (excluding commercial harbors); planning, developing, operating, administering and maintaining small boat harbors and other boating facilities; and regulating the use of these facilities. A 2004 amendment to Section 13-232-43, HAR, ensures that all improvements to a State boating facility or other property under the jurisdiction of DOBOR shall be constructed, maintained, operated, or modified to comply with EPA's *National Management Measures Guidance to Control Nonpoint Source Pollution from Marinas and Recreational Boating* (November 2001) or subsequent amendments. DOBOR and other organizations have developed a number of public education and outreach materials.

DLNR, under OCCL, also administers the State's CDUP process, which is triggered by any proposed marina construction project because submerged lands are included within the State Conservation District. OCCL will require, as a condition of a Conservation District Use Permit, compliance with EPA's *National Management Measures Guidance to Control Nonpoint Source Pollution from Marinas and Recreational Boating* (November 2001) for both public and private marina developments.

### Implementation Tools

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 13-232, HAR Sanitation and Fire Safety	DLNR- DOBOR	-no building structure, object, site improvement, landscape treatment, or other facility of any nature whatsoever shall be erected, constructed, reconstructed, altered, moved, installed, or demolished at a state boating facility or other property under the jurisdiction of the division of boating and ocean recreation except in accordance with a department permit or as provided by a lease or right of entry issued by the department. All improvements made pursuant to this section, including those improvements made prior to the effective date of these rules, shall be constructed, maintained, operated, or modified to comply with EPA's final approved guidelines for BMPs for marinas and recreational boating, i.e., the "National Management Measures Guidance to Control Nonpoint Source Pollution from Marinas and Recreational Boating. EPA, November 2001," or as subsequently amended. The department may require plans, specifications, and other pertinent data to accompany or supplement any application. (§13-232-43)

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
<i>National Management Measures to Control Nonpoint Source Pollution from Marinas and Recreational Boating</i> (EPA 2001)	EPA  DLNR- DOBOR	Technical guidance and reference document for use by State and local managers in the implementation of nonpoint source pollution management programs. It contains information on the best available, economically achievable means of reducing pollution of surface water runoff from marinas and recreational boating.
<i>Managing Boat Wastes: A Guide for Hawaii Boaters</i> (2005)	Hawaii Sea Grant  DLNR- DOBOR  DOH	-lists alternative products for cleaning boats -provides do's and don'ts for managing bilge water, boat and deck washing, paint/varnishes/epoxies/etc., sewage, lead acid batteries, used oil and oil filters, fuel and fuel spills, solvents, and marine debris -provides information on pumpout facilities at various harbors
<i>Hawaii Recreational Harbors with MSD pumpouts</i> (2006 brochure)	DLNR- DOBOR	-brochure/map detailing locations of existing facilities and explaining the benefits of using pump-outs -this pumpout literature is distributed and prominently displayed whenever DOBOR erects an exhibit at public forums and events. It is also continuously available at each of the Division's harbor and administrative offices and a digital copy (suitable for printing) has been posted on DOBOR's website.
DOBOR website: <a href="http://hawaii.gov/dlnr/dbor/bor_clean.htm">http://hawaii.gov/dlnr/dbor/bor_clean.htm</a>	DLNR- DOBOR	-provides educational information on protecting Hawaii's marine environment and addressing problems of marine debris, sewage, and by-products of vessel maintenance and cleaning
Hawaii Ocean Safety Team (HOST) Safe Operating Practices (S.O.P.s)	HOST	Formed in 1998, HOST is a non-profit organization whose purpose is to promote and enhance the safe and pollution free use of Hawaii's waters through pro-active prevention. HOST is comprised of representatives from maritime industries, government, and the community who are committed to identifying maritime concerns and developing solutions <i>before</i> they become major issues. HOST develops and agrees upon <a href="#">Safe Operating Practices (S.O.P.s)</a> when necessary to provide for effective and efficient operations.

### Maintenance of Sewage Facilities Management Measure

**Ensure that sewage pumpout facilities are maintained in operational condition and encourage their use.**

#### Responsible Agencies and Authorities

DLNR is the lead agency for implementing this management measure. Since 1993, DOBOR has been responsible for managing and administering the ocean-based recreation and coastal areas programs pertaining to the ocean waters and navigable streams of the State (excluding commercial harbors); planning, developing, operating, administering and maintaining small boat harbors and other boating facilities; and regulating the use of these facilities. A 2004 amendment to Section 13-232-43, HAR, ensures that all improvements to a State boating facility or other property under the jurisdiction of DOBOR shall be constructed, maintained, operated, or modified to comply with EPA's *National*

*Management Measures Guidance to Control Nonpoint Source Pollution from Marinas and Recreational Boating* (November 2001) or subsequent amendments. Chapter 13-232, HAR, also prohibits discharge of oil, spirits, gasoline, distillate, any petroleum product, or any other flammable material into the waters of a small boat harbor or designated offshore mooring area. Chapter 13-232, HAR, also prohibits discharge of any untreated sewage from marine toilets directly or indirectly into the waters of a small boat harbor.

Currently there are pump-outs at Nawiliwili on Kauai; at Waianae, Heeia Kea, Ala Wai and Keehi harbors on Oahu; at Lahaina on Maui; and at the Kailua-Kona pier on the Big Island. DOBOR has plans to build three pump-out sites in the County of Maui, at Maalaea small-boat harbor on Maui, at Manele small-boat harbor on Lanai, and at Kaunakakai small-boat harbor on Molokai.

DLNR, under OCCL, also administers the State’s CDUP process, which is triggered by any proposed marina construction project because submerged lands are included within the State Conservation District. OCCL will require, as a condition of a Conservation District Use Permit, compliance with EPA’s *National Management Measures Guidance to Control Nonpoint Source Pollution from Marinas and Recreational Boating* (November 2001) for both public and private marina developments.

DOH has general regulatory authority over water pollution control and waste management.

**Implementation Tools**

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 13-232, HAR Sanitation and Fire Safety	DLNR- DOBOR	-no building structure, object, site improvement, landscape treatment, or other facility of any nature whatsoever shall be erected, constructed, reconstructed, altered, moved, installed, or demolished at a state boating facility or other property under the jurisdiction of the division of boating and ocean recreation except in accordance with a department permit or as provided by a lease or right of entry issued by the department. All improvements made pursuant to this section, including those improvements made prior to the effective date of these rules, shall be constructed, maintained, operated, or modified to comply with EPA's final approved guidelines for BMPs for marinas and recreational boating, i.e., the "National Management Measures Guidance to Control Nonpoint Source Pollution from Marinas and Recreational Boating. EPA, November 2001," or as subsequently amended. The department may require plans, specifications, and other pertinent data to accompany or supplement any application. (§13-232-43) --prohibits discharge of any untreated sewage from marine toilets directly or indirectly into the waters of a small boat harbor (§13-232-8(a)) -prohibits discharge of wastes into the waters of a small boat harbor without permit from DOH (§13-232-9)

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
<i>National Management Measures to Control Nonpoint Source Pollution from Marinas and Recreational Boating</i> (EPA 2001)	EPA  DLNR-DOBOR	Technical guidance and reference document for use by State and local managers in the implementation of nonpoint source pollution management programs. It contains information on the best available, economically achievable means of reducing pollution of surface water runoff from marinas and recreational boating.
Chapter 13-235, HAR Offshore Mooring Rules and Areas	DLNR-DOBOR	-no person shall anchor, moor or stay aboard a vessel except those equipped with an approved marine sanitation device in proper working condition, or those vessels exempt from MSD requirements in accordance with USCG regulations (§13-235-14)
Chapter 13-243, HAR Vessel Equipment Requirements	DLNR	-requires all vessels in the State with a MSD to comply with federal 33 CFR Part 159, which in turn prescribes regulations governing the design and construction of MSDs and procedures for certifying that MSDs meet the regulations and standards of the EPA promulgated under Section 312 of 33 USC 1322, to eliminate the discharge of untreated sewage from vessels into the waters of the U.S., including the territorial seas. (§13-243-2)
<i>Managing Boat Wastes: A Guide for Hawaii Boaters</i> (2005)	Hawaii Sea Grant  DLNR-DOBOR  DOH	-lists alternative products for cleaning boats -provides do's and don'ts for managing bilge water, boat and deck washing, paint/varnishes/epoxies/etc., sewage, lead acid batteries, used oil and oil filters, fuel and fuel spills, solvents, and marine debris -provides information on pumpout facilities at various harbors
<i>Hawaii Recreational Harbors with MSD pumpouts</i> (2006 brochure)	DLNR-DOBOR	-brochure/map detailing locations of existing facilities and explaining the benefits of using pump-outs -this pumpout literature is distributed and prominently displayed whenever DOBOR erects an exhibit at public forums and events. It is also continuously available at each of the Division's harbor and administrative offices and a digital copy (suitable for printing) has been posted on DOBOR's website.
Chapter 342D, HRS Water Pollution	DOH	-prohibits discharge of any pollutant into State waters -allows DOH to institute a civil action for injunctive relief to prevent violation of State water quality standards (§342D-11) -under the statute, DOH may request the court to order nonpoint source polluters to implement all required management measures

### Boat Operation Management Measure (applies to boating only)

**Restrict boating activities where necessary to decrease turbidity and physical destruction of shallow-water habitat.**

#### Responsible Agencies and Authorities

DLNR is the lead agency for implementing this management measure. Since 1993, DOBOR has been responsible for managing and administering the ocean-based recreation and coastal areas programs pertaining to the ocean waters and navigable streams of the State (excluding commercial harbors); planning, developing, operating, administering and maintaining small boat harbors and other boating facilities; and regulating the use of these facilities. A 2004 amendment to Section 13-232-43, HAR,

ensures that all improvements to a State boating facility or other property under the jurisdiction of DOBOR shall be constructed, maintained, operated, or modified to comply with EPA's *National Management Measures Guidance to Control Nonpoint Source Pollution from Marinas and Recreational Boating* (November 2001) or subsequent amendments. Chapter 13-232, HAR, also prohibits discharge of oil, spirits, gasoline, distillate, any petroleum product, or any other flammable material into the waters of a small boat harbor or designated offshore mooring area. Chapter 13-232, HAR, also prohibits discharge of any untreated sewage from marine toilets directly or indirectly into the waters of a small boat harbor.

DLNR, under OCCL, also administers the State's CDUP process, which is triggered by any proposed marina construction project because submerged lands are included within the State Conservation District. OCCL will require, as a condition of a Conservation District Use Permit, compliance with EPA's *National Management Measures Guidance to Control Nonpoint Source Pollution from Marinas and Recreational Boating* (November 2001) for both public and private marina developments.

DOH has general regulatory authority over water pollution control and waste management.

### **Implementation Tools**

<b>Regulatory or Non-Regulatory Mechanism</b>	<b>Responsible Agency</b>	<b>Description</b>
Chapter 13-232, HAR Sanitation and Fire Safety	DLNR- DOBOR	-no building structure, object, site improvement, landscape treatment, or other facility of any nature whatsoever shall be erected, constructed, reconstructed, altered, moved, installed, or demolished at a state boating facility or other property under the jurisdiction of the division of boating and ocean recreation except in accordance with a department permit or as provided by a lease or right of entry issued by the department. All improvements made pursuant to this section, including those improvements made prior to the effective date of these rules, shall be constructed, maintained, operated, or modified to comply with EPA's final approved guidelines for BMPs for marinas and recreational boating, i.e., the "National Management Measures Guidance to Control Nonpoint Source Pollution from Marinas and Recreational Boating. EPA, November 2001," or as subsequently amended. The department may require plans, specifications, and other pertinent data to accompany or supplement any application. (§13-232-43)
<i>National Management Measures to Control Nonpoint Source Pollution from Marinas and Recreational Boating</i> (EPA 2001)	EPA  DLNR- DOBOR	Technical guidance and reference document for use by State and local managers in the implementation of nonpoint source pollution management programs. It contains information on the best available, economically achievable means of reducing pollution of surface water runoff from marinas and recreational boating.
Chapter 13-231, HAR Operation of Boats, Small Boat Harbors, and Permits	DLNR- DOBOR	-requires vessels to be navigated within a state small boat harbor at a speed low enough that the wakes will not disturb any other vessel or property (§13-231-41)
Chapter 190, HRS Marine Life Conservation Program	DLNR	-enables DLNR to establish MLCDs to protect unique areas of the marine environment by prohibiting activities that disturb, degrade or alter it. -eleven MLCDs have been designated, with associated administrative rules (Chapters 13-28 through 13-38, HAR) for managing these areas, including restrictions on boating activities.

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 13-256, HAR Ocean Recreation Management Rules and Areas	DLNR- DOBOR	<ul style="list-style-type: none"> <li>-regulates activities in 10 designated Ocean Recreation Management Areas (ORMAs) to reduce conflicts among ocean water users, especially in areas of high activity.</li> <li>-rules for some of the ORMAs prohibit motorized vessels operating within the ORMA from exceeding a speed of “slow-no-wake” (5 mph) within a specified distance from the shoreline; and prohibit operation or mooring of vessel within designated swimming zones</li> </ul>
Chapter 13-244, HAR Rules of the Road; Local and Special Rules	DLNR- DOBOR	<ul style="list-style-type: none"> <li>-limits speed of all vessels to a slow-no-wake speed within 200 feet of any shoreline, float, dock, launching ramp, congested beach, swimmer, diver’s flag, or anchored, moored or drifting vessel (§13-244-9 (a))</li> <li>-no person shall operate a vessel at a rate of speed greater than is reasonable having regard to conditions and circumstances (§13-244-9 (b))</li> <li>-identifies ocean waters restricted areas (§13-244-28 -- §13-244-39)</li> <li>-no person shall operate, anchor or moor any vessel in such manner as will injure or damage any marine life or geological features and specimens within the Kealakekua ocean waters (§13-244-30(b))</li> <li>-it is unlawful for any person to operate, anchor or moor a vessel in such manner as will injure, damage or destroy any marine life or geological feature or specimen within the Manele-Hulopoe marine life conservation district. (§13-244-35(b))</li> </ul>
Chapter 342D, HRS Water Pollution	DOH	<ul style="list-style-type: none"> <li>-prohibits discharge of any pollutant into State waters</li> <li>-allows DOH to institute a civil action for injunctive relief to prevent violation of State water quality standards (§342D-11)</li> <li>-under the statute, DOH may request the court to order nonpoint source polluters to implement all required management measures</li> </ul>

## HYDROMODIFICATIONS

### Channelization and Channel Modification

#### Management Measure for Physical and Chemical Characteristics of Surface Waters

- (1) Evaluate the potential effects of proposed channelization and channel modification on the physical and chemical characteristics of surface waters in coastal areas;
- (2) Plan and design channelization and channel modification to reduce undesirable impacts; and
- (3) Develop an operation and maintenance program for existing modified channels that includes identification and implementation of opportunities to improve physical and chemical characteristics of surface waters in those channels.

#### Responsible Agencies and Authorities

The State Water Code (Chapter 174C, HRS), adopted by the Hawaii Legislature in 1987 and amended in 2004, provides the regulatory framework to protect streams, wetlands and other areas critical to water quality. The State, in its stewardship capacity, has management responsibility for all water resources of the State through the Commission on Water Resource Management (CWRM) – also known as the Water Commission. The Water Commission sets policies and approves water allocations for all water users. Existing uses established prior to 1987 are grandfathered in, provided the existing use is reasonable and beneficial. The Water Code also requires CWRM to establish and administer a statewide in-stream use protection program, including flow standards on a stream-by-stream basis whenever necessary to protect the public interest. Instream flow standards describe the flow necessary to adequately protect fishery, wildlife, aesthetic, scenic, or other beneficial instream uses. Instream uses include: maintenance of fish and wildlife habitats, outdoor recreational activities, maintenance of ecosystems such as estuaries, wetlands, and stream vegetation, aesthetic values such as waterfalls and scenic waterways, navigation, instream hydropower generation, maintenance of water quality, conveyance of irrigation and domestic water supplies to downstream points of diversion, and the protection of traditional and customary Hawaiian rights.

The Water Commission issues permits to regulate the use of surface and ground water in the State. A stream channel alteration permit (SCAP) is required prior to undertaking a stream channel alteration in order to protect fishery, wildlife, recreational, aesthetic, scenic, and other beneficial instream uses.

CWRM adopted the updated *Water Resource Protection Plan* on August 28, 2008. The plan describes the program to protect and conserve Hawaii's water resources. The updated document includes policies, program directives, resource inventories, and recommendations across a broad spectrum of resource management issues, including watershed protection and water quality. Some of the plan's recommendations include:

- Take a more active role in watershed protection, watershed partnerships, and the watershed partnership association.
- Support DOFAW's watershed management activities and the division's leadership role in watershed management.
- Study existing government and community efforts in watershed management and protection, and encourage sharing of information and experiences.



- Study other watershed planning approaches and lessons learned, including the EPA’s watershed approach and that of other state governments.
- Pursue appropriate funding to support watershed protection programs and objectives to protect water resources.
- Encourage the collaboration of federal, State, and county agencies with existing watershed partnerships and Conservation Districts to map the relationships between land management programs, land use regulations, economic and agricultural issues, and water quality and resource protection programs.
- Improve communication and encourage dialogue between watershed interests to result in the development of common goals and an integrated watershed management framework. A successful framework will acknowledge and build upon existing programs and organizations to maximize funding, staff, and volunteer resources through watershed-scale management and protection programs.
- Develop innovative public outreach methods and encourage communication between watershed entities. The development of a website devoted to Hawaii watershed projects, organized by geographic location, should facilitate this coordination.

DOH establishes and enforces the State water quality standards contained in Chapter 11-54, HAR. All inland fresh waters are classified based on their ecological characteristics and other natural criteria as flowing waters (*e.g.*, streams), standing waters (*e.g.*, lakes and reservoirs), and wetlands. These waters are further classified for the purposes of applying water quality standards and selecting appropriate quality parameters and uses to be protected in these waters. Class 1 inland waters are to remain in their natural state as nearly as possible with an absolute minimum of pollution from any human-caused source. Waste discharge into these waters is prohibited. Any conduct that results in a demonstrable increase in levels of point or nonpoint source contamination in class 1 waters is prohibited. The uses to be protected in class 1(a) waters are scientific and educational purposes, protection of native breeding stock, baseline references from which human-caused changes can be measured, compatible recreation, aesthetic enjoyment, and other non-degrading uses. The additional uses to be protected in class 1(b) waters are domestic water supplies and food processing. Class 2 inland waters are to be protected for recreational purposes, the support and propagation of aquatic life, agricultural and industrial water supplies, shipping and navigation. Class 1(a) waters include all standing and/or flowing waters, and elevated and/or low wetlands: (i) within the natural reserves, preserves, sanctuaries, and refuges established by DLNR under Chapter 195, HRS, or similar reserves for the protection of aquatic life; (ii) in national and state parks; (iii) in state or federal fish and wildlife refuges; (iv) which have been identified as a unique or critical habitat for threatened or endangered species by the U.S. Fish and Wildlife Service; and (v) in protective Conservation District subzones designated under Chapter 13-5, HAR.

The U.S. Army Corps of Engineers (USACOE) has the authority to protect the waters of the United States, including wetlands and some streams, by regulating certain activities within those waters. Section 404 of the Clean Water Act requires that anyone interested in placing dredged or fill material into waters of the United States must first obtain a permit from the Corps. Section 10 of the Rivers and Harbors Act of 1899 requires approval prior to the accomplishment of any work in or over navigable waters of the United States, or which affects the course, location, condition, or capacity of such waters.

The law applies to any dredging or disposal of dredged materials, excavation, filling, rechannelization, or any other modification of a navigable water of the United States, and applies to all structures large or small. The initiation of a Section 404 permit process triggers a Section 401 water quality certification from DOH.

If development activity will disturb one acre or more of total land area, then a NPDES permit is required from DOH. This permit process is described in Chapter 11-55, HAR, “Water Pollution Control.” A County grading permit is required for any grading and grubbing work before a NPDES permit can be issued. The grading permit allows the grading, while the NPDES permit regulates stormwater runoff from the construction site.

The counties administer the Special Management Area (SMA) permit process. SMAs are a subset of the State’s coastal zone and include all lands and waters beginning at the shoreline and extending inland or *mauka* at least 100 yards. Many new developments fall within this more sensitive coastal area, and the SMA permit process ensures that these developments are consistent with Hawaii’s coastal zone management program objectives and policies. Although each county has its own procedures for administering SMA permits, the requirements and review processes for SMA applications are similar for all four counties and are based on Chapter 205A-26, HRS (“Special management area guidelines”). Each county requires a permit applicant to describe the proposed development in terms of the CZM objectives and policies.

DLNR manages lands in the Conservation District through the issuance of Conservation District Use Permits (CDUPs), in order to conserve, protect, and preserve the important natural resources of the State through appropriate management and use to promote their long-term sustainability. The conservation district is divided into sub-zones, in which permitted land uses are restricted to those provided for in Chapter 13-5, HAR. Erosion control, flood control and other hazard prevention devices or facilities are allowed within the limited subzone, with a permit from the Board of Land and Natural Resources. Activities within the conservation district would likely trigger the EIS process, because they constitute a use of state lands.

Major development projects frequently trigger an environmental review process. Chapter 343, HRS, and Chapter 11-200, HAR, both about the Environmental Impact Statement law, require the preparation of an EA and/or EIS for proposed activities that trigger the environmental review process. Some of these trigger conditions are as follows: (1) use of State or county lands or funds; (2) use within the conservation district; (3) use within a shoreline setback area; (4) use within the Waikiki special district; (5) use within an historic site; (6) reclassification of conservation lands; and (7) certain amendments to a county general plan. In determining whether an action may have a significant effect on the environment, the approving State or county agency shall consider every phase of a proposed action, the expected consequences, both primary and secondary, and the cumulative as well as the short-term and long-term effects of the action. In most instances, an action will be determined to have a significant effect on the environment if it detrimentally affects water quality or affects an environmentally sensitive area such as a flood plain, beach, erosion-prone area, estuary, fresh water, or coastal waters. Mitigation measures must be identified to address these detrimental effects.

Under Chapter 46-11.5, HRS, the counties are responsible for the maintenance of channels, streambeds, streambanks, and drainageways, whether natural or artificial, including their exits into the ocean, in suitable condition to carry off stormwaters. For lands comprising the channels, streams, streambanks, and drainageways that are privately owned or owned by the State, the respective owner is responsible for maintenance. In the City and County of Honolulu, Chapter 41-26.3, ROH, implements this statute; another ordinance addresses the maintenance of drainage facilities (Chapter 14-12, ROH). The City and County of Honolulu also has an ordinance that states “Whenever practical, drainage improvements shall emphasize natural means and retention of water, with minimum reliance on structural means and rapid water transport” (Chapter 24-1.8, ROH, Development Plans).

DOH has general regulatory authority over water pollution control.

## Implementation Tools

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
<p>Chapter 174C, HRS Hawaii Water Code</p> <p>Chapter 13-169, HAR Protection of Instream Uses of Water</p>	<p>DLNR Commission on Water Resource Management</p>	<p>-the state water code shall be liberally interpreted to obtain maximum beneficial use of the waters of the State for purposes such as domestic uses, aquaculture uses, irrigation and other agricultural uses, power development, and commercial and industrial uses. However, adequate provision shall be made for the protection of traditional and customary Hawaiian rights, the protection and procreation of fish and wildlife, the maintenance of proper ecological balance and scenic beauty, and the preservation and enhancement of waters of the State for municipal uses, public recreation, public water supply, agriculture, and navigation. Such objectives are declared to be in the public interest. (§174C-2(c))</p> <p>-provides eight criteria for CWRM to consider in designating an area for regulation of ground water use (§174C-44)</p> <p>-provides the following criteria in designating an area for surface water use regulation:</p> <ul style="list-style-type: none"> <li>• Whether regulation is necessary to preserve the diminishing surface water supply for future needs, as evidenced by excessively declining surface water levels, not related to rainfall variations, or increasing or proposed diversions of surface waters to levels which may detrimentally affect existing instream uses or prior existing off stream uses;</li> <li>• Whether the diversions of stream waters are reducing the capacity of the stream to assimilate pollutants to an extent which adversely affects public health or existing instream uses; or</li> <li>• Serious disputes respecting the use of surface water resources are occurring. (§174C-45)</li> </ul> <p>-CWRM applies a water use permitting process to regulate use in designated water management areas. A water use permit must be obtained in order to continue existing uses and prior to commencing any new water use. (§174C-48)</p> <p>-to obtain a permit, the applicant must establish that the proposed use of water can be accommodated with the available water source; is a reasonable-beneficial use; will not interfere with any existing legal use of water; is consistent with the public interest; is consistent with state and county general plans and land use designations; is consistent with county land use plans and policies; and will not interfere with the rights of DHHL. (§174C-49)</p>
<p>Chapter 174C, HRS Hawaii Water Code, continued</p> <p>Chapter 13-169, HAR Protection of Instream Uses of Water, continued</p>	<p>DLNR Commission on Water Resource Management</p>	<p>-requires permit from the Water Commission prior to undertaking a stream channel alteration to protect fishery, wildlife, recreational, aesthetic, scenic, and other beneficial uses (§174C-71)</p> <p>-outlines the stream channel alteration permit (SCAP) process (§13-169-50 through 13-169-54)</p>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 11-55, HAR Water Pollution Control	DOH	<p><u>-NPDES General Permit:</u> The NPDES General Permit Authorizing Discharges of Storm Water Associated with Construction Activity covers discharges of stormwater runoff associated with construction activities, including clearing, grading, and excavation that result in the disturbance of one acre or more of total land area. This general permit also covers activities that disturb less than one acre of total land area that is part of a larger common plan if the larger common plan will ultimately disturb one acre or more of total land area. This general permit covers all areas of the State except for discharges in or to state waters classified by DOH as "class 1, inland waters," "class AA, marine waters," and some other restricted areas. For these state waters, an individual NPDES permit is required. (§11-55-04; 11-55-34.02; Appendix C)</p> <p><u>-NPDES Individual Permit:</u> For discharges of stormwater associated with construction activities that result in the disturbance of one acre or more of total land area that do not qualify for a general permit because they affect "class 1, inland waters" or "class AA, marine waters," a NPDES Individual Permit is required. (§11-55-04; §11-55-15)</p>
Chapter 11-54, HAR Water Quality Standards	DOH	<p>-defines classifications of water uses. The objective of "class 1, inland waters" is that they remain in their natural state as nearly as possible with an absolute minimum of pollution from any human-caused source. Waste discharge into these waters is prohibited. Any conduct that results in a demonstrable increase in levels of point or nonpoint source contamination in class 1 waters is prohibited. Class 1 waters include all standing and/or flowing waters, and elevated and/or low wetlands: (i) within the natural reserves, preserves, sanctuaries, and refuges established by DLNR under Chapter 195, HRS, or similar reserves for the protection of aquatic life; (ii) in national and state parks; (iii) in state or federal fish and wildlife refuges; (iv) which have been identified as a unique or critical habitat for threatened or endangered species by the USFWS; and (v) in protective Conservation District subzones designated under Chapter 13-5, HAR. (§11-54-3(b)(1))</p> <p>-similarly, the objective of "class AA, marine waters" is that these waters remain in their natural pristine state as nearly as possible with an absolute minimum of pollution or alteration of water quality from any human-caused source or actions. Approximately 63% of Hawaii's coastline abuts Class AA marine waters. (§11-54-3(c)(1))</p>
Section 404, CWA	USACOE	The U.S. Army Corps of Engineers (USACOE) has the authority to protect the waters of the U.S., including wetlands, by regulating certain activities within those waters. Section 404 of the Clean Water Act requires that anyone interested in placing dredged or fill material into waters of the U.S. must first obtain a permit from the Corps.
Section 10, Rivers and Harbors Act of 1899	USACOE	-requires approval prior to undertaking any work in or over navigable waters of the U.S., or which affects the course, location, condition, or capacity of such waters. The law applies to any dredging or disposal of dredged materials, excavation, filling, rechannelization, or any other modification of a navigable water of the U.S., and applies to all structures, from the smallest floating dock to the largest commercial undertaking.

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Section 401, CWA	DOH	<p>-DOH is authorized under Section 401 of the Federal Clean Water Act and Section 342D-53, HRS, to administer the Section 401 Water Quality Certification (WQC) program in Hawaii.</p> <p>- A WQC issued by the DOH is required by any owner applying for a Federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may result in any “discharge” into navigable waters. A 401 WQC certifies that the activity will not violate State water quality standards (Chapter 11-54, HAR).</p> <p>-The Section 404, CWA, permit process, administered by USACOE, would trigger a Section 401 WQC prior to issuance.</p>
Chapter 205A, HRS Coastal Zone Management	OP-CZM	<p>-establishes coastal zone management objectives and policies (§205A-2)</p> <p>-related policies for coastal ecosystems include;</p> <p>(A) Exercise an overall conservation ethic, and practice stewardship in the protection, use, and development of marine and coastal resources;</p> <p>(B) Improve the technical basis for natural resource management;</p> <p>(C) Preserve valuable coastal ecosystems, including reefs, of significant biological or economic importance;</p> <p>(D) Minimize disruption or degradation of coastal water ecosystems by effective regulation of stream diversions, channelization, and similar land and water uses, recognizing competing water needs; and</p> <p>(E) Promote water quantity and quality planning and management practices that reflect the tolerance of fresh water and marine ecosystems and maintain and enhance water quality through the development and implementation of point and nonpoint source water pollution control measures. (§205A-2)</p> <p>-the objectives and policies of the chapter and any guidelines enacted by the legislature shall be binding upon actions within the coastal zone management area by all agencies, within the scope of their authority (§205A-4(b))</p> <p>-all agencies shall ensure that their rules comply with the objectives and policies of the chapter (§205A-5)</p> <p>-establishes special controls on developments within an area along the shoreline to avoid permanent losses of valuable resources (§205A-21, -26).</p> <p>-no development is allowed in any county within these special management areas (SMAs) without a permit (§205A-28). The county planning departments administer the SMA permit process.</p> <p>-no development is approved unless it is found that the development, among other things, will not have any substantial adverse environmental or ecological effect; is consistent with the objectives, policies, and SMA guidelines of the chapter; and is consistent with the county general plan and zoning. (§205A-26)</p>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
<p>Chapter 15-150, HAR Special Management Areas/Shoreline Areas</p> <p>Chapter 12-202, MCC SMA Rules for Maui Planning Commission</p> <p>Chapter 12-302, MCC SMA Rules for Molokai Planning Commission</p> <p>Chapter 12-402, MCC SMA Rules for Lanai Planning Commission</p> <p>Chapter 25, ROH Special Management Area</p> <p>Rule 9, Hawaii County Planning Commission</p> <p>SMA Rules and Regulations of the County of Kauai</p>	<p>OP for SMAs of CDDs</p> <p>County planning commissions</p>	<p>-provides guidelines for use by OP for the review of developments proposed in the SMA of community development districts (CDDs); development in the SMA of CDDs must be consistent with the objectives and policies established in Section 205A-2, HRS (§15-150-6)</p> <p>-county rules for administering the SMA permits and shoreline setback provisions within each county/island</p>
<p>Chapter 183C, HRS Conservation District</p> <p>Chapter 13-5, HAR Conservation District</p>	<p>DLNR</p>	<p>-DLNR shall establish zones within the conservation district and permitted uses within those zones (§183C-4)</p> <p>-DLNR regulates land use in the conservation district through the issuance of permits (CDUPs) (§183C-6)</p> <p>-5 subzones within conservation district are established by DLNR; erosion control, flood control and other hazard prevention devices or facilities are allowed within the limited (L) subzone, with a permit from the DLNR (§13-5-23)</p> <p>-permit application process and requirements are described in §13-5-31</p>
<p>Chapter 343, HRS Environmental Impact Statements</p> <p>Chapter 11-200, HAR Environmental Impact Statement Rules</p>	<p>OEQC</p>	<p>-states that an environmental review process will integrate the review of environmental concerns with existing planning processes of the State and counties and alert decision makers to significant environmental effects which may result from the implementation of certain actions (§343-1)</p> <p>-the following actions, among others, shall trigger an EA: (1) use of State or county lands or funds; (2) use within the conservation district; (3) use within a shoreline setback area; (4) use within the Waikiki special district; (5) use within an historic site; (6) certain amendments to county general plans; and (7) reclassification of conservation lands (§343-5)</p> <p>-provides agencies and persons with procedures, specifications of contents of EAs and EISs, and criteria and definitions of statewide application (§11-200-1)</p>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
<p>Chapter 343, HRS Environmental Impact Statements</p> <p>Chapter 11-200, HAR Environmental Impact Statement Rules, continued</p>	OEQC	<p>-in determining whether an action may have a significant effect on the environment, the agency shall consider every phase of a proposed action, the expected consequences, both primary and secondary, and the cumulative as well as the short-term and long-term effects of the action. In most instances, an action shall be determined to have a significant effect on the environment if it:</p> <ol style="list-style-type: none"> <li>1. Involves an irrevocable commitment to loss or destruction of any natural or cultural resource;</li> <li>2. Curtails the range of beneficial uses of the environment;</li> <li>3. Conflicts with the state's long-term environmental policies or goals and guidelines as expressed in chapter 344, HRS, and any revisions thereof and amendments thereto, court decisions, or executive orders;</li> <li>4. Substantially affects the economic welfare, social welfare, and cultural practices of the community or State;</li> <li>5. Substantially affects public health;</li> <li>6. Involves substantial secondary impacts, such as population changes or effects on public facilities;</li> <li>7. Involves a substantial degradation of environmental quality;</li> <li>8. Is individually limited but cumulatively has considerable effect upon the environment or involves a commitment for larger actions;</li> <li>9. Substantially affects a rare, threatened, or endangered species, or its habitat;</li> <li>10. Detrimentally affects air or water quality or ambient noise levels;</li> <li>11. Affects or is likely to suffer damage by being located in an environmentally sensitive area such as a flood plain, tsunami zone, beach, erosion-prone area, geologically hazardous land, estuary, fresh water, or coastal waters;</li> <li>12. Substantially affects scenic vistas and viewplanes identified in county or state plans or studies; or,</li> <li>13. Requires substantial energy consumption. (§11-200-12)</li> </ol>
<p>Chapter 46, HRS General Provisions, County Organization and Administration</p>	counties	<p>-each county shall provide for the maintenance of channels, streambeds, streambanks, and drainageways, whether natural or artificial, including their exits to the ocean, in suitable condition to carry off storm waters; and for the removal from the channels, streambeds, streambanks, and drainageways and from the shores and beaches any debris which is likely to create an unsanitary condition or otherwise become a public nuisance; provided that to the extent any of the foregoing work is a private responsibility the responsibility may be enforced by the county in lieu of the work being done at county expense, and any private entity or person refusing to comply with any final order issued by the county shall be in violation of this chapter and be liable for a civil penalty not to exceed \$500 for each day the violation continues; provided further that it shall be the responsibility of the county to maintain all channels, streambeds, streambanks, and drainageways unless such channels, streambeds, streambanks, and drainageways are privately owned or owned by the State, in which event such channels, streambeds, streambanks, and drainageways shall be maintained by their respective owners. (§46-11.5)</p>



Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 41-26, ROH Maintenance of Channels, Streambeds, Streambanks and Drainageways	CCH Dept. of Public Works	-the owner of any stream has the duty to maintain, dredge and clear such stream so that the natural flow of water runs unimpaired. The owner shall also be responsible for the removal of any debris, vegetation, silt or other items or material of any kind, that may interfere with the natural flow of water. (§41-26.3)
Chapter 14-12, ROH, Drainage, Flood and Pollution Control	CCH Dept. of Public Works	(a) Except as otherwise provided, the city shall acquire the land or any interest in land necessary for the construction, maintenance and repair (and operation as the case may be) of drainage facilities which are to be constructed by the city by way of easements or in fee simple. Nothing herein shall prevent the city from acquiring easements for other improvements or for utilities or other uses through the same land. (b) The city shall maintain and repair (and operate as the case may be) only structures in improved drainage facilities which have been constructed to city standards and have been accepted or constructed by the city. (c) The cleaning of debris from public or private drainways may be performed as part of any general cleanup or beautification program of the city but shall not be performed as a part of maintenance and repair of drainage facilities; however, the chief engineer may cause to be removed any potential obstruction to the operation of any culvert, gate, bridge or drain opening, or similar drainage structure which has been accepted or constructed by the city. (§14-12.16)
Chapter 342D, HRS Water Pollution	DOH	-prohibits discharge of any pollutant into State waters -allows DOH to institute a civil action for injunctive relief to prevent violation of State water quality standards (§342D-11) -under the statute, DOH may request the court to order nonpoint source polluters to implement all required management measures

### Instream and Riparian Habitat Restoration Management Measure

- (1) Evaluate the potential effects of proposed channelization and channel modification on instream and riparian habitat in coastal areas;**
- (2) Plan and design channelization and channel modification to reduce undesirable impacts; and**
- (3) Develop an operation and maintenance program with specific timetables for existing modified channels that includes identification of opportunities to restore instream and riparian habitat in those channels.**

#### **Responsible Agencies and Authorities**

The State Water Code (Chapter 174C, HRS), adopted by the Hawaii Legislature in 1987 and amended in 2004, provides the regulatory framework to protect streams, wetlands and other areas critical to water quality. The State, in its stewardship capacity, has management responsibility for all water resources of the State through CWRM – also known as the Water Commission. The Water Commission sets policies and approves water allocations for all water users. Existing uses established prior to 1987 are grandfathered in, provided the existing use is reasonable and beneficial. The Water Code also requires CWRM to establish and administer a statewide in-stream use protection program, including flow standards on a stream-by-stream basis whenever necessary to protect the public interest. Instream flow standards describe the flow necessary to adequately protect fishery, wildlife, aesthetic, scenic, or

other beneficial instream uses. Instream uses include: maintenance of fish and wildlife habitats, outdoor recreational activities, maintenance of ecosystems such as estuaries, wetlands, and stream vegetation, aesthetic values such as waterfalls and scenic waterways, navigation, instream hydropower generation, maintenance of water quality, conveyance of irrigation and domestic water supplies to downstream points of diversion, and the protection of traditional and customary Hawaiian rights.

The Water Commission issues permits to regulate the use of surface and ground water in the State. A stream channel alteration permit (SCAP) is required prior to undertaking a stream channel alteration in order to protect fishery, wildlife, recreational, aesthetic, scenic, and other beneficial instream uses.

CWRM adopted the updated *Water Resource Protection Plan* on August 28, 2008. The plan describes the program to protect and conserve Hawaii's water resources. The updated document includes policies, program directives, resource inventories, and recommendations across a broad spectrum of resource management issues, including watershed protection and water quality. Some of the plan's recommendations include:

- Take a more active role in watershed protection, watershed partnerships, and the watershed partnership association.
- Support DOFAW's watershed management activities and the division's leadership role in watershed management.
- Study existing government and community efforts in watershed management and protection, and encourage sharing of information and experiences.
- Study other watershed planning approaches and lessons learned, including the EPA's watershed approach and that of other state governments.
- Pursue appropriate funding to support watershed protection programs and objectives to protect water resources.
- Encourage the collaboration of federal, State, and county agencies with existing watershed partnerships and Conservation Districts to map the relationships between land management programs, land use regulations, economic and agricultural issues, and water quality and resource protection programs.
- Improve communication and encourage dialogue between watershed interests to result in the development of common goals and an integrated watershed management framework. A successful framework will acknowledge and build upon existing programs and organizations to maximize funding, staff, and volunteer resources through watershed-scale management and protection programs.
- Develop innovative public outreach methods and encourage communication between watershed entities. The development of a website devoted to Hawaii watershed projects, organized by geographic location, should facilitate this coordination.

DOH establishes and enforces the State water quality standards contained in Chapter 11-54, HAR. All inland fresh waters are classified based on their ecological characteristics and other natural criteria as flowing waters (e.g., streams), standing waters (e.g., lakes and reservoirs), and wetlands. These waters are further classified for the purposes of applying water quality standards and selecting appropriate quality parameters and uses to be protected in these waters. Class 1 inland waters are to remain in

their natural state as nearly as possible with an absolute minimum of pollution from any human-caused source. Waste discharge into these waters is prohibited. Any conduct that results in a demonstrable increase in levels of point or nonpoint source contamination in class 1 waters is prohibited. The uses to be protected in class 1(a) waters are scientific and educational purposes, protection of native breeding stock, baseline references from which human-caused changes can be measured, compatible recreation, aesthetic enjoyment, and other non-degrading uses. The additional uses to be protected in class 1(b) waters are domestic water supplies and food processing. Class 2 inland waters are to be protected for recreational purposes, the support and propagation of aquatic life, agricultural and industrial water supplies, shipping and navigation. Class 1(a) waters include all standing and/or flowing waters, and elevated and/or low wetlands: (i) within the natural reserves, preserves, sanctuaries, and refuges established by DLNR under Chapter 195, HRS, or similar reserves for the protection of aquatic life; (ii) in national and state parks; (iii) in state or federal fish and wildlife refuges; (iv) which have been identified as a unique or critical habitat for threatened or endangered species by the U.S. Fish and Wildlife Service; and (v) in protective Conservation District subzones designated under Chapter 13-5, HAR.

USACOE has the authority to protect the waters of the United States, including wetlands and some streams, by regulating certain activities within those waters. Section 404 of the Clean Water Act requires that anyone interested in placing dredged or fill material into waters of the United States must first obtain a permit from the Corps. Section 10 of the Rivers and Harbors Act of 1899 requires approval prior to the accomplishment of any work in or over navigable waters of the United States, or which affects the course, location, condition, or capacity of such waters. The law applies to any dredging or disposal of dredged materials, excavation, filling, rechannelization, or any other modification of a navigable water of the United States, and applies to all structures large or small. The initiation of a Section 404 permit process triggers a Section 401 water quality certification from DOH.

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in which permitted land uses are restricted to those provided for in Chapter 13-5, HAR. Erosion control, flood control and other hazard prevention devices or facilities are allowed within the limited subzone, with a permit from the Board of Land and Natural Resources. Activities within the conservation district would likely trigger the EIS process, because they constitute a use of state lands.

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**Implementation Tools**

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Chapter 174C, HRS Hawaii Water Code  Chapter 13-169, HAR Protection of Instream Uses of Water	DLNR Commission on Water Resource Management	-the state water code shall be liberally interpreted to obtain maximum beneficial use of the waters of the State for purposes such as domestic uses, aquaculture uses, irrigation and other agricultural uses, power development, and commercial and industrial uses. However, adequate provision shall be made for the protection of traditional and customary Hawaiian rights, the protection and procreation of fish and wildlife, the maintenance of proper ecological balance and scenic beauty, and the preservation and enhancement of waters of the State for municipal uses, public recreation, public water supply, agriculture, and navigation. Such objectives are declared to be in the public interest. (§174C-2(c))

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
<p>Chapter 174C, HRS Hawaii Water Code, continued</p> <p>Chapter 13-169, HAR Protection of Instream Uses of Water, continued</p>	<p>DLNR Commission on Water Resource Management</p>	<p>-provides eight criteria for CWRM to consider in designating an area for regulation of ground water use (§174C-44)</p> <p>-provides the following criteria in designating an area for surface water use regulation:</p> <ul style="list-style-type: none"> <li>• Whether regulation is necessary to preserve the diminishing surface water supply for future needs, as evidenced by excessively declining surface water levels, not related to rainfall variations, or increasing or proposed diversions of surface waters to levels which may detrimentally affect existing instream uses or prior existing off stream uses;</li> <li>• Whether the diversions of stream waters are reducing the capacity of the stream to assimilate pollutants to an extent which adversely affects public health or existing instream uses; or</li> <li>• Serious disputes respecting the use of surface water resources are occurring. (§174C-45)</li> </ul> <p>-CWRM applies a water use permitting process to regulate use in designated water management areas. A water use permit must be obtained in order to continue existing uses and prior to commencing any new water use. (§174C-48)</p> <p>-to obtain a permit, the applicant must establish that the proposed use of water can be accommodated with the available water source; is a reasonable-beneficial use; will not interfere with any existing legal use of water; is consistent with the public interest; is consistent with state and county general plans and land use designations; is consistent with county land use plans and policies; and will not interfere with the rights of DHHL. (§174C-49)</p> <p>- requires permit from the Water Commission prior to undertaking a stream channel alteration to protect fishery, wildlife, recreational, aesthetic, scenic, and other beneficial uses (§174C-71)</p> <p>-outlines the stream channel alteration permit (SCAP) process (§13-169-50 through 13-169-54)</p>
<p>Chapter 11-55, HAR Water Pollution Control</p>	<p>DOH</p>	<p><u>-NPDES General Permit:</u> The NPDES General Permit Authorizing Discharges of Storm Water Associated with Construction Activity covers discharges of stormwater runoff associated with construction activities, including clearing, grading, and excavation that result in the disturbance of one acre or more of total land area. This general permit also covers activities that disturb less than one acre of total land area that is part of a larger common plan if the larger common plan will ultimately disturb one acre or more of total land area. This general permit covers all areas of the State except for discharges in or to state waters classified by DOH as "class 1, inland waters," "class AA, marine waters," and some other restricted areas. For these state waters, an individual NPDES permit is required. (§11-55-04; 11-55-34.02; Appendix C)</p> <p><u>-NPDES Individual Permit:</u> For discharges of stormwater associated with construction activities that result in the disturbance of one acre or more of total land area that do not qualify for a general permit because they affect "class 1, inland waters" or "class AA, marine waters," a NPDES Individual Permit is required. (§11-55-04; §11-55-15)</p>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 11-54, HAR Water Quality Standards	DOH	<p>-defines classifications of water uses. The objective of “class 1, inland waters” is that they remain in their natural state as nearly as possible with an absolute minimum of pollution from any human-caused source. Waste discharge into these waters is prohibited. Any conduct that results in a demonstrable increase in levels of point or nonpoint source contamination in class 1 waters is prohibited. Class 1 waters include all standing and/or flowing waters, and elevated and/or low wetlands: (i) within the natural reserves, preserves, sanctuaries, and refuges established by DLNR under Chapter 195, HRS, or similar reserves for the protection of aquatic life; (ii) in national and state parks; (iii) in state or federal fish and wildlife refuges; (iv) which have been identified as a unique or critical habitat for threatened or endangered species by the USFWS; and (v) in protective Conservation District subzones designated under Chapter 13-5, HAR. (§11-54-3(b)(1))</p> <p>-similarly, the objective of “class AA, marine waters” is that these waters remain in their natural pristine state as nearly as possible with an absolute minimum of pollution or alteration of water quality from any human-caused source or actions. Approximately 63% of Hawaii’s coastline abuts Class AA marine waters. (§11-54-3(c)(1))</p>
Section 404, CWA	USACOE	The U.S. Army Corps of Engineers (USACOE) has the authority to protect the waters of the U.S., including wetlands, by regulating certain activities within those waters. Section 404 of the Clean Water Act requires that anyone interested in placing dredged or fill material into waters of the U.S. must first obtain a permit from the Corps.
Section 10, Rivers and Harbors Act of 1899	USACOE	-requires approval prior to undertaking any work in or over navigable waters of the U.S., or which affects the course, location, condition, or capacity of such waters. The law applies to any dredging or disposal of dredged materials, excavation, filling, rechannelization, or any other modification of a navigable water of the U.S., and applies to all structures, from the smallest floating dock to the largest commercial undertaking.
Section 401, CWA	DOH	<p>-DOH is authorized under Section 401 of the Federal Clean Water Act and Section 342D-53, HRS, to administer the Section 401 Water Quality Certification (WQC) program in Hawaii.</p> <p>- A WQC issued by the DOH is required by any owner applying for a Federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may result in any “discharge” into navigable waters. A 401 WQC certifies that the activity will not violate State water quality standards (Chapter 11-54, HAR).</p> <p>-The Section 404, CWA, permit process, administered by USACOE, would trigger a Section 401 WQC prior to issuance.</p>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 205A, HRS Coastal Zone Management	OP-CZM	<p>-establishes coastal zone management objectives and policies (§205A-2)</p> <p>-related policies for coastal ecosystems include;</p> <ul style="list-style-type: none"> <li>(A) Exercise an overall conservation ethic, and practice stewardship in the protection, use, and development of marine and coastal resources;</li> <li>(B) Improve the technical basis for natural resource management;</li> <li>(C) Preserve valuable coastal ecosystems, including reefs, of significant biological or economic importance;</li> <li>(D) Minimize disruption or degradation of coastal water ecosystems by effective regulation of stream diversions, channelization, and similar land and water uses, recognizing competing water needs; and</li> <li>(E) Promote water quantity and quality planning and management practices that reflect the tolerance of fresh water and marine ecosystems and maintain and enhance water quality through the development and implementation of point and nonpoint source water pollution control measures. (§205A-2)</li> </ul> <p>-the objectives and policies of the chapter and any guidelines enacted by the legislature shall be binding upon actions within the coastal zone management area by all agencies, within the scope of their authority (§205A-4(b))</p> <p>-all agencies shall ensure that their rules comply with the objectives and policies of the chapter (§205A-5)</p> <p>-establishes special controls on developments within an area along the shoreline to avoid permanent losses of valuable resources (§205A-21, -26).</p> <p>-no development is allowed in any county within these special management areas (SMAs) without a permit (§205A-28). The county planning departments administer the SMA permit process.</p> <p>-no development is approved unless it is found that the development, among other things, will not have any substantial adverse environmental or ecological effect; is consistent with the objectives, policies, and SMA guidelines of the chapter; and is consistent with the county general plan and zoning. (§205A-26)</p>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
<p>Chapter 15-150, HAR Special Management Areas/Shoreline Areas</p> <p>Chapter 12-202, MCC SMA Rules for Maui Planning Commission</p> <p>Chapter 12-302, MCC SMA Rules for Molokai Planning Commission</p> <p>Chapter 12-402, MCC SMA Rules for Lanai Planning Commission</p> <p>Chapter 25, ROH Special Management Area</p>	<p>OP for SMAs of CDDs</p> <p>County planning commissions</p>	<p>-provides guidelines for use by OP for the review of developments proposed in the SMA of community development districts (CDDs); development in the SMA of CDDs must be consistent with the objectives and policies established in Section 205A-2, HRS (§15-150-6)</p> <p>-county rules for administering the SMA permits and shoreline setback provisions within each county/island</p>
<p>Rule 9, Hawaii County Planning Commission</p> <p>SMA Rules and Regulations of the County of Kauai</p>	<p>County planning commissions</p>	<p>-county rules for administering the SMA permits and shoreline setback provisions within each county/island</p>
<p>Chapter 183C, HRS Conservation District</p> <p>Chapter 13-5, HAR Conservation District</p>	<p>DLNR</p>	<p>-DLNR shall establish zones within the conservation district and permitted uses within those zones (§183C-4)</p> <p>-DLNR regulates land use in the conservation district through the issuance of permits (CDUPs) (§183C-6)</p> <p>-5 subzones within conservation district are established by DLNR; erosion control, flood control and other hazard prevention devices or facilities are allowed within the limited (L) subzone, with a permit from the DLNR (§13-5-23)</p> <p>-permit application process and requirements are described in §13-5-31</p>



Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
<p>Chapter 343, HRS Environmental Impact Statements</p> <p>Chapter 11-200, HAR Environmental Impact Statement Rules</p>	<p>OEQC</p>	<p>-states that an environmental review process will integrate the review of environmental concerns with existing planning processes of the State and counties and alert decision makers to significant environmental effects which may result from the implementation of certain actions (§343-1)</p> <p>-the following actions, among others, shall trigger an EA: (1) use of State or county lands or funds; (2) use within the conservation district; (3) use within a shoreline setback area; (4) use within the Waikiki special district; (5) use within an historic site; (6) certain amendments to county general plans; and (7) reclassification of conservation lands (§343-5)</p> <p>-provides agencies and persons with procedures, specifications of contents of EAs and EISs, and criteria and definitions of statewide application (§11-200-1)</p> <p>-in determining whether an action may have a significant effect on the environment, the agency shall consider every phase of a proposed action, the expected consequences, both primary and secondary, and the cumulative as well as the short-term and long-term effects of the action. In most instances, an action shall be determined to have a significant effect on the environment if it:</p> <ol style="list-style-type: none"> <li>1. Involves an irrevocable commitment to loss or destruction of any natural or cultural resource;</li> <li>2. Curtails the range of beneficial uses of the environment;</li> <li>3. Conflicts with the state's long-term environmental policies or goals and guidelines as expressed in chapter 344, HRS, and any revisions thereof and amendments thereto, court decisions, or executive orders;</li> <li>4. Substantially affects the economic welfare, social welfare, and cultural practices of the community or State;</li> <li>5. Substantially affects public health;</li> <li>6. Involves substantial secondary impacts, such as population changes or effects on public facilities;</li> <li>7. Involves a substantial degradation of environmental quality;</li> <li>8. Is individually limited but cumulatively has considerable effect upon the environment or involves a commitment for larger actions;</li> <li>9. Substantially affects a rare, threatened, or endangered species, or its habitat;</li> <li>10. Detrimentally affects air or water quality or ambient noise levels;</li> </ol>
<p>Chapter 343, HRS Environmental Impact Statements</p> <p>Chapter 11-200, HAR Environmental Impact Statement Rules, continued</p>	<p>OEQC</p>	<ol style="list-style-type: none"> <li>11. Affects or is likely to suffer damage by being located in an environmentally sensitive area such as a flood plain, tsunami zone, beach, erosion-prone area, geologically hazardous land, estuary, fresh water, or coastal waters;</li> <li>12. Substantially affects scenic vistas and viewplanes identified in county or state plans or studies; or,</li> <li>13. Requires substantial energy consumption. (§11-200-12)</li> </ol>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 46, HRS General Provisions, County Organization and Administration	counties	-each county shall provide for the maintenance of channels, streambeds, streambanks, and drainageways, whether natural or artificial, including their exits to the ocean, in suitable condition to carry off storm waters; and for the removal from the channels, streambeds, streambanks, and drainageways and from the shores and beaches any debris which is likely to create an unsanitary condition or otherwise become a public nuisance; provided that to the extent any of the foregoing work is a private responsibility the responsibility may be enforced by the county in lieu of the work being done at county expense, and any private entity or person refusing to comply with any final order issued by the county shall be in violation of this chapter and be liable for a civil penalty not to exceed \$500 for each day the violation continues; provided further that it shall be the responsibility of the county to maintain all channels, streambeds, streambanks, and drainageways unless such channels, streambeds, streambanks, and drainageways are privately owned or owned by the State, in which event such channels, streambeds, streambanks, and drainageways shall be maintained by their respective owners. (§46-11.5)
Chapter 41-26, ROH Maintenance of Channels, Streambeds, Streambanks and Drainageways	CCH Dept. of Public Works	-the owner of any stream has the duty to maintain, dredge and clear such stream so that the natural flow of water runs unimpaired. The owner shall also be responsible for the removal of any debris, vegetation, silt or other items or material of any kind, that may interfere with the natural flow of water. (§41-26.3)
Chapter 14-12, ROH, Drainage, Flood and Pollution Control	CCH Dept. of Public Works	(a) Except as otherwise provided, the city shall acquire the land or any interest in land necessary for the construction, maintenance and repair (and operation as the case may be) of drainage facilities which are to be constructed by the city by way of easements or in fee simple. Nothing herein shall prevent the city from acquiring easements for other improvements or for utilities or other uses through the same land. (b) The city shall maintain and repair (and operate as the case may be) only structures in improved drainage facilities which have been constructed to city standards and have been accepted or constructed by the city. (c) The cleaning of debris from public or private drainways may be performed as part of any general cleanup or beautification program of the city but shall not be performed as a part of maintenance and repair of drainage facilities; however, the chief engineer may cause to be removed any potential obstruction to the operation of any culvert, gate, bridge or drain opening, or similar drainage structure which has been accepted or constructed by the city. (§14-12.16)
Chapter 342D, HRS Water Pollution	DOH	-prohibits discharge of any pollutant into State waters -allows DOH to institute a civil action for injunctive relief to prevent violation of State water quality standards (§342D-11) -under the statute, DOH may request the court to order nonpoint source polluters to implement all required management measures

## Dams

### **Management Measure for Protection of Surface Water Quality and Instream and Riparian Habitat**

Develop and implement a program to manage the operation of dams in coastal areas that includes an assessment of:

- (1) Surface water quality and instream and riparian habitat and potential for improvement and
- (2) Significant nonpoint source pollution problems that result from excessive surface water withdrawals.

### **Responsible Agencies and Authorities**

The State Water Code (Chapter 174C, HRS), adopted by the Hawaii Legislature in 1987 and amended in 2004, provides the regulatory framework to protect streams, wetlands and other areas critical to water quality. The State, in its stewardship capacity, has management responsibility for all water resources of the State through CWRM – also known as the Water Commission. The Water Commission sets policies and approves water allocations for all water users. Existing uses established prior to 1987 are grandfathered in, provided the existing use is reasonable and beneficial. The Water Code also requires CWRM to establish and administer a statewide in-stream use protection program, including flow standards on a stream-by-stream basis whenever necessary to protect the public interest. Instream flow standards describe the flow necessary to adequately protect fishery, wildlife, aesthetic, scenic, or other beneficial instream uses. Instream uses include: maintenance of fish and wildlife habitats, outdoor recreational activities, maintenance of ecosystems such as estuaries, wetlands, and stream vegetation, aesthetic values such as waterfalls and scenic waterways, navigation, instream hydropower generation, maintenance of water quality, conveyance of irrigation and domestic water supplies to downstream points of diversion, and the protection of traditional and customary Hawaiian rights.

The Water Commission issues permits to regulate the use of surface and ground water in the State. A stream channel alteration permit (SCAP) is required prior to undertaking a stream channel alteration in order to protect fishery, wildlife, recreational, aesthetic, scenic, and other beneficial instream uses.

When the water resources of an area are determined to be threatened by existing or proposed withdrawals of water, CWRM may designate the area as a water management area. In water management areas, CWRM can limit the total quantity of water that can be withdrawn. Chapter 174C, HRS, provides criteria for designating ground and surface water management areas. CWRM applies a water use permitting process to regulate use in designated water management areas. A water use permit must be obtained in order to continue existing uses and prior to commencing any new water use. To obtain a permit, the applicant must establish that the proposed use of water can be accommodated with the available water source; is a reasonable-beneficial use; will not interfere with any existing legal use of water; is consistent with the public interest; is consistent with state and county general plans and land use designations; is consistent with county land use plans and policies; and will not interfere with the rights of the Department of Hawaiian Home Lands.

CWRM adopted the updated *Water Resource Protection Plan* on August 28, 2008. The plan describes the program to protect and conserve Hawaii's water resources. The updated document includes policies, program directives, resource inventories, and recommendations across a broad spectrum of resource management issues, including watershed protection and water quality. Some of the plan's recommendations include:

- Take a more active role in watershed protection, watershed partnerships, and the watershed partnership association.
- Support DOFAW's watershed management activities and the division's leadership role in watershed management.
- Study existing government and community efforts in watershed management and protection, and encourage sharing of information and experiences.
- Study other watershed planning approaches and lessons learned, including the EPA's watershed approach and that of other state governments.
- Pursue appropriate funding to support watershed protection programs and objectives to protect water resources.
- Encourage the collaboration of federal, State, and county agencies with existing watershed partnerships and Conservation Districts to map the relationships between land management programs, land use regulations, economic and agricultural issues, and water quality and resource protection programs.
- Improve communication and encourage dialogue between watershed interests to result in the development of common goals and an integrated watershed management framework. A successful framework will acknowledge and build upon existing programs and organizations to maximize funding, staff, and volunteer resources through watershed-scale management and protection programs.
- Develop innovative public outreach methods and encourage communication between watershed entities. The development of a website devoted to Hawaii watershed projects, organized by geographic location, should facilitate this coordination.

DOH establishes and enforces the State water quality standards contained in Chapter 11-54, HAR. All inland fresh waters are classified based on their ecological characteristics and other natural criteria as flowing waters (*e.g.*, streams), standing waters (*e.g.*, lakes and reservoirs), and wetlands. These waters are further classified for the purposes of applying water quality standards and selecting appropriate quality parameters and uses to be protected in these waters. Class 1 inland waters are to remain in their natural state as nearly as possible with an absolute minimum of pollution from any human-caused source. Waste discharge into these waters is prohibited. Any conduct that results in a demonstrable increase in levels of point or nonpoint source contamination in class 1 waters is prohibited. The uses to be protected in class 1(a) waters are scientific and educational purposes, protection of native breeding stock, baseline references from which human-caused changes can be measured, compatible recreation, aesthetic enjoyment, and other non-degrading uses. The additional uses to be protected in class 1(b) waters are domestic water supplies and food processing. Class 2 inland waters are to be protected for recreational purposes, the support and propagation of aquatic life, agricultural and industrial water supplies, shipping and navigation. Class 1(a) waters include all standing and/or flowing waters, and elevated and/or low wetlands: (i) within the natural reserves, preserves, sanctuaries, and refuges established by DLNR under Chapter 195, HRS, or similar reserves for the protection of aquatic life; (ii) in national and state parks; (iii) in state or federal fish and wildlife refuges; (iv) which have been identified as a unique or critical habitat for threatened or endangered species by the U.S. Fish and Wildlife Service; and (v) in protective Conservation District subzones designated under Chapter 13-5, HAR.

USACOE has the authority to protect the waters of the United States, including wetlands and some streams, by regulating certain activities within those waters. Section 404 of the Clean Water Act requires that anyone interested in placing dredged or fill material into waters of the United States must first obtain a permit from the Corps. Section 10 of the Rivers and Harbors Act of 1899 requires approval prior to the accomplishment of any work in or over navigable waters of the United States, or which affects the course, location, condition, or capacity of such waters. The law applies to any dredging or disposal of dredged materials, excavation, filling, rechannelization, or any other modification of a navigable water of the United States, and applies to all structures large or small. The initiation of a Section 404 permit process triggers a Section 401 water quality certification from DOH.

If development activity will disturb one acre or more of total land area, then a NPDES permit is required from DOH. This permit process is described in Chapter 11-55, HAR, “Water Pollution Control.” A County grading permit is required for any grading and grubbing work before a NPDES permit can be issued. The grading permit allows the grading, while the NPDES permit regulates stormwater runoff from the construction site.

The counties administer the SMA permit process. SMAs are a subset of the State’s coastal zone and include all lands and waters beginning at the shoreline and extending inland or *mauka* at least 100 yards. Many new developments fall within this more sensitive coastal area, and the SMA permit process ensures that these developments are consistent with Hawaii’s coastal zone management program objectives and policies. Although each county has its own procedures for administering SMA permits, the requirements and review processes for SMA applications are similar for all four counties and are based on Chapter 205A-26, HRS (“Special management area guidelines”). Each county requires a permit applicant to describe the proposed development in terms of the CZM objectives and policies.

Major development projects frequently trigger an environmental review process. Chapter 343, HRS, and Chapter 11-200, HAR, both about the Environmental Impact Statement law, require the preparation of an EA and/or EIS for proposed activities that trigger the environmental review process. Some of these trigger conditions are as follows: (1) use of State or county lands or funds; (2) use within the conservation district; (3) use within a shoreline setback area; (4) use within the Waikiki special district; (5) use within an historic site; (6) reclassification of conservation lands; and (7) certain amendments to a county general plan. In determining whether an action may have a significant effect on the environment, the approving State or county agency shall consider every phase of a proposed action, the expected consequences, both primary and secondary, and the cumulative as well as the short-term and long-term effects of the action. In most instances, an action will be determined to have a significant effect on the environment if it detrimentally affects water quality or affects an environmentally sensitive area such as a flood plain, beach, erosion-prone area, estuary, fresh water, or coastal waters. Mitigation measures must be identified to address these detrimental effects.

Chapter 13-190, HAR, “Dams and Reservoirs”, is administered by DLNR. These rules govern the design, construction, operation, maintenance, enlargement, alteration, repair and removal of dams in the State. Written approval from DLNR of the construction plans is required for any construction, enlargement, repair or alteration project. Owners are required to provide for adequate and timely

maintenance, operation, and inspection of their dams and reservoirs to insure public safety. DLNR is required to inspect all dams and reservoirs at least every five years.

DOH has general regulatory authority over water pollution control.

### **Implementation Tools**

<b>Regulatory or Non-Regulatory Mechanism</b>	<b>Responsible Agency</b>	<b>Description</b>
<p>Chapter 174C, HRS Hawaii Water Code</p> <p>Chapter 13-169, HAR Protection of Instream Uses of Water</p>	<p>DLNR Commission on Water Resource Management</p>	<p>-the state water code shall be liberally interpreted to obtain maximum beneficial use of the waters of the State for purposes such as domestic uses, aquaculture uses, irrigation and other agricultural uses, power development, and commercial and industrial uses. However, adequate provision shall be made for the protection of traditional and customary Hawaiian rights, the protection and procreation of fish and wildlife, the maintenance of proper ecological balance and scenic beauty, and the preservation and enhancement of waters of the State for municipal uses, public recreation, public water supply, agriculture, and navigation. Such objectives are declared to be in the public interest. (§174C-2(c))</p> <p>-provides eight criteria for CWRM to consider in designating an area for regulation of ground water use (§174C-44)</p> <p>-provides the following criteria in designating an area for surface water use regulation:</p> <ul style="list-style-type: none"> <li>• Whether regulation is necessary to preserve the diminishing surface water supply for future needs, as evidenced by excessively declining surface water levels, not related to rainfall variations, or increasing or proposed diversions of surface waters to levels which may detrimentally affect existing instream uses or prior existing off stream uses;</li> <li>• Whether the diversions of stream waters are reducing the capacity of the stream to assimilate pollutants to an extent which adversely affects public health or existing instream uses; or</li> <li>• Serious disputes respecting the use of surface water resources are occurring. (§174C-45)</li> </ul> <p>-CWRM applies a water use permitting process to regulate use in designated water management areas. A water use permit must be obtained in order to continue existing uses and prior to commencing any new water use. (§174C-48)</p> <p>-to obtain a permit, the applicant must establish that the proposed use of water can be accommodated with the available water source; is a reasonable-beneficial use; will not interfere with any existing legal use of water; is consistent with the public interest; is consistent with state and county general plans and land use designations; is consistent with county land use plans and policies; and will not interfere with the rights of DHHL. (§174C-49)</p> <p>- requires permit from the Water Commission prior to undertaking a stream channel alteration to protect fishery, wildlife, recreational, aesthetic, scenic, and other beneficial uses (§174C-71)</p> <p>-outlines the stream channel alteration permit (SCAP) process (§13-169-50 through 13-169-54)</p>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 11-55, HAR Water Pollution Control	DOH	<p><u>-NPDES General Permit:</u> The NPDES General Permit Authorizing Discharges of Storm Water Associated with Construction Activity covers discharges of stormwater runoff associated with construction activities, including clearing, grading, and excavation that result in the disturbance of one acre or more of total land area. This general permit also covers activities that disturb less than one acre of total land area that is part of a larger common plan if the larger common plan will ultimately disturb one acre or more of total land area. This general permit covers all areas of the State except for discharges in or to state waters classified by DOH as "class 1, inland waters," "class AA, marine waters," and some other restricted areas. For these state waters, an individual NPDES permit is required. (§11-55-04; 11-55-34.02; Appendix C)</p> <p><u>-NPDES Individual Permit:</u> For discharges of stormwater associated with construction activities that result in the disturbance of one acre or more of total land area that do not qualify for a general permit because they affect "class 1, inland waters" or "class AA, marine waters," a NPDES Individual Permit is required. (§11-55-04; §11-55-15)</p>
Chapter 11-54, HAR Water Quality Standards	DOH	<p>-defines classifications of water uses. The objective of "class 1, inland waters" is that they remain in their natural state as nearly as possible with an absolute minimum of pollution from any human-caused source. Waste discharge into these waters is prohibited. Any conduct that results in a demonstrable increase in levels of point or nonpoint source contamination in class 1 waters is prohibited. Class 1 waters include all standing and/or flowing waters, and elevated and/or low wetlands: (i) within the natural reserves, preserves, sanctuaries, and refuges established by DLNR under Chapter 195, HRS, or similar reserves for the protection of aquatic life; (ii) in national and state parks; (iii) in state or federal fish and wildlife refuges; (iv) which have been identified as a unique or critical habitat for threatened or endangered species by the USFWS; and (v) in protective Conservation District subzones designated under Chapter 13-5, HAR. (§11-54-3(b)(1))</p> <p>-similarly, the objective of "class AA, marine waters" is that these waters remain in their natural pristine state as nearly as possible with an absolute minimum of pollution or alteration of water quality from any human-caused source or actions. Approximately 63% of Hawaii's coastline abuts Class AA marine waters. (§11-54-3(c)(1))</p>
Section 404, CWA	USACOE	The U.S. Army Corps of Engineers (USACOE) has the authority to protect the waters of the U.S., including wetlands, by regulating certain activities within those waters. Section 404 of the Clean Water Act requires that anyone interested in placing dredged or fill material into waters of the U.S. must first obtain a permit from the Corps.
Section 10, Rivers and Harbors Act of 1899	USACOE	-requires approval prior to undertaking any work in or over navigable waters of the U.S., or which affects the course, location, condition, or capacity of such waters. The law applies to any dredging or disposal of dredged materials, excavation, filling, rechannelization, or any other modification of a navigable water of the U.S., and applies to all structures, from the smallest floating dock to the largest commercial undertaking.

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Section 401, CWA	DOH	<p>-DOH is authorized under Section 401 of the Federal Clean Water Act and Section 342D-53, HRS, to administer the Section 401 Water Quality Certification (WQC) program in Hawaii.</p> <p>- A WQC issued by the DOH is required by any owner applying for a Federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may result in any “discharge” into navigable waters. A 401 WQC certifies that the activity will not violate State water quality standards (Chapter 11-54, HAR).</p> <p>-The Section 404, CWA, permit process, administered by USACOE, would trigger a Section 401 WQC prior to issuance.</p>



Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 205A, HRS Coastal Zone Management	OP-CZM	<p>-establishes coastal zone management objectives and policies (§205A-2)</p> <p>-related policies include: ensure that new developments are compatible with their visual environment by designing and locating such developments to minimize the alteration of natural landforms and existing public views to and along the shoreline; encourage those developments that are not coastal dependent to locate in inland areas; promote water quantity and quality planning and management practices that reflect the tolerance of fresh water and marine ecosystems and maintain and enhance water quality through the development and implementation of point and nonpoint source water pollution control measures; control development in areas subject to storm wave, tsunami, flood, erosion, hurricane, wind, subsidence, and point and nonpoint source pollution hazards; ensure that developments comply with requirements of the Federal Flood Insurance Program; use, implement, and enforce existing law effectively in managing present and future coastal zone development; facilitate timely processing of applications for development permits and resolve overlapping or conflicting permit requirements; communicate the potential short and long-term impacts of proposed significant coastal developments early in their life cycle and in terms understandable to the public to facilitate public participation in the planning and review process; locate new structures inland from the shoreline setback to conserve open space, minimize interference with natural shoreline processes, and minimize loss of improvements due to erosion (§205A-2)</p> <p>-the objectives and policies of the chapter and any guidelines enacted by the legislature shall be binding upon actions within the coastal zone management area by all agencies, within the scope of their authority (§205A-4(b))</p> <p>-all agencies shall ensure that their rules comply with the objectives and policies of the chapter (§205A-5)</p> <p>-establishes special controls on developments within an area along the shoreline to avoid permanent losses of valuable resources (§205A-21, -26).</p> <p>-no development is allowed in any county within these special management areas (SMAs) without a permit (§205A-28). The county planning departments administer the SMA permit process.</p> <p>-no development is approved unless it is found that the development, among other things, will not have any substantial adverse environmental or ecological effect; is consistent with the objectives, policies, and SMA guidelines of the chapter; and is consistent with the county general plan and zoning. (§205A-26)</p>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 15-150, HAR Special Management Areas/Shoreline Areas	OP for SMAs of CDDs	-provides guidelines for use by OP for the review of developments proposed in the SMA of community development districts (CDDs); development in the SMA of CDDs must be consistent with the objectives and policies established in Section 205A-2, HRS (§15-150-6)
Chapter 12-202, MCC SMA Rules for Maui Planning Commission	County planning commissions	-county rules for administering the SMA permits and shoreline setback provisions within each county/island
Chapter 12-302, MCC SMA Rules for Molokai Planning Commission		
Chapter 12-402, MCC SMA Rules for Lanai Planning Commission		
Chapter 25, ROH Special Management Area		
Rule 9, Hawaii County Planning Commission		
SMA Rules and Regulations of the County of Kauai		

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
<p>Chapter 343, HRS Environmental Impact Statements</p> <p>Chapter 11-200, HAR Environmental Impact Statement Rules</p>	<p>OEQC</p>	<p>-states that an environmental review process will integrate the review of environmental concerns with existing planning processes of the State and counties and alert decision makers to significant environmental effects which may result from the implementation of certain actions (§343-1)</p> <p>-the following actions, among others, shall trigger an EA: (1) use of State or county lands or funds; (2) use within the conservation district; (3) use within a shoreline setback area; (4) use within the Waikiki special district; (5) use within an historic site; (6) certain amendments to county general plans; and (7) reclassification of conservation lands (§343-5)</p> <p>-provides agencies and persons with procedures, specifications of contents of EAs and EISs, and criteria and definitions of statewide application (§11-200-1)</p> <p>-in determining whether an action may have a significant effect on the environment, the agency shall consider every phase of a proposed action, the expected consequences, both primary and secondary, and the cumulative as well as the short-term and long-term effects of the action. In most instances, an action shall be determined to have a significant effect on the environment if it:</p> <ol style="list-style-type: none"> <li>1. Involves an irrevocable commitment to loss or destruction of any natural or cultural resource;</li> <li>2. Curtails the range of beneficial uses of the environment;</li> <li>3. Conflicts with the state's long-term environmental policies or goals and guidelines as expressed in chapter 344, HRS, and any revisions thereof and amendments thereto, court decisions, or executive orders;</li> <li>4. Substantially affects the economic welfare, social welfare, and cultural practices of the community or State;</li> </ol>
<p>Chapter 343, HRS Environmental Impact Statements</p> <p>Chapter 11-200, HAR Environmental Impact Statement Rules, continued</p>	<p>OEQC</p>	<ol style="list-style-type: none"> <li>5. Substantially affects public health;</li> <li>6. Involves substantial secondary impacts, such as population changes or effects on public facilities;</li> <li>7. Involves a substantial degradation of environmental quality;</li> <li>8. Is individually limited but cumulatively has considerable effect upon the environment or involves a commitment for larger actions;</li> <li>9. Substantially affects a rare, threatened, or endangered species, or its habitat;</li> <li>10. Detrimentally affects air or water quality or ambient noise levels;</li> <li>11. Affects or is likely to suffer damage by being located in an environmentally sensitive area such as a flood plain, tsunami zone, beach, erosion-prone area, geologically hazardous land, estuary, fresh water, or coastal waters;</li> <li>12. Substantially affects scenic vistas and viewplanes identified in county or state plans or studies; or,</li> <li>13. Requires substantial energy consumption. (§11-200-12)</li> </ol>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 179D, HRS Dams and Reservoirs	DLNR	-no person shall construct, repair, or alter any dam or reservoir or enlarge any dam or reservoir until an application to undertake the work has been filed and written approval of the construction plans and specifications is obtained from the board. (§13-190-20, §13-190-21) -owners shall provide for the adequate and timely maintenance, operation, and inspection of their dams and reservoirs and shall be responsible for any engineering and geologic investigations which may be required to insure public safety; upon reasonable notice to the owners of dams and reservoirs, the department, from time to time, but not less than once every five years, either with its own engineers or by consulting engineers of its selection, shall make inspections of dams and reservoirs at State expense for the purpose of determining their safety. (§13-190-40)
Chapter 342D, HRS Water Pollution	DOH	-prohibits discharge of any pollutant into State waters -allows DOH to institute a civil action for injunctive relief to prevent violation of State water quality standards (§342D-11) -under the statute, DOH may request the court to order nonpoint source polluters to implement all required management measures

## **Streambank and Shoreline Erosion**

### **Management Measure for Eroding Streambanks and Shorelines**

- (1) Where streambank or shoreline erosion is a serious nonpoint source pollution problem, streambanks and shorelines may need to be stabilized. Vegetative methods are strongly preferred. Structural methods may be necessary where vegetative methods cannot work and where they do not interfere with natural beach processes or harm other sensitive ecological areas.**
- (2) Protect streambank and shoreline features with the potential to reduce nonpoint source pollution.**
- (3) Protect streambanks and shorelines from erosion due to uses of either the shorelands or adjacent surface waters.**
- (4) Where artificial fill is eroding into adjacent streams or coastal waters, it should be removed.**

### **Responsible Agencies and Authorities**

Shoreline erosion in Hawaii generally occurs where beaches are starved for sand in front of seawalls and other shoreline structures designed to protect buildings and coastal lands. Streambank erosion generally occurs because of alterations to the riparian area and severe flooding caused by storm events. In the past, the State used hardening techniques to address erosion and flood control. However, more recently the trend has moved away from hardening, in preference of more vegetative and non-structural stabilization techniques. There are few situations in the State where uses of the adjacent surface waters contribute to streambanks and shoreline erosion and excessive sedimentation is generated. There are also very few Hawaiian streams that are navigable, so that aspect of the management measure is not really relevant. While, in some areas, cattle access streams for water, this activity is managed under the agricultural management measures. Likewise, there are few situations where the use of nearshore waters causes erosion of the shoreline.

Chapter 205A, HRS, defines the shoreline as “the upper reaches of the wash of the waves, other than storm and seismic waves, at high tide during the season of the year in which the highest wash of the waves occurs, usually evidenced by the edge of the vegetation growth, or the upper limit of debris left by the wash of the waves.” The area seaward or *makai* of the shoreline is part of the Conservation District and is under State jurisdiction. The area landward or *mauka* of the shoreline is managed by the counties as part of the Shoreline Management Area (SMA) established under Chapter 205A, HRS.

Chapter 205A, HRS, establishes coastal zone management objectives and policies which must be implemented by State and county agencies. One objective, addressing coastal hazards, states “reduce hazard to life and property from tsunami, storm waves, stream flooding, erosion, subsidence, and pollution.” Another, for beach protection, states “protect beaches for public use and recreation.” The associated policies for beach protection are: (A) locate new structures inland from the shoreline setback to conserve open space, minimize interference with natural shoreline processes, and minimize loss of improvements due to erosion; (B) prohibit construction of private erosion-protection structures seaward of the shoreline, except when they result in improved aesthetic and engineering solutions to erosion at the sites and do not interfere with existing recreational and waterline activities; and (C) minimize the construction of public erosion-protection structures seaward of the shoreline.

DLNR manages the area seaward of the shoreline. Pursuant to Chapter 183, HRS, DLNR is responsible for establishing the procedures and certifying where the shoreline is located, and for promulgating and administering the Conservation District use regulations. All activities proposed within the Conservation District require a CDUP, for which there is an application and review process. The Board of Land and Natural Resources can approve, deny, or approve with conditions, proposed uses of the Conservation District.

DLNR has also produced a number of documents related to management of shoreline erosion. It developed the *Hawaii Coastal Erosion Management Plan (COEMAP)*, which was adopted as policy by the BLNR in 2000. The document provides a framework for discussion and management of coastal erosion problems in the state, as well as guidelines, recommendations and implementation steps to improve this management. It describes regulatory and non-regulatory tools for managing coastal erosion and makes recommendations to further protect beaches from erosion caused by inappropriate development. DLNR and the University of Hawaii Sea Grant Extension Service also began drafting a document entitled *Erosion Management Alternatives for Hawaii* (still in draft form) in 2004 in which alternatives for shoreline stabilization, restoration and revegetation are described.

The counties are responsible for management of the area *mauka* of the shoreline. Under Chapter 205A, HRS, the four counties are required to establish a “shoreline area” with setbacks no less than 20-ft and no more than 40-ft inland from the shoreline wherein no development is allowed. The law also allows counties to establish ordinances creating setbacks greater than 40 ft. The statute is intended to control development on the shoreline, maintain open space, and preserve public access.

The counties also administer the SMA permit process. SMAs are a subset of the State’s coastal zone and include all lands and waters beginning at the shoreline and extending inland or *mauka* at least 100 yards. Many new developments fall within this more sensitive coastal area, and the SMA permit

process ensures that these developments are consistent with Hawaii's coastal zone management program objectives and policies. Although each county has its own procedures for administering SMA permits, the requirements and review processes for SMA applications are similar for all four counties and are based on Chapter 205A-26, HRS ("Special management area guidelines"). Each county requires a permit applicant to describe the proposed development in terms of the CZM objectives and policies.

Each of the counties' general plans also addresses the issue of hydromodification. Hawaii County's general plan includes policies to "develop an integrated shoreline erosion management plan that ensures the preservation of sandy beaches ..." and "develop drainage master plans from a watershed perspective that considers non-structural alternatives, minimizes channelization, protects wetlands that serve drainage functions..." Kauai has several relevant policies in its general plan: "(a) Establish zoning and subdivision regulations that (1) strictly limit development on lands that are steeply-sloped and/or have highly erodible soils, in order to prevent flooding, landslides and nonpoint pollution; and (2) strictly limit development on shoreline lands within coastal flood hazard areas or susceptible to shoreline erosion; (b) Focusing on the most heavily impacted urban watersheds, evaluate flooding and erosion risks and develop long-range plans for drainage and flood hazard management; ..... and (d) Regulations and drainage improvements shall be consistent with the following principles:

- (1) Use natural drainageways for storm runoff waterways wherever possible.
- (2) Avoid channelization or alteration of natural drainageways.
- (3) Avoid diversion of storm runoff from one basin to another.
- (4) Do not replace natural drainageways with structured, closed systems, except at road crossings."

The Development/Sustainable Communities Plans of the City and County of Honolulu also address streambank stabilization. The Koolaupoko Sustainable Communities Plan states that "modifications needed for flood protection should be designed and constructed to maintain habitat and aesthetic values, and avoid and/or mitigate degradation of stream, coastline and nearshore water quality." It further directs the county to "select natural and man-made vegetated drainageways and retention basins as the preferred solution to drainage problems wherever they can promote water recharge, help control nonpoint source pollutants, and provide passive recreation benefits." The Koolau Loa Sustainable Communities Plan recommends "Encourage abutting property owners along streams and/or drainageways to stabilize the banks with vegetation where erosion potential is high." In fact, the Waimanalo Watershed Restoration Project has developed a 6-page brochure for landowners about plants to use to control streambank erosion.

The State Water Code (Chapter 174C, HRS), adopted by the Hawaii Legislature in 1987 and amended in 2004, provides the regulatory framework to protect streams, wetlands and other areas critical to water quality. The State, in its stewardship capacity, has management responsibility for all water resources of the State through CWRM – also known as the Water Commission. The Water Commission issues permits to regulate the use of surface and ground water in the State. A stream channel alteration permit (SCAP) is required prior to undertaking a stream channel alteration in order to protect fishery, wildlife, recreational, aesthetic, scenic, and other beneficial instream uses.

CWRM adopted the updated *Water Resource Protection Plan* on August 28, 2008. The plan describes the program to protect and conserve Hawaii's water resources. The updated document includes

policies, program directives, resource inventories, and recommendations across a broad spectrum of resource management issues, including watershed protection and water quality. Some of the plan's recommendations include:

- Take a more active role in watershed protection, watershed partnerships, and the watershed partnership association.
- Support DOFAW's watershed management activities and the division's leadership role in watershed management.
- Study existing government and community efforts in watershed management and protection, and encourage sharing of information and experiences.
- Study other watershed planning approaches and lessons learned, including the EPA's watershed approach and that of other state governments.
- Pursue appropriate funding to support watershed protection programs and objectives to protect water resources.
- Encourage the collaboration of federal, State, and county agencies with existing watershed partnerships and Conservation Districts to map the relationships between land management programs, land use regulations, economic and agricultural issues, and water quality and resource protection programs.
- Improve communication and encourage dialogue between watershed interests to result in the development of common goals and an integrated watershed management framework. A successful framework will acknowledge and build upon existing programs and organizations to maximize funding, staff, and volunteer resources through watershed-scale management and protection programs.
- Develop innovative public outreach methods and encourage communication between watershed entities. The development of a website devoted to Hawaii watershed projects, organized by geographic location, should facilitate this coordination.

USACOE has the authority to protect the waters of the United States, including wetlands and some streams, by regulating certain activities within those waters. Section 404 of the Clean Water Act requires that anyone interested in placing dredged or fill material into waters of the United States must first obtain a permit from the Corps. Section 10 of the Rivers and Harbors Act of 1899 requires approval prior to the accomplishment of any work in or over navigable waters of the United States, or which affects the course, location, condition, or capacity of such waters. The law applies to any dredging or disposal of dredged materials, excavation, filling, rechannelization, or any other modification of a navigable water of the United States, and applies to all structures large or small. The initiation of a Section 404 permit process triggers a Section 401 water quality certification from DOH.

If development activity will disturb one acre or more of total land area, then a NPDES permit is required from DOH. This permit process is described in Chapter 11-55, HAR, "Water Pollution Control." A County grading permit is required for any grading and grubbing work before a NPDES permit can be issued. The grading permit allows the grading, while the NPDES permit regulates stormwater runoff from the construction site.

Major development projects normally trigger an environmental review process. Chapter 343, HRS, and Chapter 11-200, HAR, both about the Environmental Impact Statement law, require the preparation of an EA and/or EIS for proposed activities that trigger the environmental review process. Some of these trigger conditions are as follows: (1) use of State or county lands or funds; (2) use within the conservation district; (3) use within a shoreline setback area; (4) use within the Waikiki special district; (5) use within an historic site; (6) reclassification of conservation lands; and (7) certain amendments to a county general plan. In determining whether an action may have a significant effect on the environment, the approving State or county agency shall consider every phase of a proposed action, the expected consequences, both primary and secondary, and the cumulative as well as the short-term and long-term effects of the action. In most instances, an action will be determined to have a significant effect on the environment if it detrimentally affects water quality or affects an environmentally sensitive area such as a flood plain, beach, erosion-prone area, estuary, fresh water, or coastal waters. Mitigation measures must be identified to address these detrimental effects.

Rules regulating the operation of vessels in ocean waters and navigable streams, administered by DLNR's Division of Boating and Ocean Recreation (DOBOR) restrict vessel speeds in Ocean Recreation Management Areas, along shorelines, and near other vessels, docks, and swimmers/divers. Chapter 13-244, HAR, specifically states that "no person shall operate a vessel at a rate of speed greater than is reasonable having regard to conditions and circumstances."

DOH has general regulatory authority over water pollution control.



## Implementation Tools

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 205A, HRS Coastal Zone Management	OP-CZM	<ul style="list-style-type: none"> <li>-establishes coastal zone management objectives and policies (§205A-2)</li> <li>-one objective, addressing coastal hazards, states “reduce hazard to life and property from tsunami, storm waves, stream flooding, erosion, subsidence, and pollution.” Another, for beach protection, states “protect beaches for public use and recreation.” The associated policies for beach protection are: (A) locate new structures inland from the shoreline setback to conserve open space, minimize interference with natural shoreline processes, and minimize loss of improvements due to erosion; (B) prohibit construction of private erosion-protection structures seaward of the shoreline, except when they result in improved aesthetic and engineering solutions to erosion at the sites and do not interfere with existing recreational and waterline activities; and (C) minimize the construction of public erosion-protection structures seaward of the shoreline. (§205A-2)</li> <li>-the objectives and policies of the chapter and any guidelines enacted by the legislature shall be binding upon actions within the coastal zone management area by all agencies, within the scope of their authority (§205A-4(b))</li> <li>-all agencies shall ensure that their rules comply with the objectives and policies of the chapter (§205A-5)</li> <li>-establishes special controls on developments within an area along the shoreline to avoid permanent losses of valuable resources (§205A-21, -26).</li> <li>-no development is allowed in any county within these special management areas (SMAs) without a permit (§205A-28). The county planning departments administer the SMA permit process.</li> <li>-no development is approved unless it is found that the development, among other things, will not have any substantial adverse environmental or ecological effect; is consistent with the objectives, policies, and SMA guidelines of the chapter; and is consistent with the county general plan and zoning. (§205A-26)</li> <li>-setbacks along shorelines are established of not less than twenty feet and not more than forty feet inland from the shoreline. (§205A-43)</li> <li>-the counties through rules adopted pursuant to chapter 91 or ordinance may require that shoreline setback lines be established at distances greater than that established in this part. (§205A-45)</li> </ul>
Chapter 15-150, HAR Special Management Areas/Shoreline Areas	OP for SMAs of CDDs	<ul style="list-style-type: none"> <li>-provides guidelines for use by OP for the review of developments proposed in the SMA of community development districts (CDDs); development in the SMA of CDDs must be consistent with the objectives and policies established in Section 205A-2, HRS (§15-150-6)</li> </ul>
Chapter 12-202, MCC SMA Rules for Maui Planning Commission	County planning commissions	<ul style="list-style-type: none"> <li>-county rules for administering the SMA permits and shoreline setback provisions within each county/island</li> </ul>
Chapter 12-302, MCC SMA Rules for Molokai Planning Commission		

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
<p>Chapter 12-402, MCC SMA Rules for Lanai Planning Commission</p> <p>Chapter 25, ROH Special Management Area</p> <p>Rule 9, Hawaii County Planning Commission</p> <p>SMA Rules and Regulations of the County of Kauai</p>	<p>County planning commissions</p>	<p>-county rules for administering the SMA permits and shoreline setback provisions within each county/island</p>
<p><i>Hawaii County General Plan</i> (2005)</p>	<p>Hawaii County</p>	<p><u>8.3 Policies related to Natural Resources and Shorelines</u></p> <p>(d) Protect the shoreline from the encroachment of man-made improvements and structures.</p> <p>(f) Investigate methods of beach replenishment and sand erosion control.</p> <p><u>5.3 Policies related to Flooding and Natural Hazards</u></p> <p>(a) Enact restrictive land use and building structure regulations in areas vulnerable to severe damage due to the impact of wave action. Only uses that cannot be located elsewhere due to public necessity and character, such as maritime activities and the necessary public facilities and utilities, shall be allowed in these areas.</p> <p>(k) Develop an integrated shoreline erosion management plan that ensures the preservation of sandy beaches and public access to and along the shoreline, and the protection of private and public property from flood hazards and wave damage.</p> <p>(n) Develop drainage master plans from a watershed perspective that considers nonstructural alternatives, minimizes channelization, protects wetlands that serve drainage functions, coordinates the regulation of construction and agricultural operation, and encourages the establishment of floodplains as public green ways.</p>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
<i>The Kauai General Plan (2000)</i>	Kauai County	<p><u>3.5.1 Policies related to Coastal Lands</u></p> <p>(b) When developing public facilities or granting zoning, land use permits, or subdivision for development along the coast, the first priority shall be to preserve and protect sandy beaches.</p> <p>(1) Strips of land along the shoreline that have been placed in the State Conservation District or in the County Open zoning district are intended to serve as a buffer from coastal erosion. Structures should be sited inland of these coastal buffers on lands that are appropriately zoned.</p> <p>(2) When development is proposed along a sandy beach, hazards of long-term coastal erosion should be assessed and used to determine appropriate setbacks.</p> <p>(c) For coastal areas suffering erosion, promote and provide for beach re-nourishment in conjunction with property owners and DLNR. Discourage the construction of shoreline protection structures (seawalls, revetments).</p> <p><u>3.1.1.1 Policy related to Heritage Resources Maps</u></p> <p>(b) Important landforms shall be designated as “Open” on the GP Land Use Map and shall be zoned accordingly, in order to protect steep slopes and streams from erosion and to protect landforms from development that might affect scenic views.</p>
<i>2030 General Plan Update Draft Countywide Policy Plan (January 2008)</i>	Maui County	<p><u>Policies related to Protecting the Natural Environment</u></p> <p>1.c. Restore and protect forests, wetlands, watersheds and stream flows and guard against wildfires, flooding and erosion.</p> <p>1.e. Protect undeveloped beaches, dunes, and coastal ecosystems and restore natural shoreline processes.</p> <p><u>Policies related to Promoting Sustainable Land Use and Growth Management</u></p> <p>1.f. Discourage new entitlements for residential, resort or commercial development along the shoreline.</p> <p>1.g. Restrict development in areas that are prone to natural hazards, disasters or sea level rise.</p>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
various sustainable communities and development plans for Oahu	City and County of Honolulu	<p><b>Central Oahu Sustainable Communities Plan</b>  <u>3.1.4.3. Guidelines for Shoreline Areas</u>  At a minimum, a 60 foot setback should be provided along the shoreline, and should, where possible, be expanded to 150 feet.</p> <p><b>East Honolulu Sustainable Communities Plan</b>  <u>3.1.3.6 Guidelines for Shoreline Areas</u>  Require additional minimum setbacks for structures near the shoreline and implement other management strategies to protect unstable sandy beach areas at Paiko Peninsula and Portlock.</p> <p><b>Ewa Development Plan</b>  <u>3.1.4.3. Guidelines for Shoreline Areas</u>  At a minimum, a 60 foot setback should be provided along the shoreline, and should, where possible, be expanded to 150 feet.</p> <p><b>Koolaupoko Sustainable Communities Plan</b>  <u>3.1.3.2 Guidelines for Shoreline Areas</u>  -Consideration should be given to the establishment of buffer zones for the protection of rare coastal resources and recognition that such resources should be defined and identified.  -To maintain lateral access along popular beaches that are subject to long-term and seasonal erosion, particularly at Lanikai and Kualoa, beach management plans should be developed and implemented, with an emphasis on non-structural approaches and prevention of adverse effects on adjacent coral reef ecosystems. Greater shoreline setbacks should be established for new structures along these and other unstable shoreline areas, using criteria developed in various shoreline studies. Plans and activities should be consistent with the objectives and policies of the CZM Program.  -The Alala Point to Wailea shoreline should be designated as an erosion-prone area and a beach management plan prepared and implemented. Periodic beach restoration activities should also focus on the Bellows Air Force Station beach and Kaupo beach.  -The shoreline along Kamehameha highway adjacent to Kualoa Ranch to Kualoa Point should be designated as an erosion-prone area and be subject to a beach management plan.  -Discourage the use of shore armoring structures.</p>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
various sustainable communities and development plans for Oahu, continued	City and County of Honolulu	<p><b>Koolaupoko Sustainable Communities Plan</b>  <u>3.1.3.4. Guidelines for Natural Gulches, Streams, and Drainageways</u>            -If necessary to provide flood protection, alter natural drainageways in a way that preserves aesthetic and biological values, and avoids degradation of stream, coastline and nearshore water quality.            -Incorporate erosion control measures and best management practices, as cited in the <i>Hawaii’s Coastal Nonpoint Pollution Control Program Management Plan</i> to prevent pollution of wetlands, streams, estuaries and nearshore waters.</p> <p><b>Koolau Loa Sustainable Communities Plan</b>  <u>3.1.3.2 Guidelines for Shoreline Areas</u>            -Maintain and, where possible, enhance the physical integrity and habitat value of shoreline areas.            -Preserve rare coastal resources including coastal strand vegetation, sand dunes, and anchialine pools. Establish buffer zones around these resources where necessary.            -To the extent possible, acquire shallow developed beach-front lots which would be impractical to redevelop given existing zoning standards or wave hazard considerations in order to improve public access and lateral shoreline views along Kamehameha Highway.            -Require additional minimum setbacks for structures near the shoreline and implement other management strategies to protect unstable sandy beach areas that impact Kamehameha Highway along the Kaaawa, Punaluu and Hauula shorelines.</p> <p><u>3.1.3.4 Guidelines for Natural Gulches, Streams and Drainageways</u>            -Minimize soil erosion, runoff of pesticides, fertilizers and other non-point source contaminants into streams, wetlands and marine habitats with strategies such as stream setbacks, erosion control devices, integrated pest management plans, and revegetation of disturbed areas. Incorporate erosion control measures and best management practices, as cited in Hawaii’s Coastal Non-point Pollution Control Program Management Plan, to prevent pollution of wetlands, streams, estuaries, and nearshore waters.            -Where feasible, establish setbacks along rivers, streams, and shoreline areas to preserve these resources and protective buffer zones around biologically sensitive areas to minimize habitat disturbance. Where possible, provide access as part of the open space network.            -To the extent possible, limit any modifications to natural gulches and streams, except for measures which are necessary for flood protection. If modifications are needed, take all possible steps to preserve water quality and protect aesthetic and biological resources. These could include streamside vegetation and rip-rap boulder lining of stream banks; channelization should be a last resort and should be limited to v-shaped bottom channels to maintain a stream flow during low rainfall periods and/or other measures that maintain environmental habitat qualities and capabilities.</p>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
various sustainable communities and development plans for Oahu, continued	City and County of Honolulu	<p><b>North Shore Sustainable Communities Plan</b></p> <p><u>3.1.3.2 Guidelines for Shoreline Areas</u></p> <ul style="list-style-type: none"> <li>-Preserve rare coastal resources including coastal strand vegetation, sand dunes, and archialine pools. Establish buffer zones around these areas where necessary.</li> <li>-Support research to determine causes of coastal erosion and identify appropriate management strategies to avoid future erosion hazards. Encourage interagency coordination and public/private cooperation in developing and implementing beach management plans, with an emphasis on nonstructural approaches.</li> <li>-Discourage development or activities which result in beach loss. Encourage development or activities which result in beach preservation or enhancement.</li> <li>-Where structures are permitted on lands abutting the shoreline, adequate setbacks should be provided. Establish greater shoreline setbacks for new structures in erosion hazard areas, using criteria from the various shoreline studies.</li> </ul> <p><u>3.1.3.3 Guidelines for Wetlands</u></p> <ul style="list-style-type: none"> <li>-Preserve and maintain all North Shore wetlands and wildlife habitats. When considering future activities/construction in the vicinity of biologically sensitive areas such as wetlands, the preferred sequence will be to: <ul style="list-style-type: none"> <li>- avoid ecologically sensitive areas entirely;</li> <li>- if not possible, minimize project effects; and</li> <li>- if negative effects are unavoidable, require mitigation that will offset the loss of resources.</li> </ul> </li> </ul> <p><u>3.1.3.4 Natural Gulches, Streams, and Drainageways</u></p> <ul style="list-style-type: none"> <li>-Preserve the aesthetic and biological values of the natural gulches, streams, and drainageways as part of the North Shore’s open space system. Where feasible, establish wildlife habitat protective buffer zones and/or setbacks along rivers, streams, and shoreline areas.</li> <li>-Minimize soil erosion, runoff of pesticides, fertilizers and other nonpoint source contaminants into streams, wetlands, and marine habitats. In addition to stream setbacks, utilize erosion control devices, integrated pest management plans, and revegetation of disturbed areas. Incorporate erosion control measures and best management practices, as recommended in the State Nonpoint Pollution Control Program, to prevent pollution of wetlands, streams, estuaries, and nearshore waters.</li> <li>-If modifications are necessary, mitigate impacts on biological habitats by using stream-side vegetation, rip-rap boulder lining of steam banks, v-shaped bottom channels to maintain a stream flow during low rainfall periods, and other designs to promote aeration.</li> </ul>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
various sustainable communities and development plans for Oahu, continued	City and County of Honolulu	<p><b>Primary Urban Center Development Plan</b>  <u>3.1.3.5 Guidelines for Stream Greenways and Drainage</u>            -Establish riparian zones for all streams to prevent the encroachment of buildings and structures – other than those for drainage, flood control or recreational purposes – and to establish and enforce policies for the protection and enhancement of stream habitats and water quality.            -In developing drainage and flood control, seek to limit stormwater velocity and reduce the transport of sediment and pollutants to coastal waters.</p> <p><b>Waianae Sustainable Communities Plan</b>  <u>3.3.2.1 No New Coastal Development</u>            There should be no new residential, commercial, industrial, resort or other urban or suburban type of development makai of Farrington Highway, with the exception of new development or redevelopment of low-rise commercial and public buildings associated with the development of Waianae Country Town.</p> <p><u>3.3.2.3 Shore Armoring Discouraged</u>            Shore armoring along any beaches of the Waianae District, including seawalls, groins, and breakwaters, should generally be discouraged.</p> <p><u>3.5.2.1 Establish Stream Conservation Corridors</u>            Stream Conservation Corridors should be established where feasible as an element of the Waianae <i>Sustainable</i> Communities Plan.</p> <p><u>3.5.2.3 Uses Within the Stream Conservation Corridors</u>            Uses and activities within these Stream Conservation Corridors should be restricted to natural resources conservation uses and programs, compatible recreational uses such as walking and gathering of native plants and stream animals, and controlled diversion of stream waters for agricultural purposes. Other compatible uses should be permitted as may be defined by the agency with jurisdiction.</p>
Section 404, CWA	USACOE	The U.S. Army Corps of Engineers (USACOE) has the authority to protect the waters of the U.S., including wetlands, by regulating certain activities within those waters. Section 404 of the Clean Water Act requires that anyone interested in placing dredged or fill material into waters of the U.S. must first obtain a permit from the Corps.
Section 10, Rivers and Harbors Act of 1899	USACOE	-requires approval prior to undertaking any work in or over navigable waters of the U.S., or which affects the course, location, condition, or capacity of such waters. The law applies to any dredging or disposal of dredged materials, excavation, filling, rechannelization, or any other modification of a navigable water of the U.S., and applies to all structures, from the smallest floating dock to the largest commercial undertaking.

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Section 401, CWA	DOH	<p>-DOH is authorized under Section 401 of the Federal Clean Water Act and Section 342D-53, HRS, to administer the Section 401 Water Quality Certification (WQC) program in Hawaii.</p> <p>- A WQC issued by the DOH is required by any owner applying for a Federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may result in any “discharge” into navigable waters. A 401 WQC certifies that the activity will not violate State water quality standards (Chapter 11-54, HAR).</p> <p>-The Section 404, CWA, permit process, administered by USACOE, would trigger a Section 401 WQC prior to issuance.</p>



Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
<p>Chapter 174C, HRS Hawaii Water Code</p> <p>Chapter 13-169, HAR Protection of Instream Uses of Water</p>	<p>DLNR Commission on Water Resource Management</p>	<p>-the state water code shall be liberally interpreted to obtain maximum beneficial use of the waters of the State for purposes such as domestic uses, aquaculture uses, irrigation and other agricultural uses, power development, and commercial and industrial uses. However, adequate provision shall be made for the protection of traditional and customary Hawaiian rights, the protection and procreation of fish and wildlife, the maintenance of proper ecological balance and scenic beauty, and the preservation and enhancement of waters of the State for municipal uses, public recreation, public water supply, agriculture, and navigation. Such objectives are declared to be in the public interest. (§174C-2(c))</p> <p>-provides eight criteria for CWRM to consider in designating an area for regulation of ground water use (§174C-44)</p> <p>-provides the following criteria in designating an area for surface water use regulation:</p> <ul style="list-style-type: none"> <li>• Whether regulation is necessary to preserve the diminishing surface water supply for future needs, as evidenced by excessively declining surface water levels, not related to rainfall variations, or increasing or proposed diversions of surface waters to levels which may detrimentally affect existing instream uses or prior existing off stream uses;</li> <li>• Whether the diversions of stream waters are reducing the capacity of the stream to assimilate pollutants to an extent which adversely affects public health or existing instream uses; or</li> <li>• Serious disputes respecting the use of surface water resources are occurring. (§174C-45)</li> </ul> <p>-CWRM applies a water use permitting process to regulate use in designated water management areas. A water use permit must be obtained in order to continue existing uses and prior to commencing any new water use. (§174C-48)</p> <p>-to obtain a permit, the applicant must establish that the proposed use of water can be accommodated with the available water source; is a reasonable-beneficial use; will not interfere with any existing legal use of water; is consistent with the public interest; is consistent with state and county general plans and land use designations; is consistent with county land use plans and policies; and will not interfere with the rights of DHHL. (§174C-49)</p> <p>- requires permit from the Water Commission prior to undertaking a stream channel alteration to protect fishery, wildlife, recreational, aesthetic, scenic, and other beneficial uses (§174C-71)</p> <p>-outlines the stream channel alteration permit (SCAP) process (§13-169-50 through 13-169-54)</p>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
<p>Chapter 343, HRS Environmental Impact Statements</p> <p>Chapter 11-200, HAR Environmental Impact Statement Rules</p>	<p>OEQC</p>	<p>-states that an environmental review process will integrate the review of environmental concerns with existing planning processes of the State and counties and alert decision makers to significant environmental effects which may result from the implementation of certain actions (§343-1)</p> <p>-the following actions, among others, shall trigger an EA: (1) use of State or county lands or funds; (2) use within the conservation district; (3) use within a shoreline setback area; (4) use within the Waikiki special district; (5) use within an historic site; (6) certain amendments to county general plans; and (7) reclassification of conservation lands (§343-5)</p> <p>-provides agencies and persons with procedures, specifications of contents of EAs and EISs, and criteria and definitions of statewide application (§11-200-1)</p> <p>-in determining whether an action may have a significant effect on the environment, the agency shall consider every phase of a proposed action, the expected consequences, both primary and secondary, and the cumulative as well as the short-term and long-term effects of the action. In most instances, an action shall be determined to have a significant effect on the environment if it:</p> <ol style="list-style-type: none"> <li>1. Involves an irrevocable commitment to loss or destruction of any natural or cultural resource;</li> <li>2. Curtails the range of beneficial uses of the environment;</li> <li>3. Conflicts with the state's long-term environmental policies or goals and guidelines as expressed in chapter 344, HRS, and any revisions thereof and amendments thereto, court decisions, or executive orders;</li> <li>4. Substantially affects the economic welfare, social welfare, and cultural practices of the community or State;</li> <li>5. Substantially affects public health;</li> <li>6. Involves substantial secondary impacts, such as population changes or effects on public facilities;</li> <li>7. Involves a substantial degradation of environmental quality;</li> <li>8. Is individually limited but cumulatively has considerable effect upon the environment or involves a commitment for larger actions;</li> <li>9. Substantially affects a rare, threatened, or endangered species, or its habitat;</li> <li>10. Detrimentally affects air or water quality or ambient noise levels;</li> <li>11. Affects or is likely to suffer damage by being located in an environmentally sensitive area such as a flood plain, tsunami zone, beach, erosion-prone area, geologically hazardous land, estuary, fresh water, or coastal waters;</li> <li>12. Substantially affects scenic vistas and viewplanes identified in county or state plans or studies; or,</li> <li>13. Requires substantial energy consumption. (§11-200-12)</li> </ol>
<p>Chapter 13-231, HAR Operation of Boats, Small Boat Harbors, and Permits</p>	<p>DLNR-DOBOR</p>	<p>-requires vessels to be navigated within a state small boat harbor at a speed low enough that the wakes will not disturb any other vessel or property (§13-231-41)</p>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 13-256, HAR Ocean Recreation Management Rules and Areas	DLNR-DOBOR	<ul style="list-style-type: none"> <li>-regulates activities in 10 designated Ocean Recreation Management Areas (ORMAs) to reduce conflicts among ocean water users, especially in areas of high activity.</li> <li>-rules for some of the ORMAs prohibit motorized vessels operating within the ORMA from exceeding a speed of "slow-no-wake" (5 mph) within a specified distance from the shoreline; and prohibit operation or mooring of vessel within designated swimming zones</li> </ul>
Chapter 13-244, HAR Rules of the Road; Local and Special Rules	DLNR-DOBOR	<ul style="list-style-type: none"> <li>-limits speed of all vessels to a slow-no-wake speed within 200 feet of any shoreline, float, dock, launching ramp, congested beach, swimmer, diver's flag, or anchored, moored or drifting vessel (§13-244-9 (a))</li> <li>-no person shall operate a vessel at a rate of speed greater than is reasonable having regard to conditions and circumstances (§13-244-9 (b))</li> <li>-identifies ocean waters restricted areas (§13-244-28 -- §13-244-39)</li> <li>-no person shall operate, anchor or moor any vessel in such manner as will injure or damage any marine life or geological features and specimens within the Kealakekua ocean waters (§13-244-30(b))</li> <li>-it is unlawful for any person to operate, anchor or moor a vessel in such manner as will injure, damage or destroy any marine life or geological feature or specimen within the Manele-Hulopoe marine life conservation district. (§13-244-35(b))</li> </ul>
Chapter 11-55, HAR Water Pollution Control	DOH	<ul style="list-style-type: none"> <li>-<u>NPDES General Permit</u>: The NPDES General Permit Authorizing Discharges of Storm Water Associated with Construction Activity covers discharges of stormwater runoff associated with construction activities, including clearing, grading, and excavation that result in the disturbance of one acre or more of total land area. This general permit also covers activities that disturb less than one acre of total land area that is part of a larger common plan if the larger common plan will ultimately disturb one acre or more of total land area. This general permit covers all areas of the State except for discharges in or to state waters classified by DOH as "class 1, inland waters," "class AA, marine waters," and some other restricted areas. For these state waters, an individual NPDES permit is required. (§11-55-04; 11-55-34.02; Appendix C)</li> <li>-<u>NPDES Individual Permit</u>: For discharges of stormwater associated with construction activities that result in the disturbance of one acre or more of total land area that do not qualify for a general permit because they affect "class 1, inland waters" or "class AA, marine waters," a NPDES Individual Permit is required. (§11-55-04; §11-55-15)</li> </ul>
Chapter 342D, HRS Water Pollution	DOH	<ul style="list-style-type: none"> <li>-prohibits discharge of any pollutant into State waters</li> <li>-allows DOH to institute a civil action for injunctive relief to prevent violation of State water quality standards (§342D-11)</li> <li>-under the statute, DOH may request the court to order nonpoint source polluters to implement all required management measures</li> </ul>

## WETLANDS, RIPARIAN AREAS, AND VEGETATED TREATMENT SYSTEMS

### Management Measure for Protection of Wetlands and Riparian Areas

Protect from adverse effects wetlands and riparian areas that are serving a significant nonpoint source pollution abatement function and maintain this function while protecting the other existing functions of these wetlands and riparian areas as measured by characteristics such as vegetative composition and cover, hydrology of surface water and ground water, geochemistry of the substrate, and species composition.

### Responsible Agencies and Authorities

The Hawaii State Planning Act, Chapter 226, HRS, establishes a statewide planning system to coordinate and guide state and county activities and to implement the overall theme, goals, objectives, policies, and priority guidelines contained in the chapter. The statute characterizes county general plans, what they should address, and how they should be developed (Sections 226-52 and 226-58). It specifies that the plans must contain objectives and policies, and implementation priorities and actions to carry out the policies, applying the guiding state principles to the unique problems and needs of each individual county. One of the duties of the Office of Planning defined in Chapter 226 is to provide recommendations to the governor and state and county agencies on conflicts between and among the chapter, state functional plans approved by the governor, county general plans and development plans, and state programs.

The county general plans provide a coordinated set of guidelines within each county for decision-making regarding future growth and development and protection of natural and cultural resources. Generally, all development within the counties must conform to the policies outlined in the county general plans and specific community development plans. The general plans also guide revisions and updates to the county codes. They are given the effect of law through adoption by the respective county councils. Generally, all the county general plans have policies related to protecting the county's natural resources; protecting wetlands and riparian areas; and designing drainage systems to minimize polluted runoff, retain streambank vegetation, and maintain habitat and aesthetic values.

County general plans are implemented through the specific community development plans, budgeting and capital improvement programs (CIP) guided by the goals, objectives and policies of the general plans and community development plans, county laws amended to be consistent with the intent of the general plan components, and approval or disapproval of developments seeking zoning and other development approvals based on how they support the visions expressed in the general plans. The county planning departments prepare annual reports to monitor progress towards achieving general plan goals, objectives and policies. The annual reports are submitted to the mayors and county councils for review. General plans are subject to periodic review and amendment, as specified by county procedures, with significant opportunities for input by the public.

Like the other counties, the City and County of Honolulu implements a three-tiered system of objectives, policies, planning principles, guidelines, and regulations. The General Plan is the first tier and comprises brief statements of objectives and policies. The second tier is the Development Plans and Sustainable Communities Plans, which are adopted and revised by ordinance. The third tier is

comprised of the implementing ordinances and regulations, which must be consistent with the General Plan and Development/Sustainable Communities Plans. Eight community-oriented plans have been developed to help guide public policy, investment and decision-making through the 2025 planning horizon. Each plan addresses one of 8 geographic planning regions on Oahu. The planning regions of Ewa and Primary Urban Center are the areas to which major growth in population and economic activity will be directed, so the plans for these regions are titled “Development Plans.” The remaining 6 planning regions are envisioned to remain relatively stable, so their plans are titled “Sustainable Communities Plans.”

These community-oriented plans generally recommend policies in an *ahupua`a* or watershed context and address the protection of wetlands and riparian areas. For example, the Primary Urban Center Development Plan (2004) includes in its guidelines “establish riparian zones for all streams to prevent the encroachment of buildings and structures and to establish and enforce policies for the protection and enhancement of stream habitats and water quality.” The East Honolulu Sustainable Communities Plan (April 1999) states “preserve the aesthetic and biological values of significant streams, wetlands, natural gulches and other drainageways, by providing appropriate setbacks as part of the open space system.” One of the guidelines in the Koolaupoko Sustainable Communities Plan (August 2000) is to “incorporate erosion control measures and best management practices, as cited in Hawaii’s Coastal Nonpoint Pollution Control Program Management Plan to prevent pollution of wetlands, streams, estuaries, and nearshore waters.” The Koolau Loa Sustainable Communities Plan (October 1999) has several policies related to the protection of wetlands and riparian areas: “minimize soil erosion, runoff of pesticides, fertilizers and other non-point source contaminants into streams, wetlands, and marine habitats with strategies such as stream setbacks, erosion control devices, integrated pest management plans, and revegetation of disturbed areas”; and “where feasible, establish setbacks along rivers, streams, and shoreline areas to preserve these resources and protective buffer zones around biologically sensitive areas to minimize habitat disturbances.” The Waianae Sustainable Communities Plan (July 2000) recommends establishing Stream Conservation Corridors for the protection of streams and stream floodplains.

The City and County of Honolulu Board of Water Supply has developed draft watershed management plans for Koolau Loa and Waianae, consistent with the planning regions described above. The plans consist of policies and strategies that will guide the City and County and also provide advice to the State Commission on Water Resource Management (CWRM) in regards to the management, conservation, development and allocation of Oahu’s surface and ground water resources to 2030. The Waianae watershed management plan covers 9 *ahupua`a*, while the Koolau Loa plan covers 34. Both plans contain similar objectives: “1. Promote sustainable watershed” and “2. Protect and enhance water quality and quantity.”

The sub-objective contained in the Waianae Plan related to the protection of wetlands and riparian areas is Sub-Objective 1.1 “Strive to enhance and protect natural resources including land, stream, and near shore ecosystems.” This is followed by implementing strategies and projects, including:

- Strategy 1.1.1 Restore natural watershed structure and functions through implementation of incremental, long-term ecosystem restoration programs.

- Strategy 1.1.2 Preserve species and habitat biodiversity by assessing and restoring critical water-related habitats – to be implemented through stream conservation corridor project; wetlands restoration and protection program; and concrete flood channel redesign project.

Relevant sub-objectives, strategies and projects contained in the Koolau Loa Plan are:

Sub-objective 1.1 Strive to enhance and protect natural resources including land, streams and nearshore ecosystems.

- Strategy 1.1.3: Ensure that the additional urban growth is clustered within the Sustainable Communities Plan Rural Community Boundary and is designed for minimal impact on the environment -- projects include pollution prevention/runoff water quality and stream conservation buffers.

Sub-objective 1.3 Collaborate with responsible agencies to identify and implement measures to alleviate flooding issues and reduce polluted runoff.

- Strategy 1.3.1: Plan and implement flood control measures -- projects include flood control/ stormwater management and flood channel redesign.
- Strategy 1.3.2: Improve management of streams and streambanks.

Hawaii County’s general plan, which was updated in 2005, outlines policies that demonstrate its commitment to reducing the generation of polluted runoff and protecting wetlands and riparian areas. It includes policies to:

- participate in watershed management projects to improve stream and coastal water quality and encourage local communities to develop such projects;
- work with the appropriate agencies to adopt appropriate measures and provide incentives to control point and nonpoint sources of pollution;
- require implementation of the management measures contained in Hawaii’s coastal nonpoint pollution control program as a condition of land use permitting; and
- develop drainage master plans from a watershed perspective that consider non-structural alternatives, minimize channelization, protect wetlands that serve drainage functions, coordinate the regulation of construction and agricultural operation, and encourage the establishment of floodplains as public green ways.

Kauai County’s general plan was updated in 2000. The policies for land management derive from the concepts of *ahupua`a* and watershed, linking the mountains, lowlands and ocean as one basic ecological unit. The general plan contains a set of Heritage Resources Maps that document important natural, scenic and historic features, particularly in relation to the urban and agricultural lands that are developed or may be developed in the future. It specifies that important landforms shall be designated “Open” and zoned accordingly, in order to protect steep slopes and streams from erosion. The Heritage Resources Maps serve as a guide in preparing Development Plans, in preparing or revising land use ordinances and rules, and in the review of subdivision and land use permit applications. The following policies related to watershed management must be considered when developing county roads and drainage facilities and in administering the grading, flood control, and drainage regulations:

- Manage land use and earth-moving activities from the standpoint of the entire watershed, considering important characteristics such as scenic landscape features, historic sites, native species of plants and animals, and other special resources.
- Specify relevant best management practices as a condition of approving land use permits that affect stream corridors.
- Collaborate with State agencies (Office of Planning, DLNR, DOH), federal agencies (U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service), and community organizations (e.g., Soil and Water Conservation Districts) in order to plan and manage watersheds.

In addition, one of the implementing actions states: “In particular, the [Planning] Department shall review and revise the Drainageway Constraint District to provide overlay regulation protecting stream and wetland riparian areas and floodplains.”

Maui County is currently updating its general plan. The *Maui County 2030 General Plan Update: Countywide Policy Plan* is currently under consideration by the Maui County Council. Policies to implement the objective related to expanding the preservation of environmentally-sensitive, locally-valued natural resources and Hawaiian ecosystems include:

- protect and restore nearshore reef environments and water quality through strengthened coastal zone management, re-naturalization of shorelines, and mitigation of urban and agricultural runoff;
- preserve and reestablish habitat connectivity through greenways, watercourses, and habitat corridors;
- evaluate development to assess its impact on the County’s land and marine resources;
- support programs that forward the use of stormwater treatment technologies which incorporate the use of native vegetation and mimic natural systems; and
- protect remaining undeveloped beaches, dunes and coastal ecosystems and restore natural shoreline processes where possible.

Once it has been adopted, the updated general plan will become the principal tool for the government and public to use when evaluating projects and their impacts on land use and the environment, among other things.

Hawaii has water quality standards for both inland and marine waters. Inland waters include streams, freshwater lakes, reservoirs, elevated wetlands, and low wetlands, as well as brackish anchialine pools, coastal wetlands, and estuaries. Inland and marine waters are also classified by use categories for the purpose of applying the water quality standards set forth in Chapter 11-54, HAR. Inland waters are divided into Class 1 waters, which should remain in their natural state as nearly as possible with an absolute minimum of pollution from any human-caused source, and Class 2 waters, which shall not act as receiving waters for any discharge that has not received the best degree of treatment or control. If a land use activity is affecting the water quality or designated use of a stream or wetland, then DOH can take enforcement action.

The State Water Code, Chapter 174C, HRS, was enacted into law in 1987 to protect Hawaii's land-based surface and ground water resources. One of the purposes of the water code is to protect and improve the quality of waters of the State and to provide that no substance be discharged into these waters without first receiving the necessary treatment or other corrective action (Section 174C-2(d)).

Chapter 174C, HRS, establishes CWRM to administer the statute. As stipulated in the statute, CWRM must establish and administer a statewide instream use protection program. "Instream use" is defined as beneficial uses of stream water for significant purposes which are located in the stream and which are achieved by leaving the water in the stream. Instream uses include, but are not limited to: (1) maintenance of fish and wildlife habitats; (2) outdoor recreational activities; (3) maintenance of ecosystems such as estuaries, wetlands, and stream vegetation; (4) aesthetic values such as waterfalls and scenic waterways; (5) navigation; (6) instream hydropower generation; (7) maintenance of water quality; (8) the conveyance of irrigation and domestic water supplies to downstream points of diversion; and (9) the protection of traditional and customary Hawaiian rights (Section 174C-3). Through its administrative process, CWRM can regulate land use activities that are affecting or have the potential to affect these instream uses.

Watershed partnerships are voluntary alliances of public and private landowners committed to protecting large areas of forested watersheds to support multiple ecosystem services such as water production and filtration, native habitat/species protection, erosion/sedimentation control, mitigation of climate change, and education, recreation and economic opportunities. Currently, over 900,000 acres (approximately one-fourth of the land area of the State) have been placed within these partnerships, mostly within the Conservation District, protecting the headwaters of countless streams. There are watershed partnerships for West Maui Mountains (50,000 acres), East Maui (100,000+ acres), Koolau (Oahu) (97,100 acres), Kauai (142,000 acres), Lanai (~20,000 acres), East Molokai (25,000+ acres), Three Mountain Alliance (Hawaii) (420,000 acres), Leeward Haleakala (Maui) (43,175), and Kohala (Hawaii) (32,573 acres). While DLNR is a partner on each of the watershed partnerships, it is the partnership as a whole that develops the management plan and decides on management priorities and strategies.

Chapter 205A, HRS, establishes coastal zone management objectives and policies that must be implemented by State and county agencies. One objective, addressing coastal ecosystems, states "protect valuable coastal ecosystems, including reefs, from disruption and minimize adverse impacts on all coastal ecosystems." The associated policies for coastal ecosystems are: (A) Exercise an overall conservation ethic, and practice stewardship in the protection, use, and development of marine and coastal resources; (B) Improve the technical basis for natural resource management; (C) Preserve valuable coastal ecosystems, including reefs, of significant biological or economic importance; (D) Minimize disruption or degradation of coastal water ecosystems by effective regulation of stream diversions, channelization, and similar land and water uses, recognizing competing water needs; and (E) Promote water quantity and quality planning and management practices that reflect the tolerance of fresh water and marine ecosystems and maintain and enhance water quality through the development and implementation of point and nonpoint source water pollution control measures.



Federal agency involvement in the management of wetlands and riparian areas is typically more reactive than proactive, and may be triggered by proposed activities affecting various functions and criteria, such as migratory birds, endangered species, anadromous fish (USFWS), interstate commerce (USACOE), farmed agricultural wetlands (NRCS), and special habitats (National Park Service).

USACOE has the authority to protect the waters of the United States, including wetlands and some streams, by regulating certain activities within those waters. Section 404 of the Clean Water Act requires that anyone interested in placing dredged or fill material into waters of the United States must first obtain a permit from the Corps. Section 10 of the Rivers and Harbors Act of 1899 requires approval prior to the accomplishment of any work in or over navigable waters of the United States, or which affects the course, location, condition, or capacity of such waters. The law applies to any dredging or disposal of dredged materials, excavation, filling, rechannelization, or any other modification of a navigable water of the United States, and applies to all structures large or small. The initiation of a Section 404 permit process triggers a Section 401 water quality certification from DOH.

The counties administer the SMA permit process. SMAs are a subset of the State's coastal zone and include all lands and waters beginning at the shoreline and extending inland or *mauka* at least 100 yards. Many new developments fall within this more sensitive coastal area, and the SMA permit process ensures that these developments are consistent with Hawaii's coastal zone management program objectives and policies. Although each county has its own procedures for administering SMA permits, the requirements and review processes for SMA applications are similar for all four counties and are based on Chapter 205A-26, HRS ("Special management area guidelines"). Each county requires a permit applicant to describe the proposed development in terms of the CZM objectives and policies.

DLNR manages lands in the Conservation District in order to conserve, protect, and preserve the important natural resources of the State through appropriate management and use to promote their long-term sustainability. Approximately half of each of the main islands is designated "Conservation", in which land use activities are severely limited: Kauai (54.8%), Maui (43.8%), Molokai (31.3%), Lanai (45.0%), Hawaii (51.9%), and Oahu (41.3%).<sup>4</sup> The headwaters of most of Hawaii's streams originate in the conservation district. The conservation district is divided into sub-zones, in which permitted land uses are restricted to those provided for in Chapter 13-5, HAR.

DLNR manages and regulates all lands set apart as forest reserves. It is also responsible for the management of the State's Natural Area Reserve System (NARS) to ensure preservation of specific land and water areas which support communities of natural flora and fauna, including wetland areas. Chapter 195, HRS, establishes a Natural Area Partnership program to provide state funds to help match private funds for the management of private lands that are dedicated to conservation. Chapter 173A, HRS, enables the State to acquire lands of exceptional value due to the presence of habitats for threatened or endangered species of flora, fauna, or aquatic resources. Chapter 195D, HRS, authorizes DLNR to acquire habitat for endangered species restoration. Chapter 198, HRS, authorizes DLNR to acquire conservation easements to preserve natural lands and waters.

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<sup>4</sup> *Most of these conservation lands are included in the statewide network of watershed partnerships.*

DOH has general regulatory authority over water pollution control.

**Implementation Tools**

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
<p>Chapter 174C, HRS Hawaii Water Code</p> <p>Chapter 13-169, HAR Protection of Instream Uses of Water</p>	<p>DLNR Commission on Water Resource Management</p>	<p>-the state water code shall be liberally interpreted to obtain maximum beneficial use of the waters of the State for purposes such as domestic uses, aquaculture uses, irrigation and other agricultural uses, power development, and commercial and industrial uses. However, adequate provision shall be made for the protection of traditional and customary Hawaiian rights, the protection and procreation of fish and wildlife, the maintenance of proper ecological balance and scenic beauty, and the preservation and enhancement of waters of the State for municipal uses, public recreation, public water supply, agriculture, and navigation. Such objectives are declared to be in the public interest. (§174C-2(c))</p> <p>-provides the following criteria in designating an area for surface water use regulation:</p> <ul style="list-style-type: none"> <li>• Whether regulation is necessary to preserve the diminishing surface water supply for future needs, as evidenced by excessively declining surface water levels, not related to rainfall variations, or increasing or proposed diversions of surface waters to levels which may detrimentally affect existing instream uses or prior existing off stream uses;</li> <li>• Whether the diversions of stream waters are reducing the capacity of the stream to assimilate pollutants to an extent which adversely affects public health or existing instream uses; or</li> <li>• Serious disputes respecting the use of surface water resources are occurring. (§174C-45)</li> </ul> <p>-CWRM applies a water use permitting process to regulate use in designated water management areas. A water use permit must be obtained in order to continue existing uses and prior to commencing any new water use. (§174C-48)</p> <p>- requires permit from the Water Commission prior to undertaking a stream channel alteration to protect fishery, wildlife, recreational, aesthetic, scenic, and other beneficial uses (§174C-71)</p> <p>-outlines the stream channel alteration permit (SCAP) process (§13-169-50 through 13-169-54)</p>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 11-54, HAR Water Quality Standards	DOH	<p>-defines classifications of water uses. The objective of “class 1, inland waters” is that they remain in their natural state as nearly as possible with an absolute minimum of pollution from any human-caused source. Waste discharge into these waters is prohibited. Any conduct that results in a demonstrable increase in levels of point or nonpoint source contamination in class 1 waters is prohibited. Class 1 waters include all standing and/or flowing waters, and elevated and/or low wetlands: (i) within the natural reserves, preserves, sanctuaries, and refuges established by DLNR under Chapter 195, HRS, or similar reserves for the protection of aquatic life; (ii) in national and state parks; (iii) in state or federal fish and wildlife refuges; (iv) which have been identified as a unique or critical habitat for threatened or endangered species by the USFWS; and (v) in protective Conservation District subzones designated under Chapter 13-5, HAR. (§11-54-3(b)(1))</p>
Chapter 205A, HRS Coastal Zone Management	OP-CZM	<p>-establishes coastal zone management objectives and policies (§205A-2)</p> <p>-one objective, addressing coastal ecosystems, states “protect valuable coastal ecosystems, including reefs, from disruption and minimize adverse impacts on all coastal ecosystems.” The associated policies for coastal ecosystems are: (A) Exercise an overall conservation ethic, and practice stewardship in the protection, use, and development of marine and coastal resources; (B) Improve the technical basis for natural resource management; (C) Preserve valuable coastal ecosystems, including reefs, of significant biological or economic importance; (D) Minimize disruption or degradation of coastal water ecosystems by effective regulation of stream diversions, channelization, and similar land and water uses, recognizing competing water needs; and (E) Promote water quantity and quality planning and management practices that reflect the tolerance of fresh water and marine ecosystems and maintain and enhance water quality through the development and implementation of point and nonpoint source water pollution control measures. (§205A-2)</p> <p>-the objectives and policies of the chapter and any guidelines enacted by the legislature shall be binding upon actions within the coastal zone management area by all agencies, within the scope of their authority (§205A-4(b))</p> <p>-all agencies shall ensure that their rules comply with the objectives and policies of the chapter (§205A-5)</p> <p>-establishes special controls on developments within an area along the shoreline to avoid permanent losses of valuable resources (§205A-21, -26).</p> <p>-no development is allowed in any county within these special management areas (SMAs) without a permit (§205A-28). The county planning departments administer the SMA permit process.</p> <p>-no development is approved unless it is found that the development, among other things, will not have any substantial adverse environmental or ecological effect; is consistent with the objectives, policies, and SMA guidelines of the chapter; and is consistent with the county general plan and zoning. (§205A-26)</p>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Section 404, CWA	USACOE	The U.S. Army Corps of Engineers (USACOE) has the authority to protect the waters of the U.S., including wetlands, by regulating certain activities within those waters. Section 404 of the Clean Water Act requires that anyone interested in placing dredged or fill material into waters of the U.S. must first obtain a permit from the Corps.
Section 10, Rivers and Harbors Act of 1899	USACOE	-requires approval prior to undertaking any work in or over navigable waters of the U.S., or which affects the course, location, condition, or capacity of such waters. The law applies to any dredging or disposal of dredged materials, excavation, filling, rechannelization, or any other modification of a navigable water of the U.S., and applies to all structures, from the smallest floating dock to the largest commercial undertaking.
Section 401, CWA	DOH	<p>-DOH is authorized under Section 401 of the Federal Clean Water Act and Section 342D-53, HRS, to administer the Section 401 Water Quality Certification (WQC) program in Hawaii.</p> <p>- A WQC issued by the DOH is required by any owner applying for a Federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may result in any “discharge” into navigable waters. A 401 WQC certifies that the activity will not violate State water quality standards (Chapter 11-54, HAR).</p> <p>-The Section 404, CWA, permit process, administered by USACOE, would trigger a Section 401 WQC prior to issuance.</p>
<p>Chapter 15-150, HAR Special Management Areas/Shoreline Areas</p> <p>Chapter 12-202, MCC SMA Rules for Maui Planning Commission</p> <p>Chapter 12-302, MCC SMA Rules for Molokai Planning Commission</p> <p>Chapter 12-402, MCC SMA Rules for Lanai Planning Commission</p> <p>Chapter 25, ROH Special Management Area</p> <p>Rule 9, Hawaii County Planning Commission</p> <p>SMA Rules and Regulations of the County of Kauai</p>	<p>OP for SMAs of CDDs</p> <p>County planning commissions</p>	<p>-provides guidelines for use by OP for the review of developments proposed in the SMA of community development districts (CDDs); development in the SMA of CDDs must be consistent with the objectives and policies established in Section 205A-2, HRS (§15-150-6)</p> <p>-county rules for administering the SMA permits and shoreline setback provisions within each county/island</p>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 183C, HRS Conservation District  Chapter 13-5, HAR Conservation District	DLNR	<ul style="list-style-type: none"> <li>-the legislature finds that lands within the state land use conservation district contain important natural resources essential to the preservation of the State’s fragile natural ecosystems and the sustainability of the State’s water supply (§183C-1)</li> <li>-DLNR shall establish zones within the conservation district and permitted uses within those zones (§183C-4)</li> <li>-DLNR regulates land use in the conservation district through the issuance of permits (CDUPs) (§183C-6)</li> <li>-5 subzones within the conservation district are established by DLNR: protective (P), limited (L), resource (R), General (G), and Special (S). (§13-5-10)</li> </ul>
Chapter 183, HRS Forest Reserves, Water Development and Zoning	DLNR	<ul style="list-style-type: none"> <li>-DLNR manages and regulate all lands set apart as forest reserves</li> <li>-DLNR should devise ways and means of protecting, extending, increasing, and utilizing the forest and forest reserves, more particularly for protecting and developing the springs, streams, and sources of water supply to increase and make that water supply available for use (§183-1.5)</li> <li>-DLNR can establish watershed areas which are recharge areas for domestic water supplies</li> </ul>
Chapter 195, HRS Natural Area Reserves System	DLNR	<ul style="list-style-type: none"> <li>-DLNR is responsible for the management of NARS, which should preserve in perpetuity specific land and water areas which support communities, as relatively unmodified as possible, of the natural flora and fauna, as well as geological sites, of Hawaii. It also empowers DLNR to establish NARS for areas with unique wetland values and native species. (§195-1)</li> <li>-establishes a Natural Area Partnership Program to provide state funds to help match private funds for the management of private lands that are dedicated to conservation (§195-6.5)</li> </ul>
Chapter 173A, HRS Acquisition of Resource Value Lands	DLNR	<ul style="list-style-type: none"> <li>-provides for the acquisition of lands with high resource value</li> <li>-one of the land acquisition priorities is lands having exceptional value due to the presence of (a) unique aesthetic resources, (b) unique and valuable cultural or archaeological resources, or (c) habitats for threatened or endangered species of flora, fauna, or aquatic resources. (§173A-2.6)</li> <li>-establishes a land conservation fund for the acquisition of lands (§173A-5)</li> </ul>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 195D, HRS Conservation of Aquatic Life, Wildlife, and Land Plants	DLNR	-to insure the continued perpetuation of indigenous aquatic life, wildlife, and land plants, and their habitats for human enjoyment, for scientific purposes, and as members of ecosystems, it is necessary that the State take positive actions to enhance their prospects for survival (§195D-1) -establishes authority to establish any indigenous species of aquatic life, wildlife, or land plant as an endangered or threatened species because of a number of factors and criteria (§195D-4) -DLNR may enter into a planning process with any landowner for the purpose of preparing and implementing a habitat conservation plan. Applications to enter into a planning process shall identify: (1) The geographic area encompassed by the plan; (2) The ecosystems, natural communities, or habitat types within the plan area that are the focus of the plan; (3) The endangered, threatened, proposed, and candidate species known or reasonably expected to occur in the ecosystems, natural communities, or habitat types in the plan area; (4) The measures or actions to be undertaken to protect, maintain, restore, or enhance those ecosystems, natural communities, or habitat types within the plan
Chapter 195D, HRS Conservation of Aquatic Life, Wildlife, and Land Plants, continued	DLNR	area; (5) A schedule for implementation of the proposed measures and actions; and (6) An adequate funding source to ensure that the proposed measures and actions are undertaken in accordance with the schedule. (§195D-21)
Chapter 198, HRS Conservation Easements	DLNR	-authorizes DLNR to acquire conservation easements to preserve natural lands and waters.
Chapter 342D, HRS Water Pollution	DOH	-prohibits discharge of any pollutant into State waters -allows DOH to institute a civil action for injunctive relief to prevent violation of State water quality standards (§342D-11) -under the statute, DOH may request the court to order nonpoint source polluters to implement all required management measures

### Management Measure for Restoration of Wetlands and Riparian Areas

**Promote the restoration of the pre-existing functions in damaged and destroyed wetlands and riparian systems in areas where the systems will serve a significant nonpoint source pollution abatement function.**

#### Responsible Agencies and Authorities

The State Water Code (Chapter 174C, HRS), adopted by the Hawaii Legislature in 1987 and amended in 2004, provides the regulatory framework to protect streams, wetlands and other areas critical to water quality. The State, in its stewardship capacity, has management responsibility for all water resources of the State through CWRM – also known as the Water Commission. The Water Commission sets policies and approves water allocations for all water users. Existing uses established prior to 1987 are grandfathered in, provided the existing use is reasonable and beneficial. The Water Code also requires CWRM to establish and administer a statewide in-stream use protection program, including flow standards on a stream-by-stream basis whenever necessary to protect the public interest. Instream flow standards describe the flow necessary to adequately protect fishery, wildlife, aesthetic, scenic, or other beneficial instream uses. Instream uses include: maintenance of fish and wildlife habitats, outdoor recreational activities, maintenance of ecosystems such as estuaries, wetlands, and stream

vegetation, aesthetic values such as waterfalls and scenic waterways, navigation, instream hydropower generation, maintenance of water quality, conveyance of irrigation and domestic water supplies to downstream points of diversion, and the protection of traditional and customary Hawaiian rights.

The Water Commission issues permits to regulate the use of surface and ground water in the State. A stream channel alteration permit (SCAP) is required prior to undertaking a stream channel alteration in order to protect fishery, wildlife, recreational, aesthetic, scenic, and other beneficial instream uses.

CWRM adopted the updated *Water Resource Protection Plan* on August 28, 2008. The plan describes the program to protect and conserve Hawaii's water resources. The updated document includes policies, program directives, resource inventories, and recommendations across a broad spectrum of resource management issues, including watershed protection and water quality. Some of the plan's recommendations include:

- Take a more active role in watershed protection, watershed partnerships, and the watershed partnership association.
- Support DOFAW's watershed management activities and the division's leadership role in watershed management.
- Study existing government and community efforts in watershed management and protection, and encourage sharing of information and experiences.
- Study other watershed planning approaches and lessons learned, including the EPA's watershed approach and that of other state governments.
- Pursue appropriate funding to support watershed protection programs and objectives to protect water resources.
- Encourage the collaboration of federal, State, and county agencies with existing watershed partnerships and Conservation Districts to map the relationships between land management programs, land use regulations, economic and agricultural issues, and water quality and resource protection programs.
- Improve communication and encourage dialogue between watershed interests to result in the development of common goals and an integrated watershed management framework. A successful framework will acknowledge and build upon existing programs and organizations to maximize funding, staff, and volunteer resources through watershed-scale management and protection programs.
- Develop innovative public outreach methods and encourage communication between watershed entities. The development of a website devoted to Hawaii watershed projects, organized by geographic location, should facilitate this coordination.

DOH establishes and enforces the State water quality standards contained in Chapter 11-54, HAR. All inland fresh waters are classified based on their ecological characteristics and other natural criteria as flowing waters (*e.g.*, streams), standing waters (*e.g.*, lakes and reservoirs), and wetlands. These waters are further classified for the purposes of applying water quality standards and selecting appropriate quality parameters and uses to be protected in these waters. Class 1 inland waters are to remain in their natural state as nearly as possible with an absolute minimum of pollution from any human-caused source. Waste discharge into these waters is prohibited. Any conduct that results in a

demonstrable increase in levels of point or nonpoint source contamination in class 1 waters is prohibited. The uses to be protected in class 1(a) waters are scientific and educational purposes, protection of native breeding stock, baseline references from which human-caused changes can be measured, compatible recreation, aesthetic enjoyment, and other non-degrading uses. The additional uses to be protected in class 1(b) waters are domestic water supplies and food processing. Class 2 inland waters are to be protected for recreational purposes, the support and propagation of aquatic life, agricultural and industrial water supplies, shipping and navigation. Class 1(a) waters include all standing and/or flowing waters, and elevated and/or low wetlands: (i) within the natural reserves, preserves, sanctuaries, and refuges established by DLNR under Chapter 195, HRS, or similar reserves for the protection of aquatic life; (ii) in national and state parks; (iii) in state or federal fish and wildlife refuges; (iv) which have been identified as a unique or critical habitat for threatened or endangered species by the U.S. Fish and Wildlife Service; and (v) in protective Conservation District subzones designated under Chapter 13-5, HAR.

Chapter 205A, HRS, establishes coastal zone management objectives and policies which must be implemented by State and county agencies. One objective, addressing coastal ecosystems, states “protect valuable coastal ecosystems, including reefs, from disruption and minimize adverse impacts on all coastal ecosystems.” The associated policies for coastal ecosystems are: (A) Exercise an overall conservation ethic, and practice stewardship in the protection, use, and development of marine and coastal resources; (B) Improve the technical basis for natural resource management; (C) Preserve valuable coastal ecosystems, including reefs, of significant biological or economic importance; (D) Minimize disruption or degradation of coastal water ecosystems by effective regulation of stream diversions, channelization, and similar land and water uses, recognizing competing water needs; and (E) Promote water quantity and quality planning and management practices that reflect the tolerance of fresh water and marine ecosystems and maintain and enhance water quality through the development and implementation of point and nonpoint source water pollution control measures.

Federal agency involvement in the management of wetlands and riparian areas is typically more reactive than proactive, and may be triggered by proposed activities affecting various functions and criteria, such as migratory birds, endangered species, anadromous fish (USFWS), interstate commerce (USACOE), farmed agricultural wetlands (NRCS), and special habitats (National Park Service).

USACOE has the authority to protect the waters of the United States, including wetlands and some streams, by regulating certain activities within those waters. Section 404 of the Clean Water Act requires that anyone interested in placing dredged or fill material into waters of the United States must first obtain a permit from the Corps. Section 10 of the Rivers and Harbors Act of 1899 requires approval prior to the accomplishment of any work in or over navigable waters of the United States, or which affects the course, location, condition, or capacity of such waters. The law applies to any dredging or disposal of dredged materials, excavation, filling, rechannelization, or any other modification of a navigable water of the United States, and applies to all structures large or small. The initiation of a Section 404 permit process triggers a Section 401 water quality certification from DOH.

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yards. Many new developments fall within this more sensitive coastal area, and the SMA permit process ensures that these developments are consistent with Hawaii’s coastal zone management program objectives and policies. Although each county has its own procedures for administering SMA permits, the requirements and review processes for SMA applications are similar for all four counties and are based on Chapter 205A-26, HRS (“Special management area guidelines”). Each county requires a permit applicant to describe the proposed development in terms of the CZM objectives and policies.

DLNR manages lands in the Conservation District in order to conserve, protect, and preserve the important natural resources of the State through appropriate management and use to promote their long-term sustainability. Approximately half of each of the main islands is designated “Conservation”, in which land use activities are severely limited: Kauai (54.8%), Maui (43.8%), Molokai (31.3%), Lanai (45.0%), Hawaii (51.9%), and Oahu (41.3%). The headwaters of most of Hawaii’s streams originate in the conservation district. The conservation district is divided into sub-zones, in which permitted land uses are restricted to those provided for in Chapter 13-5, HAR.

DLNR manages and regulates all lands set apart as forest reserves. It is also responsible for the management of the NARS to ensure preservation of specific land and water areas which support communities of natural flora and fauna, including wetland areas. Chapter 195, HRS, establishes a Natural Area Partnership program to provide state funds to help match private funds for the management of private lands that are dedicated to conservation. Chapter 173A, HRS, enables the State to acquire lands of exceptional value due to the presence of habitats for threatened or endangered species of flora, fauna, or aquatic resources. Chapter 195D, HRS, authorizes DLNR to acquire habitat for endangered species restoration. Chapter 198, HRS, authorizes DLNR to acquire conservation easements to preserve natural lands and waters.

DOH has general regulatory authority over water pollution control.

**Implementation Tools**

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
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Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
<p>Chapter 174C, HRS Hawaii Water Code</p> <p>Chapter 13-169, HAR Protection of Instream Uses of Water</p>	<p>DLNR Commission on Water Resource Management</p>	<p>-the state water code shall be liberally interpreted to obtain maximum beneficial use of the waters of the State for purposes such as domestic uses, aquaculture uses, irrigation and other agricultural uses, power development, and commercial and industrial uses. However, adequate provision shall be made for the protection of traditional and customary Hawaiian rights, the protection and procreation of fish and wildlife, the maintenance of proper ecological balance and scenic beauty, and the preservation and enhancement of waters of the State for municipal uses, public recreation, public water supply, agriculture, and navigation. Such objectives are declared to be in the public interest. (§174C-2(c))</p> <p>-provides the following criteria in designating an area for surface water use regulation:</p> <ul style="list-style-type: none"> <li>• Whether regulation is necessary to preserve the diminishing surface water supply for future needs, as evidenced by excessively declining surface water levels, not related to rainfall variations, or increasing or proposed diversions of surface waters to levels which may detrimentally affect existing instream uses or prior existing off stream uses;</li> <li>• Whether the diversions of stream waters are reducing the capacity of the stream to assimilate pollutants to an extent which adversely affects public health or existing instream uses; or</li> <li>• Serious disputes respecting the use of surface water resources are occurring. (§174C-45)</li> </ul> <p>-CWRM applies a water use permitting process to regulate use in designated water management areas. A water use permit must be obtained in order to continue existing uses and prior to commencing any new water use. (§174C-48)</p>
<p>Chapter 174C, HRS Hawaii Water Code, continued</p> <p>Chapter 13-169, HAR Protection of Instream Uses of Water, continued</p>	<p>DLNR Commission on Water Resource Management</p>	<p>-requires permit from the Water Commission prior to undertaking a stream channel alteration to protect fishery, wildlife, recreational, aesthetic, scenic, and other beneficial uses (§174C-71)</p> <p>-outlines the stream channel alteration permit (SCAP) process (§13-169-50 through 13-169-54)</p>
<p>Chapter 11-54, HAR Water Quality Standards</p>	<p>DOH</p>	<p>-defines classifications of water uses. The objective of “class 1, inland waters” is that they remain in their natural state as nearly as possible with an absolute minimum of pollution from any human-caused source. Waste discharge into these waters is prohibited. Any conduct that results in a demonstrable increase in levels of point or nonpoint source contamination in class 1 waters is prohibited. Class 1 waters include all standing and/or flowing waters, and elevated and/or low wetlands: (i) within the natural reserves, preserves, sanctuaries, and refuges established by DLNR under Chapter 195, HRS, or similar reserves for the protection of aquatic life; (ii) in national and state parks; (iii) in state or federal fish and wildlife refuges; (iv) which have been identified as a unique or critical habitat for threatened or endangered species by the USFWS; and (v) in protective Conservation District subzones designated under Chapter 13-5, HAR. (§11-54-3(b)(1))</p>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 205A, HRS Coastal Zone Management	OP-CZM	<p>-establishes coastal zone management objectives and policies (§205A-2)</p> <p>-one objective, addressing coastal ecosystems, states “protect valuable coastal ecosystems, including reefs, from disruption and minimize adverse impacts on all coastal ecosystems.” The associated policies for coastal ecosystems are: (A) Exercise an overall conservation ethic, and practice stewardship in the protection, use, and development of marine and coastal resources; (B) Improve the technical basis for natural resource management; (C) Preserve valuable coastal ecosystems, including reefs, of significant biological or economic importance; (D) Minimize disruption or degradation of coastal water ecosystems by effective regulation of stream diversions, channelization, and similar land and water uses, recognizing competing water needs; and (E) Promote water quantity and quality planning and management practices that reflect the tolerance of fresh water and marine ecosystems and maintain and enhance water quality through the development and implementation of point and nonpoint source water pollution control measures. (§205A-2)</p> <p>-the objectives and policies of the chapter and any guidelines enacted by the legislature shall be binding upon actions within the coastal zone management area by all agencies, within the scope of their authority (§205A-4(b))</p> <p>-all agencies shall ensure that their rules comply with the objectives and policies of the chapter (§205A-5)</p> <p>-establishes special controls on developments within an area along the shoreline to avoid permanent losses of valuable resources (§205A-21, -26).</p> <p>-no development is allowed in any county within these special management areas (SMAs) without a permit (§205A-28). The county planning departments administer the SMA permit process.</p>
Chapter 205A, HRS Coastal Zone Management, continued	OP-CZM	<p>-no development is approved unless it is found that the development, among other things, will not have any substantial adverse environmental or ecological effect; is consistent with the objectives, policies, and SMA guidelines of the chapter; and is consistent with the county general plan and zoning. (§205A-26)</p>
Section 404, CWA	USACOE	<p>The U.S. Army Corps of Engineers (USACOE) has the authority to protect the waters of the U.S., including wetlands, by regulating certain activities within those waters. Section 404 of the Clean Water Act requires that anyone interested in placing dredged or fill material into waters of the U.S. must first obtain a permit from the Corps.</p>
Section 10, Rivers and Harbors Act of 1899	USACOE	<p>-requires approval prior to undertaking any work in or over navigable waters of the U.S., or which affects the course, location, condition, or capacity of such waters. The law applies to any dredging or disposal of dredged materials, excavation, filling, rechannelization, or any other modification of a navigable water of the U.S., and applies to all structures, from the smallest floating dock to the largest commercial undertaking.</p>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Section 401, CWA	DOH	<p>-DOH is authorized under Section 401 of the Federal Clean Water Act and Section 342D-53, HRS, to administer the Section 401 Water Quality Certification (WQC) program in Hawaii.</p> <p>- A WQC issued by the DOH is required by any owner applying for a Federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may result in any “discharge” into navigable waters. A 401 WQC certifies that the activity will not violate State water quality standards (Chapter 11-54, HAR).</p> <p>-The Section 404, CWA, permit process, administered by USACOE, would trigger a Section 401 WQC prior to issuance.</p>
<p>Chapter 15-150, HAR Special Management Areas/Shoreline Areas</p> <p>Chapter 12-202, MCC SMA Rules for Maui Planning Commission</p> <p>Chapter 12-302, MCC SMA Rules for Molokai Planning Commission</p> <p>Chapter 12-402, MCC SMA Rules for Lanai Planning Commission</p> <p>Chapter 25, ROH Special Management Area</p> <p>Rule 9, Hawaii County Planning Commission</p> <p>SMA Rules and Regulations of the County of Kauai</p>	<p>OP for SMAs of CDDs</p> <p>County planning commissions</p>	<p>-provides guidelines for use by OP for the review of developments proposed in the SMA of community development districts (CDDs); development in the SMA of CDDs must be consistent with the objectives and policies established in Section 205A-2, HRS (§15-150-6)</p> <p>-county rules for administering the SMA permits and shoreline setback provisions within each county/island</p>
<p>Chapter 183C, HRS Conservation District</p> <p>Chapter 13-5, HAR Conservation District</p>	DLNR	<p>-the legislature finds that lands within the state land use conservation district contain important natural resources essential to the preservation of the State’s fragile natural ecosystems and the sustainability of the State’s water supply (§183C-1)</p> <p>-DLNR shall establish zones within the conservation district and permitted uses within those zones (§183C-4)</p> <p>-DLNR regulates land use in the conservation district through the issuance of permits (CDUPs) (§183C-6)</p> <p>-5 subzones within the conservation district are established by DLNR: protective (P), limited (L), resource (R), General (G), and Special (S). (§13-5-10)</p>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 183, HRS Forest Reserves, Water Development and Zoning	DLNR	<ul style="list-style-type: none"> <li>-DLNR manages and regulate all lands set apart as forest reserves</li> <li>-DLNR should devise ways and means of protecting, extending, increasing, and utilizing the forest and forest reserves, more particularly for protecting and developing the springs, streams, and sources of water supply to increase and make that water supply available for use (§183-1.5)</li> <li>-DLNR can establish watershed areas which are recharge areas for domestic water supplies</li> </ul>
Chapter 195, HRS Natural Area Reserves System	DLNR	<ul style="list-style-type: none"> <li>-DLNR is responsible for the management of NARS, which should preserve in perpetuity specific land and water areas which support communities, as relatively unmodified as possible, of the natural flora and fauna, as well as geological sites, of Hawaii. It also empowers DLNR to establish NARS for areas with unique wetland values and native species. (§195-1)</li> <li>-establishes a Natural Area Partnership Program to provide state funds to help match private funds for the management of private lands that are dedicated to conservation (§195-6.5)</li> </ul>
Chapter 173A, HRS Acquisition of Resource Value Lands	DLNR	<ul style="list-style-type: none"> <li>-provides for the acquisition of lands with high resource value</li> <li>-one of the land acquisition priorities is lands having exceptional value due to the presence of (a) unique aesthetic resources, (b) unique and valuable cultural or archaeological resources, or (c) habitats for threatened or endangered species of flora, fauna, or aquatic resources. (§173A-2.6)</li> <li>-establishes a land conservation fund for the acquisition of lands (§173A-5)</li> </ul>
Chapter 195D, HRS Conservation of Aquatic Life, Wildlife, and Land Plants	DLNR	<ul style="list-style-type: none"> <li>-to insure the continued perpetuation of indigenous aquatic life, wildlife, and land plants, and their habitats for human enjoyment, for scientific purposes, and as members of ecosystems, it is necessary that the State take positive actions to enhance their prospects for survival (§195D-1)</li> <li>-establishes authority to establish any indigenous species of aquatic life, wildlife, or land plant as an endangered or threatened species because of a number of factors and criteria (§195D-4)</li> <li>-DLNR may enter into a planning process with any landowner for the purpose of preparing and implementing a habitat conservation plan. Applications to enter into a planning process shall identify: (1) The geographic area encompassed by the plan; (2) The ecosystems, natural communities, or habitat types within the plan area that are the focus of the plan; (3) The endangered, threatened, proposed, and candidate species known or reasonably expected to occur in the ecosystems, natural communities, or habitat types in the plan area; (4) The measures or actions to be undertaken to protect, maintain, restore, or enhance those ecosystems, natural communities, or habitat types within the plan area; (5) A schedule for implementation of the proposed measures and actions; and (6) An adequate funding source to ensure that the proposed measures and actions are undertaken in accordance with the schedule. (§195D-21)</li> </ul>
Chapter 195D, HRS Conservation of Aquatic Life, Wildlife, and Land Plants, continued	DLNR	<ul style="list-style-type: none"> <li>-authorizes DLNR to acquire conservation easements to preserve natural lands and waters.</li> </ul>
Chapter 198, HRS Conservation Easements	DLNR	<ul style="list-style-type: none"> <li>-authorizes DLNR to acquire conservation easements to preserve natural lands and waters.</li> </ul>

Regulatory or Non-Regulatory Mechanism	Responsible Agency	Description
Chapter 342D, HRS Water Pollution	DOH	-prohibits discharge of any pollutant into State waters -allows DOH to institute a civil action for injunctive relief to prevent violation of State water quality standards (§342D-11) -under the statute, DOH may request the court to order nonpoint source polluters to implement all required management measures

### C. Management Measure for Vegetated Treatment Systems

**Promote the use of engineered vegetated treatment systems such as constructed wetlands or vegetated filter strips where these systems will serve a significant nonpoint source pollution abatement function.**

#### Responsible Agencies and Authorities

This management measure is not being implemented on a regular and consistent basis in Hawaii. Engineered VTS and VFS may be used in site-specific cases, such as the development of water features on golf courses, to serve as retention and treatment basins for runoff.