

DEPARTMENT OF ENVIRONMENTAL QUALITY LAND USE GUIDELINES FOR ENVIRONMENTAL COMPLIANCE

This document is intended to supplement Department of Land Conservation and Development (DLCD) guidelines to local governments on Periodic Review. The information provided below will assist cities and counties that are updating comprehensive planning documents in compliance with DEQ rules to protect Oregon's environment. Each category includes a presentation of the relevant issue followed by recommendations for compliance through land use programs and plan updates. In addition, DEQ staff contacts are provided as a source for additional information and data.

DLCD administrative rule (OAR 660-30-005) allows for input from state agencies into the local government land use planning process. The purpose of this rule is to ensure that state agency rules and programs that affect land use are compatible with acknowledged city and county comprehensive plans. Rules or programs that affect land use include those referenced in the statewide planning goals and those that can reasonably be expected to have an effect on resources, objectives, or areas identified in the goals or in acknowledged comprehensive plans.

AIR QUALITY

Air Quality Control Areas:

Issue: Under the Clean Air Act, EPA identifies which areas "attain" the National Ambient Air Quality Standards (NAAQS) and which do not. Nonattainment areas, those that fail to meet the NAAQS for a given pollutant, must adopt an Air Quality Plan that describes measures that will be taken to reduce air pollution to an acceptable level. Once an area achieves the standard it must adopt a maintenance plan to demonstrate how it will maintain good air quality into the future. The air quality plans for nonattainment and maintenance areas become federally enforceable as part of the State Implementation Plan.

Nonattainment areas for particulate matter (PM10) include Eugene/Springfield, Grants Pass, Klamath Falls, La Grande, Medford-Ashland, Lakeview and Oakridge. Of these, Grants Pass and Klamath Falls have maintenance plans. Salem-Keizer is classified as nonattainment for both carbon monoxide and ozone. Areas with maintenance plans for carbon monoxide are Portland, Eugene-Springfield, Medford, Klamath Falls and Grants Pass. Portland is the only area with a maintenance plan for ozone.

Recommendations: The comprehensive plan should indicate if an area is in nonattainment or has a maintenance plan under the Clean Air Act. If it does, the land use plan should identify measures designated by the air quality plan to avoid conflicts or to potentially promote actions that might benefit both air quality and land use goals. The plan should also describe how individual jurisdictions within a multi-jurisdictional air quality control area cooperate to address air quality issues.

The jurisdiction should compare current population and traffic growth data and forecasts to the existing projections in the air quality plan. If there are significant differences, the data should be submitted to DEQ. For information contact Dave Nordberg at (503)229-5519.

Issue: The purpose of Goal 12 – Transportation is to reduce the reliance on the automobile by encouraging mixed-use pedestrian friendly environment. Automobiles are the largest source of air pollution for carbon monoxide, ozone and air toxic pollutants.

Recommendation: The plan should recognize Transportation Demand Management (TDM) strategies to reduce reliance on the automobile. TDM strategies may include, but not be limited to, mixed-use development, reduced automobile parking spaces, shared automobile parking, transit access (curb cut-outs, shelters, signage), pedestrian access (use of special paving materials, signage, link pedestrian access to other alternate modes of travel), bicycle lanes, bicycle parking, carpool parking.

For additional information contact Susan Christensen at (503)229-5518.

Class 1 Wilderness Areas and National Parks:

Issue: Air quality in Wilderness Areas and National Parks is given additional environmental protection under the Clean Air Act to preserve vistas. The Prevention of Significant Deterioration (PSD) provision of the Clean Air Act was established for this purpose.

Recommendation: The plan should acknowledge the jurisdiction's proximity to any designated class 1 areas and acknowledge that certain industries are subject to additional Prevention of Significant Deterioration air quality visibility criteria. The PSD criteria are applied in the permitting process to certain industries that have the potential to degrade air quality of a designated class 1 area. DEQ conducts computer modeling of proposed new air sources or changes to existing sources to determine if PSD criteria apply. In general certain new sources within 200 kilometers of a designated class 1 area, or further in distance based on the type of facility, fall under PSD requirements. That distance is sometimes farther for certain facilities. For further information contact Brian Finneran at (503)229-6278.

WATER QUALITY

The State planning goals help guide development in Oregon to encourage sound growth management that produces the least impact on resource lands such as agriculture (Goal 3) and forest lands (Goal 4). Other natural resource goals, such as Goal 5 (Open Spaces, Scenic and Historic Areas, and Natural Resources), Goal 6 (Air, Water, and Land Resources Quality) and Goal 7 (Areas subject to Natural Disasters and Hazards) require local communities through their comprehensive land use plans and implementing ordinances, to allow land use development and activities that produce the least impact on the State's natural resources and environmental quality.

Goal 6 is the only non-coastal resource goal that does not have administrative rules or guidelines developed for implementation. Due to this, DLCD has looked to local governments and DEQ to ensure its compliance. It is important to understand the impacts that land development has on both surface and groundwater quality. It is equally important that Goals 5, 6, and 7 be integrated in a manner that mitigates water quality concerns. If sensitive water features such as wetlands, streams, riparian areas, seeps are destroyed, both the beneficial uses and water quality and quantity are impacted. Locating development away from these sensitive features will save local communities much in stormwater quantity and quality control and maintenance cost. The local site plan review at the local level is critical to protecting water quality.

The Federal clean Water Act, Safe Drinking Water Act and in part the Federal Endangered Species Act (4d Rule) provide some regulatory control over development impacts on water quality. However, there are many impacts that are not covered and can only be controlled at the local level.

Groundwater Resource:

Issue: Oregon has adopted a state goal to prevent contamination of groundwater resources while striving to conserve and restore the resource and to maintain the high quality of groundwater for present and future uses. Groundwater resources in Oregon provide public and private drinking water, industrial and agricultural water supplies, and provide base flow for rivers, lakes, streams and wetlands. Groundwater is the primary source of drinking water in Oregon for about 70% of all state residents and over 90% of rural residents. The majority of rural residents are supplied by small private wells. The Oregon Water Resources Department maintains a database of the location and construction of public and private water supply wells that is available on-line at:

<http://www.wrd.state.or.us/groundwater/index.shtml> .

Groundwater resources may be susceptible to contamination from land uses on the surface. Susceptibility is based on many factors including physical characteristics of near surface materials (i.e., soil or rock type, permeability, porosity and absorption potential), depth to groundwater, and the presence of potential contaminant sources. Shallow groundwater, less than 100 feet below the surface in materials such as sand or gravel, are especially vulnerable to pollution from overlying land uses. For example, a

surface spill of hazardous material may quickly penetrate downward through permeable sand and gravel deposits and very quickly contaminate underlying groundwater. Other potential sources of contamination include wastewater discharges, over-application of fertilizer or pesticides on agricultural and/forest lands, or large numbers of septic systems handling residential sewage.

In some areas of the state, DEQ may have information regarding groundwater quality. DEQ has conducted 45 groundwater quality assessments since 1980. A summary of information from these assessments is presented in a report to the Legislature prepared for each legislative session. The reports from 1999 and 2001 are available from DEQ or on-line at:

<http://www.deq.state.or.us/wq/groundwa/wqgw.htm>. For more detail about groundwater quality investigations in your county, contact Karla Urbanowicz, Groundwater Program Coordinator, at (503)229-6099.

Recommendation: The plan should identify the location of groundwater resources that are vulnerable to pollution from overlying land uses and note potential sources of pollution. Discuss the proposed pollution prevention program including changes in land use, zoning, density, and permitting requirements. Questions can be directed to Karla Urbanowicz at 503-229-6099.

Groundwater Management Areas:

Issue: Data from DEQ's groundwater assessment program are used to identify area-wide groundwater contamination problems. DEQ is required by the 1989 Groundwater Protection Act to declare a Groundwater Management Area (GWMA) when area-wide groundwater contamination is found that is the result at least in part from nonpoint activities. When a GWMA is declared, state agencies and a local committee work together to develop and implement an action plan to reduce groundwater contamination originating from point and nonpoint source pollution in the area. The action plan may require amendments to comprehensive plans and land use regulations to address the identified groundwater protection and management concerns.

A Groundwater Area of Concern (AOC) may also be declared and managed locally in areas with widespread nonpoint source contamination where the contamination has not yet reached high concentrations. The procedures for GWMA and AOC declaration and response are outlined in ORS 468B.175 through 468B.188.

Oregon currently has two GWMAs: the Northern Malheur County Groundwater Management Area and the Lower Umatilla Basin Groundwater Management Area. Information about these areas and implementation of the GWMA Action Plans can be obtained from Phil Richersen at 541-278-4604. The action plans for these areas are available from DEQ or on-line at:

<http://www.deq.state.or.us/wq/groundwa/wqgw.htm>. DEQ is currently assessing area-wide groundwater contamination in the southern Willamette Valley to determine if declaration of a GWMA is warranted.

Recommendation: The land use plan should recognize groundwater management areas and map them along with the boundaries of groundwater aquifers that are susceptible to contamination. The plan needs to address any land use components of the local action plan and planned efforts to mitigate further groundwater quality problems. For information on GWMAs call Karla Urbanowicz at (503)229-6099.

Wellhead Protection Areas:

Issue: Wellhead Protection is designed to protect groundwater resources that provide drinking water via public water supply wells. This program originated from the 1986 Federal Safe Drinking Water Act and is referenced in the Oregon Groundwater Protection Act of 1989. Oregon DEQ administers the Oregon Drinking Water Program. The Oregon Department of Human Services (DHS) also provides technical assistance and delineates the source area for the public water supply well(s) or spring(s). Questions about the delineations should be directed to Dennis Nelson at DHS at (503)726-2587.

Jurisdictions need to protect the quality of the groundwater that supplies their public water system. It is extremely expensive to treat contaminated drinking water or to find an alternative source should a water supply be lost because of contamination. It will continue to be more and more difficult to find funding to address contamination of these water supplies. The cost and burden of treating or replacing the contaminated water supply will generally fall to the local community. To reduce the risk of contamination, a jurisdiction can determine the land surface area where their drinking water originates, what kind and how many potential contamination sources are within that area, and develop a management approach to reduce the risks of groundwater from those sources.

This is a voluntary program in Oregon, which each community can choose to participate in. There are no requirements associated with land use for most of the communities in Oregon. However, for public water systems which serve more than 10,000 or have more than 3000 service connections, there are some land use requirements to be aware of. If the community chooses to acknowledge its wellhead protection area and the delineation is certified by DHS, the wellhead protection area will become a Goal 5 Resource to be addressed under the land use program. Those communities will need to incorporate land use planning elements into their land use plan that protects the groundwater resource in the wellhead protection area. A DEQ-certified Wellhead Protection Plan will automatically serve to address any Goal 5 protection requirements. A detailed guidance manual for how to develop a protection plan is available from DEQ by calling Sheree Stewart at (503)229-5413. More information on the land use planning requirements can be obtained from Doug White at the Department of Land Conservation and Development at (503)373-0050, ext. 240.

Jurisdictions need to also carefully plan the location of future public supply wells in relation to potential and known areas of groundwater pollution, areas of known or suspected contamination, and sites noted on the DEQ Environmental Cleanup Site Discovery list. Locating public water supply wells in or adjacent to areas of known pollution problems is not advised. The pollution plume from a contaminated site can travel with groundwater across property boundaries where it can be pumped to the surface by water supply wells. Land uses surrounding these wells and their recharge areas should be designated to protect this natural resource. For example, depending on local conditions, industrial land uses are generally incompatible with groundwater recharge areas. It is strongly suggested that new public water supply wells and wellfields not be located near areas with known groundwater quality problems.

Recommendation: The plan should include a list of public water suppliers who use groundwater as a drinking water source. A list of suppliers by county is available through Dennis Nelson of DHS at (503)-731-4010. The location of public water supply wells should be identified on a map and designated as a 1B resource under Goal 5. Jurisdictions with delineated wellhead protection areas, approved by DHS, should discuss them in the plan. Significant (larger) jurisdictions will need to indicate how they intend to address the land use elements associated with wellhead protection.

The plan should include a discussion of drinking water sources located in the jurisdiction and any water quality problems identified by the DHS or DEQ. The plan should note how the jurisdiction will mitigate or prevent groundwater quality problems within their wellhead protection areas. Information on recommended drinking water source protection options, as well as more information about Wellhead Protection, are available from DEQ by calling Sheree Stewart at (503)229-5413.

Stormwater and Flooding Management:

Issue: Oregon has recently experienced rapid growth which, when coupled with heavy rainfall, has led to flooding event in 1996 and 1997. Developed land increases the amount of runoff being discharged to streams over open land. In addition, upstream development has been allowed to occur without regard for existing downstream land owners, creating expensive downstream cumulative impacts and water quality concerns.

Problems identified by the Governor's Interagency Hazard Mitigation Team include constrictions in stream flow paths, (older bridges, use of box cars as private bridges, culverts that decrease in size downstream instead of increase, improperly located dams, ponds and retention facilities, landslides associated with logging, road building and development allowed on steep slopes, improper development allowed in flood plains, inadequately maintained and designed levees, and inadequately sized stormwater facilities). Additionally, inadequate erosion and sediment controls allow accelerated rates of deposition in wetlands, streams, rivers, lakes and drainage facilities. Many jurisdictions do not comply with floodplain ordinances or utilize information about basic stream hydrology. There should be setback requirements near watercourses new residential construction should not be allowed in floodways.

Until recently, stormwater management planning was based on flood control objectives. However, the need to control the quality of stormwater has become more important due to its impact (degradation) on surface and groundwater resources. Overall planning objectives need to focus on the identification of solutions that balance water quality, natural resource protection and flood control. Planning is needed at a regional level with potential down stream impacts identified early on. Management strategies need to meet a number of objectives including water quality enhancement, groundwater recharge, wildlife habitat, wetland creation, erosion/sediment control, and the creation of open spaces for fish habitat and recreation. Designs should incorporate use of natural features (drainage ways, depressions, wetlands, floodplains, groundwater recharge zones and vegetation), which will maximize the economic and environmental benefits, particularly in combination with open space and recreational needs.

Development in general increases peak stream flows, the duration of high flows, stormwater runoff volumes and creates seasonal flow shifts. This creates ecological and economic impacts such as increased flooding and storm erosion, degraded aquatic habitat and water quality and can result in loss of local flora and fauna species. According to USGS studies, there is a strong correlation between the size of the flood peaks and the available basin storage. Natural wetlands and side channels act as storage areas during flood events, allowing the water to spread out. This temporary storage decreases the runoff velocity, reduces flood peaks, and distributes stormwater flow over longer periods of time causing tributaries and main channels to peak at different times. Continued loss of upland or upstream wetlands, side channels, meanders and flood plains over time exacerbates the situation. USGS studies have found that basins with 30% areal coverage in lakes, side channels or wetlands have flood peaks 60 to 80% lower than basins with little storage.

Pollutants associated with stormwater runoff include: toxic heavy metals (cadmium, chromium, copper, lead, nickel and zinc), toxic organics (gasoline, oils, wood preservatives), nutrients (nitrates and phosphorus), pesticides (municipal and residential use), PAH (organic associated with industrial sites in sandy soils and high water table), other metals (aluminum, manganese, iron), salts, and micro-organisms (viruses and bacteria). About 70% of the toxic metals will bind to sediments and the remainder stays in the water column. Bioaccumulation and long term exposure from contaminated sediments is of concern when sediments are deposited downstream in the slower portion of streams, rivers and in lakes, wetlands and estuaries.

Previous EPA studies found that the primary area of concern is industrial land, followed by commercial and residential lands. However, recent studies have found urban hot spots exist which produce significantly higher loadings of hydrocarbons and metals than other areas. Urban hot spots are linked to locations where vehicles are fueled, serviced, and parked. Identified land uses include gas stations, bus depots, fire stations, vehicle maintenance, salvage yards, long term commuter parking lots, and high use short term parking lots associated with fast food outlets and convenience stores. Other areas of concern include heavily used roads, which generate a disproportionate amount of total runoff volume and are often directly connected to the drainage system.

In compliance with the EPA Phase I and now Phase II Stormwater program, DEQ has developed an NPDES construction erosion control permit. This permit is required for construction activities, including clearing, grading, and excavation, that disturb one or more acres.

Recommendations: Cities and counties need to develop comprehensive water management plans that integrate flood control, erosion control, stormwater control including treatment, nonpoint source pollution prevention, groundwater and source water protection, while protecting sensitive natural resources areas such as wetlands, riparian areas, water quality limited streams and salmonid habitat. Jurisdictions should promote reclamation or construction of wetlands, riparian protection and restoration, remove floodplain development allowing streams room to meander, reconnect side channels or build detention stormwater/treatment basins for flood control and water quality enhancement. Wetlands are the most effective form of flood control and can be cheaper to create and maintain than dikes, levees or reservoirs. Vegetation removal increases erosion loss in the floodplain. Failure to understand the dynamics of waterways in zoning, facility planning and development has resulted in damage to public lands and conflicts which need to be addressed in watershed planning. Floodplain hazard and hydrology flow studies need to be done for all proposed developments, otherwise they can impact both upstream (if they act as a constriction) and downstream residents. DEQ recommends hydrology studies be done for new developments ½ mile upstream and 1 mile downstream to protect existing downstream residents. Additional discharges from seeps, springs, on-site systems and stormwater in unstable slopes can trigger landslides.

The DEQ/DLCD Water Quality Model Code and Guidebook should be used by all jurisdictions to comply with Goal 6. For example, erosion sediment control ordinances (ESC) need to be integrated to achieve stream protection during construction and to protect water quality. Suggested resources related to construction practices, practical pollution prevention tips, best management practices, and design suggestions include: 1) Watershed Protection Technique Bulletins published by the Center for Watershed Protection at (301) 589-1890 or www.pipeline.com/~mrrunoff on the internet for a review; 2) the Puget Sound Stormwater Management Manual; 3) King County Washington's Surface Water Management Plan; 4) City of Portland Clean Water Services; and (5) Coastal Nonpoint Source Pollution Control Program Management Measures. For more information contact Don Yon at (503)229-5076 or Kevin Masterson at (503)229-5615.

Underground Injection Control (UIC) Program:

Issue: The Federal UIC program is regulated under the Safe Drinking Water Act (SWDA). Oregon's UIC program has been in operation since 1984. DEQ updated its rules in 2001 to reflect EPA's 1999 rule revisions and to correct deficiencies in the existing program. The intent of the program is to protect groundwater drinking water sources from pollution associated with untreated discharge into the ground. There are thirty types of Class V injection systems. The main types in Oregon are: stormwater discharge, automotive drains, large onsite systems, process and waste water discharges, untreated sewage (cesspools and drill holes), dewatering, cooling water returns, geothermal systems (open and closed loop), aquifer recharge, grey water, and aquifer remediation. Class V injection wells are becoming a nationwide concern because of the growing numbers of groundwater aquifers that are becoming contaminated due to polluted discharges associated with the use of catch basins with sumps, french drains and dry wells for infiltration. Auto drains in buildings, cesspools, and the use of agricultural injections are illegal in Oregon.

Prior to use, all owners of new and existing injection systems are required to register their injection systems with the DEQ. Inventory information is required to determine if the system complies with DEQ OAR 340-044 administrative rules. If an injection system is an illegal type or in a contaminated area, it is closed. If an injection system can not meet the rule requirements, the owner needs to apply for a State discharge permit (WPCF). Generally grey water, dewatering, aquifer recharge (ASR), and geothermal systems generally meet the rule requirements because they rarely impact groundwater above background (SWDA standards). All others are reviewed on a case by case basis.

Recommendations: Cities and counties need to be aware of these rules in cases where the jurisdiction owns and operates injection systems. Many jurisdictions have yet to register their UICs. In addition to understanding the State's UIC program, cities and counties also need to be knowledgeable of their area's hydrogeology and groundwater quality. In areas where there are groundwater issues, such as delineated wellhead protection areas or a high water table, some local governments have opted to locally regulate UICs. Local regulation may involve a ban on UICs or may require or encourage additional treatment before discharge. Cities and counties should remind developers of the State UIC rules during any local development reviews. Local stormwater guidelines should be updated to note the new rules. Any questions on DEQ's UIC program can be directed to Barbara Priest at (503)-229-5945. Contacts for DEQ wellhead protection and groundwater management area programs are listed in those sections of this guidance. There is also information on the UIC website at www.deq.state.or.us/wq/groundwa/uichome.htm .

Water Quality Limited (WQL) Streams (Potential or Designated)

Issue: Rivers, streams, and other waterbodies provide water for municipalities, industry, recreation, agriculture, salmonid habitat and wildlife. DEQ is responsible for setting limits on all pollutants entering a waterbody under the Federal Clean Water Act of 1972. On a biennial basis, DEQ must submit to EPA a list of waterbodies (303d) that do not meet water quality standards, even after best available technology is applied to wastewater discharges. Data is compiled from federal, state and local data bases for listings and waterbodies listed are designated as Water Quality Limited (WQL).

While great progress has been made over the last two decades to reduce pollution from industrial sources, Oregon's surface and groundwater quality is under constant threat from an increased population, recreation, development, forestry, agriculture, urban runoff and destruction of streamside habitat. Once polluted, surface and groundwater is very difficult to clean up, taking years to restore to within water quality standards. New or increased discharges of any 303(d) listed pollutants are not permitted. By recognizing the types of land uses or practices associated with specific pollutants planners may be required to modify some aspects of their development or activities in order to eliminate or at least greatly reduce anticipated water quality impacts.

Following the development of the State's 303 (d) list, DEQ is required, by the CWA, to establish total maximum daily loads, or TMDLS, for these listed waterbodies. TMDLs allocate acceptable "loads" of pollutants such as temperature, sedimentation, turbidity, toxics, and others on the 303 (d) list. In rare cases, TMDLs may allow additional loading of pollutants. In most cases, reductions of pollutants are required. TMDLs are being established for the 91 sub-basins in Oregon on a 10 year schedule. The 303(d) listing prioritization process can be viewed on the Internet at: <http://www.deq.state.or.us/wq/303dlist/PriorityProcess98.htm> .

In developing TMDLs, DEQ coordinates with designated management agencies (DMAs) that are responsible for developing TMDL implementation plans that will achieve the TMDL targets. Management plans and DMAs include: the Forest Practices Act best management practices (BMPs) for state and private forest lands, administered by the Oregon Department of Forestry; agricultural water quality management plans for agricultural land administered by the Oregon Department of Agriculture; urban and non-point source (SB 1010) plans developed by local governments; TMDL implementation plans for federal lands, administered by federal agencies (e.g. USFS and BLM); and discharge permit modifications for industries and cities.

TMDLs are set for the following parameters: aquatic weeds/algae, bacteria (fecal coliform and E. Coli), biological criteria, chlorophyll, dissolved oxygen, habitat modification, flow modification, nutrients, pH, sedimentation, temperature, total dissolved gas, toxics, and turbidity. These parameters are used to identify impaired beneficial uses of the water body, a more complete discussion of these parameters can be found in the 1998 and proposed 2002 303(d) list and criteria for listing waterbodies.

The WQL listed waterbodies have been prioritized and DEQ has already completed many TMDLs and management strategies for the listed waterbodies according to the schedule which can be viewed at: <http://www.deq.state.or.us/wq/303dlist/TMDLTargetsMap.htm>. Sub-basin TMDL documents may include load allocations for one or more pollutants for specified waterbodies. Due to the number of WQL waters, DEQ will focus available grant funds in basins with approved TMDLs and those ranking high on the priority list. DEQ has successfully encouraged local watersheds to voluntarily prepare management plans for 23 basins and segments. This information can be accessed at: <http://www.deq.state.or.us/wq/TMDLs/ApprovedTMDLs.htm>.

Recommendation: Under Goals 5 & 6, the local comprehensive plan and zoning ordinances should be revised using the DEQ/DLCD Water Quality Model Code and Guidebook, and the yet-to-be prepared "Urban TMDL Implementation Plan Guidance for Local Governments. The latter will be completed around the end of 2002. The TMDL plan will need to identify how the load allocations will be met. Land use planners should note the types of water quality problems cited in their area for the parameters listed above. For example: Sediment: If sediment is a problem then local governments should require erosion controls for upgrades of existing and new developments, including construction activities and runoff from the completed project. Each site should be required to implement more stringent erosion control plans. Wherever possible, new development should provide treatment of the runoff that will be generated by that development. If exceptions are granted for a specific site, there must be assurance that an equivalent amount of pollution will be removed elsewhere in the basin. Replanting of native vegetation and trees is critical once development has occurred.

The land use plan should include provisions to minimize the amount of exposed soil during site development or other earth disturbing activities. The site should be designed and constructed to reduce runoff by limiting impervious surfaces. Runoff that is generated should be directed to vegetated swales or vegetation retention/treatment ponds to encourage infiltration. Stormwater runoff must be treated prior to discharge to waters of the state. A vegetated buffer (potential tree height) should be required between development and all streams, wetlands, ponds, and other waterbodies. Vegetation (such as low growing grasses) and trees should be maintained in all roadside ditches, effectively converting them into vegetated swales. This practice will remove sediments as the rate of runoff is reduced. Other practices that could be employed include the use of bio-engineering, barbs weirs, jetties and as last resort, riprap for erosion problems.

Fecal coliform is usually associated with untreated stormwater discharges in urban and rural areas, inappropriate densities of septic tanks or failing septic systems, and rural grazing practices. These discharges can create a health problem for downstream drinking water users, contract recreational sports (boating and swimming), shellfish propagation, irrigators and commercial users. If fecal coliform is a problem, land use planners may want to review the density requirements for septic systems, and require stormwater runoff treatment in urban areas, or the upgrade to sewers.

Temperature problems relate to a variety of changes to waterbodies from flow modifications such as dams/diversions, removal of woody debris or tree cover, channel widening (caused by erosion), as well as industrial discharges and loss of riparian habitat. Temperature changes can limit the types of plants, fish and wildlife found in a given area. Riparian protection and tree preservation ordinances, limiting the removal of natural native plants and trees or requiring replanting after development can assist in limiting temperature changes.

The city or county DMA must prepare an urban TMDL implementation plan. The local comprehensive plan needs to list local WQL or TMDL waterbodies and map them with an overlay of existing zoning and available land for development. The plan should identify pollution prevention strategies and commit the local government to participation in the TMDL process. For information on the 303 (d) list contact Marilyn Fonseca at (503)229-6804, and for information on Best Management Practices contact Don Yon at (503)229-5076.

Wetland and Riparian Protection (Water Quality Certification)

Issue: Natural wetlands are protected waters of the state under the Clean Water Act. In Oregon, wetlands cover little more than 2% of the state or between 1.2 to 1.5 million acres. Certification is required of any applicant applying for a federal license or permit to conduct any activity, including but not limited to the construction or operation of facilities that may result in any discharge to waters of the state.

Wetlands exist in areas with high water tables and act as natural reservoirs while recharging groundwater and can seasonally discharge cool water to surface water. Wetlands and streamside (riparian) areas: function as a natural filtering system to improve water quality; are used as spawning and nurseries for fisheries; provide critical habitat for wildlife and birds; reduce soil erosion; mitigate storm damage and flooding; recharge local groundwater supplies; and, provide a unique ecological resource supporting an incredible diversity of life. Wetlands and riparian areas also provide opportunities for recreational activities such as boating, hiking, hunting, fishing, and bird-watching. Approximately 1/3 of the nations threatened and endangered species live in wetland areas.

DEQ's role regarding wetlands, riparian and in-stream work is to protect water quality and existing associated beneficial uses pursuant to Section 401 of the Clean Water Act. This mandate applies to the State's hydrologically connected groundwater, wetlands, estuaries and surface waters of Oregon. Groundwater is also protected under the Safe Drinking Water Act and Oregon's Groundwater Act. Natural wetlands or those created to replace existing wetlands as mitigation cannot be used for stormwater treatment or to discharge polluted water. The purpose of the 401 program is to protect and maintain the remaining wetland and riparian resources in Oregon from development impacts by directing growth away from these fragile resources to more appropriate locations. When development impacts are unavoidable, mitigation is required, usually within the same basin. Stormwater discharges to wetland or riparian areas in water quality limited basins may require treatment prior to discharge.

Review and evaluation of projects pursuant to Section 401 Water Quality Certification is concurrent with the Federal 404 permitting process under the Clean Water Act administered by the US Army Corps of Engineers, and with the Division of State Lands (DSL) Removal/Fill program. Conditions applied to 401 Certification address water quality standards (for instance, anti-degradation and water quality limited streams), beneficial uses, impacts to groundwater resources, and threatened and endangered species. The conditions can be site or land use specific to prevent pollution.

Existing water quality standards and state regulations (OAR 340-048) currently do not contain wetland/riparian-specific language. DEQ is beginning the process of revising rules and preparing preliminary draft guidelines for developers. These guidelines will be applicable to all activities, projects, developments proposed in wetland/riparian areas.

Recommendation: Land Use Planning Goal 5 requires wetland and riparian inventories and the development of programs to achieve the goal. Wetland planning can help achieve water quality protection as well as minimize regulatory conflicts. Jurisdictions should contact DSL for technical and financial assistance with wetland planning, and coordinate wetland/riparian inventories with stormwater master planning efforts.

Questions relating to DEQ's wetland/riparian responsibilities can be directed to Tom Melville at 229-5845. Information on the wetland planning program can be obtained from Dana Field with DSL at 378-3805, extension 238.

Lakes:

Issue: There are over 6,000 lakes in Oregon ranging in size from 1 acre up to 90,000 acres. They have been divided into categories called "ecoregions" based on location and physical characteristics. Data is available on lake water quality through the Environmental Protection Agency's Clean Lakes Program.

Additional studies have been conducted by the U.S. Forest Service and the Army Corp of Engineers. Development, recreational uses, nuisance weed growth, bacteria, and nutrient loading, are among the threats to lake water quality. TMDLs have been established for Oswego Lake, Garrison Lake, and Clear Lake. (See discussion under TMDL Recommendations).

Recommendation: The plan should include an inventory of lakes in your jurisdiction. Indicate lakes with water quality problems, and develop strategies for pollution prevention for the urban TMDL implementation plan, Drinking Water Plan, and Stormwater Plan. A full inventory of water quality problems related to lakes is available from DEQ in the biennial water quality (305B) report, for a copy of this report contact Marilyn Fonseca at (503)229-6804. For information on DEQ's Clean Lake program contact Don Yon at (503)229-5076.

Estuaries:

Issue: Estuaries are found where river systems meet the ocean and interact with tidal flow. These highly productive biological areas provide spawning, nursery, and rearing habitat for a variety of wildlife including many of Oregon's fish and shellfish resources. These areas are subjected to pollution from the immediate shoreline, upstream sources and in some cases, from contaminated groundwater. Excess nutrients, bacteria, sediment, and toxic contaminants, often degrade estuarine water quality and diminish estuarine resources.

Marinas, houseboats, liveaboards, and shipyards, can contribute bacteria, nutrients, heavy metals, and toxic contaminants. Bacteria and nutrients can also be contributed from farms, confined animal feeding operations, on-site septic systems, waste treatment plants, urban storm runoff and combined sewer overflows (CSOs).

Activities such as forest management and logging, recreational off-road vehicle use, and in-stream mining can contribute pesticides and heavy sediment loads which can damage estuarine habitat and effect navigation. Other sources of toxic contaminants include municipal and industrial discharges, CSOs, and stormwater runoff from industry and urban development areas.

Recommendation: Estuaries are fragile ecosystems that can be easily impacted by adjacent and upstream land uses and activities. A comprehensive planning approach is required to address the various sources of pollution problems found in estuarine environments. The unique attributes of estuaries may warrant implementation of a protective overlay zone requiring additional review of development and land use proposals. Examples are the Tillamook and Lower Columbia river Estuary Management Plans.

Water quality problems in estuaries result from many different sources including; non-point sources, septic tank failures, TMDLs, wastewater treatment plant discharges and groundwater issues. For requirements related to stormwater management, contact Kevin Masterson at (503)229-5615.

Nonpoint Source Planning:

Issue: Nonpoint pollution has received increased attention based on recognition of the pollution loads contributed to the environment from these sources. Sources of non-point pollution include agriculture, forestry, toxics, organics, on-site septic systems, and urban runoff that discharge pollution in the form of suspended solids, sediments, and nutrients. These pollutants enter surface water and groundwater in a diffuse manner and can affect water quality and impact beneficial uses.

Recommendation: Coastal communities need to address water quality nonpoint source (NPS) control requirements stemming from Section 6217 of the Coastal Zone Management Act. All areas and land uses in the coastal zone will be required to control NPS pollution. This will be accomplished through application of enforceable management measures, including, where appropriate, local land use plan implementing ordinances. Since all urban areas on the coast are in water quality limited basins, an urban

TMDL implementation plans will be required of DMAs. The comprehensive plan and zoning ordinances will need to be updated to identify how the pollutant load allocation will be met.

All plans should discuss land use contributions to nonpoint sources of pollution as described by DEQ's Water Quality Model Code & Guidebook and (soon-to-be-available) Urban TMDL Implementation Plan Guidance. Provisions in the plan should be made for mitigation of NPS pollution. Plans should address control of potential water quality nonpoint source impacts originating from construction sites and activities in riparian zones. Information may be obtained from Don Yon at (503)229-5076. For coastal communities additional information is available from Amanda Punton at DLCD's Coastal Management Program, (503)731-4065, ex. 32.

Oil Spill Contingency Planning:

Issue: The Northwest Area Contingency Plan (NWACP) satisfies the requirements in Oregon Revised Statutes (ORS) 466.620 and 468B.495-500 as the State's oil and hazardous materials emergency response plan. In accordance with ORS 468B.345, certain facilities (including liquid petroleum pipelines) and vessels may not operate in the State without an approved oil spill prevention and emergency response plan.

Recommendation: The DEQ suggests that comprehensive plans recognize state and local responsibilities regarding oil and hazardous material spill planning and response. Cities and counties are encouraged to participate in the spill planning process. Plans should acknowledge that all spills or releases of a reportable quantity of oil or hazardous substances must be reported by the spiller to the Oregon Emergency Response System (OERS) at 800-452-0311 or 800-oils-911. OERS will notify DEQ. The responsible party must clean up the spill or release.

Septic Tank Systems:

Issue: On-site sewage systems are a residential technology approach to the treatment and disposal of sewage wastewaters. Specific soil and site criteria are necessary for these systems to function effectively. Residential properties that are less than approximately one-half acre in size may be inappropriate for on-site sewage systems because of public health and environmental concerns.

Recommendation: The plan should address the need for public sewerage facilities when development densities exceed two dwellings units (or equivalent) per acre, or when soil and site conditions prevent the use of on-site sewage treatment and disposal systems. Information regarding on-site sewage system failures is available from the DEQ, contact Uri Papish at (503)229-5013.

Wastewater Treatment Systems:

Issue:

The DEQ is responsible for regulating "domestic" wastewater treatment facilities, which operate under either a National Pollutant Discharge Elimination System (NPDES) permit, or a Water Pollution Control Facilities (WPCF) permit. A domestic wastewater treatment facility primarily treats human sewage, but may also treat other wastewaters generated from residential, commercial and industrial activities. Although technology-based permit limits are still being incorporated into domestic wastewater permits, emphasis is now shifting toward water quality based permits. Permittees are expected to evaluate the impact of discharges on streams and to consider alternatives to discharges. As flows increase, the Department will expect the permittee to improve treatment efficiencies, so there is no net increase in waste loads discharged.

Goal 11 Recommendations: Jurisdictions should evaluate their land use plans with respect for the need to extend and provide public sewerage where smaller or less efficient wastewater treatment facilities may have limited capabilities for providing adequate service. If a facility is at or nearing capacity, or if water quality limits are not being met, consideration should be given to how water quality based standards will be satisfied through facility modification or upgrade. Non-discharge alternatives may be considered

which would include the use of treated effluent for beneficial purposes such as land irrigation. The DEQ contact for information on wastewater treatment is Judy Johndol at (503)229-6896 or Ranei Nomura at (503)229-5657.

LAND QUALITY

Landfills:

Issue: The capacity of the existing waste disposal site should be examined in relation to its ability to meet the demands of projected growth in waste generation and disposal as well as residential population, business, and industry growth.

Recommendation: An analysis of future long term solid waste disposal options should be included in the plan. The analysis should consider the impact of the Federal RCRA Subtitle D requirements on landfill operations. Jurisdictions should work together to evaluate near and long term disposal needs and options, including costs. The goal is to provide a fair and equitable system of waste management to everyone in the county. It is important to consider the impact of recycling, reuse and waste prevention programs on future disposal needs. For additional information from DEQ contact the DEQ region office for your area: Dave Kunz, Northwest Region at (503)229-5061, Bob Barrows, Western Region at (541)686-7838, and Bruce Lumper, Eastern Region at (541)298-7255, ext. 40.

Solid Waste Collection and Disposal:

Issue: Certain materials such as used oil, lead-acid batteries, vehicle bodies, large appliances, and waste tires are banned by statute from solid waste disposal sites. In addition to the materials that are statutorily banned it is also important to have a safe management strategy for household hazardous wastes.

Recommendation: The plan should address alternatives for handling these materials such as recycling and waste prevention. An example would be a collection and temporary storage area for waste tires at the local landfill, with provisions for periodic removal by a waste tire carrier to a processor or recycler.

It is also suggested that the plan include a policy to encourage alternatives to disposal of household hazardous waste in solid waste disposal sites and sewage facilities, such as waste prevention strategies and collection facilities. There should be a discussion on how "special wastes" may be disposed of, such as septic, infectious wastes, asbestos, waste tires, etc. It may be appropriate to include these in the land use plan if there is no separate solid waste plan or if the plan does not address special wastes.

Questions can be directed to DEQ region staff: Dave Kunz, (503)229-5061 for Northwest Region; Bob Barrows (541)686-7838 for Western Region; and Bruce Lumper (541) 388-6146 ex 228 for Eastern Region.

Hazardous Substance Cleanup Sites (Existing and Potential)

Issue: One of the DEQ's goals is to identify and clean up sites contaminated with hazardous wastes, petroleum products, and other toxic substances. These tasks are the responsibility of DEQ's Cleanup Program, which is part of the agency's Land Quality Division. Identification of potentially contaminated sites is a key step in the process of ensuring protection of public health and the environment, and this step is complicated by the fact that in many cases state law does not require reporting of past releases of petroleum from underground storage tanks as well as hazardous substance spills.

DEQ relies on citizens, local government, and other outside parties to report known or suspected contamination that DEQ may not be aware of. Contacting DEQ is particularly important at potentially contaminated sites that are proposed for redevelopment, especially if new uses include conversion to residential uses.

Recommendation:

1. Despite the lack of a reporting requirement mentioned above, DEQ is aware of many sites with known or suspected contamination. Local governments should be aware of such sites within their jurisdictions,

and know how to obtain information about them. This is especially relevant during periodic review of comprehensive land use plans. Site summaries from DEQ's Environmental Cleanup Site Information (ECSI) and Leaking Underground Storage Tank (LUST) data bases are available on the Internet:

ECSI: <http://www.deq.state.or.us/wmc/ECSE/ecsiquery.htm>

LUST: <http://www.deq.state.or.us/wmc/tank/LustPublicLookup.asp>

2. DEQ would like to learn about potentially contaminated sites it doesn't know about, but that are know to local governments. As such, DEQ asks local government to contact DEQ if they have information about releases of hazardous substances that are not on the preceding list, or if local governments have additional information about sites that are currently listed. In these cases, please contact Cleanup Program staff in regional DEQ offices.

3. In promoting redevelopment opportunities, local governments may be interested in grants or other assistance to address hazardous substance releases that may be hindering redevelopment. For additional information about these "brownfield" opportunities available on the Internet at:

Brownfields: <http://www.deq.state.or.us/wmc/cleanup/brn0.htm>

For further information about whom to contact at DEQ about contaminated sites, call DEQ's Land Quality Division at (503)229-5913.