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Aggregate Resources in Oregon

Policy Briefing Memo

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Background:

Aggregate resources – the sand, gravel, and crushed rock used to construct roads, foundations, buildings and other infrastructure – play a vital role in many aspects of Oregon's economy. For planning purposes, Oregon's administrative rules define aggregate resources as "naturally occurring concentrations of stone, rock, sand and gravel, decomposed granite, lime, pumice, cinders and other naturally occurring solid materials used in road building" (*OAR 660-023-0180(1)(a)*).

Aggregate mining involves two activities: extraction of the resource and processing the material for its intended use. The two main forms of aggregate mines are the gravel pit and the quarry. In general, gravel pits produce sand and gravel and quarries produce crushed rock. Gravel pits are generally found at lower elevations and in floodplain areas while quarries are the more common form of aggregate mine at higher elevations. Aggregate extraction is a form of surface mining where soil and overburden are removed to provide access to the resource. After the mining is completed, state regulations require reclamation for most sites to second uses determined by the local land use authority, which include lakes, wildlife habitat, wetlands, farm lands, parks, and industrial development.

Most aggregate in Oregon comes from privately owned upland gravel pits and quarries. Consolidation among the industry in western Oregon has resulted in fewer companies than in the past producing larger volumes of material. Mines owned by state and local governments are also important sources of aggregate, especially for local road projects, but produce only a small percentage of the state's resource. In western Oregon, the majority of sand and gravel extracted comes from floodplain gravel pits. With increased measures to protect salmon and steelhead habitat, only about 8% of the total aggregate produced in Oregon is currently taken from rivers and streams. On average, crushed quarry rock is used more than sand and gravel to meet demand for aggregate materials in Oregon. Generally, aggregate resources are used locally as the cost of transportation is expensive.

Regulations:

The Department of State Lands (DSL) regulates removal of aggregate from instream sources under Oregon's Fill-Removal Law (*ORS 196.800-990*), which requires a permit for the

removal (or fill) of 50 cubic yards or more of material from waters of the state. In waters designated as Essential Salmon Habitat, DSL regulates the removal by motorized means of any amount of material. As of March 2007, there are 49 active state permits for commercial gravel extraction from state waters authorizing the removal of 8,042,565 cubic yards of material.

The Department of Geology and Mineral Industries (DOGAMI) is the lead state regulatory agency for floodplain and upland mining and reclamation. The agency's authority extends from the edge of the stream to the top of the ridge. Operation and reclamation permits are required to prevent off-site impacts during mining and to insure that reclamation is completed based on the secondary beneficial use established by the land use authority. A draft permit is circulated to pertinent natural resource agencies and the land use authority.

The Department of Environmental Quality (DEQ) reviews permits for compliance with state water quality standards. Under Section 401 of the Clean Water Act, DEQ reviews projects requiring a federal permit or license that may result in discharge to waters of the state, and issues either a certification or denial based on compliance with state water quality standards and programs. Many upland mines and processing facilities require NPDES permits for either stormwater or process water discharges into waters of the state. DOGAMI issues coverage under these permits for DEQ under a memorandum of agreement.

Local governments also have approval authority over aggregate mining in floodplain and upland areas. The Department of Land Conservation and Development (DLCD) provides oversight of local government land use decisions related to aggregate mining. Statewide Planning Goal 5 and related interpretive rules under OAR 660, Division 23, adopted by the Land Conservation and Development Commission (LCDC), direct local governments to adopt land use plans and other regulations that provide standards and a process (consistent with DLCD rules) for consideration of requests to mine aggregate resources. These rules limit local authority over certain mining issues delegated to DOGAMI or other agencies, including mine regulation and reclamation. LCDC rules specify the types of potential conflicts and issues that must be considered in the local permit decision process, including resolution of conflicts with surrounding uses, agricultural practices, transportation facilities, and affected natural and cultural resources. These rules also include provisions that encourage locating aggregate mines on less productive agricultural soils, and allow local governments to authorize smaller scale mining through a more expedited conditional use process. All aggregate removal, whether instream or upland, must be compatible with the local government comprehensive plan and zoning ordinance.

Federal agencies, including the U.S. Army Corps of Engineers (Corps), U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), and the Environmental Protection Agency (EPA), may review permit applications and/or issue permits for instream aggregate removal. Aggregate removal projects that fall within the Corps' jurisdiction under Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the Clean Water Act require a permit from the Corps with a 401 water quality certification from DEQ. A federal consistency determination from DLCD is necessary for projects requiring a federal permit that are located in the state's coastal zone.

The USFWS and NMFS, under the authority of the Fish and Wildlife Coordination Act, may review and comment on projects requiring federal permits and make recommendations for the protection and improvement of fish and wildlife and their habitats. In some cases, these federal agencies may recommend to the Corps that such permits be denied based on the magnitude or significance of effects of the proposed action on fish and wildlife and their habitats or other considerations, such as the availability of less damaging alternatives.

Under the Endangered Species Act (ESA), the USFWS and NMFS consult with federal agencies that undertake actions that may affect a listed species to assist them in eliminating or minimizing impacts so that the resulting project avoids jeopardizing (appreciably reducing the likelihood of survival and recovery) any listed species affected by the action. A Corps permit for instream gravel removal is an example of a federal action that may require consultation under the ESA.

Issues:

1. Protecting fish and wildlife

Instream gravel removal is a relatively low-cost way to obtain aggregate necessary for road and construction projects, particularly in areas of western and coastal Oregon where other sources are limited or non-existent. However, instream aggregate removal is an issue of growing concern, especially in the Willamette Valley and southwest Oregon where ESA-listed fish species are present in many streams and rivers. Instream gravel is a valuable habitat component for salmonids and other species, and for maintaining water quality. In March 2006, the federal agencies published a white paper entitled, *"Sediment Removal from Active Stream Channels in Oregon: Considerations for Federal Agencies for the Evaluation of Sediment Removal Actions from Oregon Streams"*. This document identifies the potential effects of aggregate removal on freshwater habitats, and provides recommendations and guidance for evaluating, designing, and monitoring instream sediment removal activities.

Gravel pits in floodplains are also an important source of aggregate, especially in the Willamette Valley. In addition to instream impacts, federal and state agencies are concerned about the effects of aggregate removal on geomorphically active dynamic systems, and in particular the channel migration zone. The channel migration zone is the geographic area where a stream or river has been and will be susceptible to channel erosion and/or channel occupation. It is a very active subset of the floodplain. Data collected by DOGAMI at the river island site on the Clackamas River confirmed that mining inside the channel migration zone may have the same negative consequences as instream mining. Current Oregon floodplain mining guidelines recognize the importance of protecting the channel migration zone and providing adequate floodplain space for future channel adjustments. The federal agencies are considering adding a chapter to the sediment removal white paper to address aggregate removal in the channel migration zone. Issues of concern include changes to stream flow patterns, fish stranding, fish egress channels, and pit capture. In addition, mining within the channel migration zone and floodplain may impact sensitive wildlife species and important habitats, such as wetlands and riparian corridors.

Recent federal agency decisions related to impacts on ESA-listed species have resulted in restrictions on instream aggregate mining in Oregon. In August 2006, the Corps denied renewal of ten aggregate removal permits in the Umpqua River. Because of a letter in late 2006 from NMFS indicating that aggregate mining activities would likely result in "take" of federally-listed salmonid species, DSL denied renewal of Freeman Rock's permit for operations on the Chetco River. In January 2007, DSL also denied renewal of one of two removal-fill permits issued to Tidewater Contractors for gravel extraction on the Chetco River.

2. Competing uses

Providing a stable and affordable source of aggregate to meet the infrastructure and development needs of a growing population and expanding economy in Oregon is challenging. The demand for aggregate resources must be balanced with a number of competing public needs including: protecting the land base of a robust and diverse agricultural industry; protecting fish and wildlife populations; and protecting and enhancing natural hydrologic functions of river systems to protect against flooding and restore essential habitat.

In the Willamette Valley, the majority of the aggregate removal is sand and gravel from the floodplain, which often consists of high value agricultural soils. With the largest population density in the state, high rates of urban development, and a historic reliance on alluvial gravel sources, the Willamette Valley will be the region most impacted by increased restrictions to instream and floodplain aggregate removal. Impacts will be in the form of significant changes to the economics of aggregate supply, as easily accessible local sources of aggregate become off limits. The predominance of productive agricultural lands in floodplain aggregate resource areas may result in intensified conflict between a commitment to preserve farmland and a need to provide aggregate to the region. These issues are also of importance along the Oregon coast, where conflicts are becoming more common.

Removal of gravel from deposits underlying high value (Class 1 and 2) agricultural lands in floodplains, particularly in western Oregon, has long been a concern to both the aggregate and agricultural industries. Over the past three years, a group of stakeholders from the aggregate and agricultural industries attempted to resolve conflicts associated with aggregate extraction from agricultural lands through a mediation project initiated by the Governor's Office. The agriculture industry maintains that significant agricultural lands are at risk from mining operations and mined lands cannot be reclaimed. The Farm Bureau will likely seek further restrictions to aggregate removal from high value agricultural lands during the 2007 legislative session.[1] The aggregate industry, on the other hand, considers the inability to mine at least Class 2 lands (which often overlay high quality aggregate material) as detrimental to the industry and economy in Oregon. The aggregate producers maintain that reclamation of pit mines in floodplains is possible and that the loss of farmland due to aggregate mining is insignificant, especially compared to farmland loss due to development of other land uses. Discussions between the agricultural and aggregate stakeholders were recently terminated, with no resolution between the two opposing views.

[1] Some LCDC restrictions to mining on Class 1 and 2 agricultural lands have been in effect since 1996; however, the farm industry believes that these restrictions are insufficient.

Habitat restoration and enhancement, especially for ESA-listed salmonids, is an important consideration for aggregate removal activities in floodplain areas. Reclamation of floodplain gravel pits, outside of the active channel migration zone, often provides an opportunity to reconnect channels, enhance floodplain functions and hydrology, and restore riparian habitats.

3) Protecting the sustainability of aggregate resources
Ensuring a stable and affordable supply of aggregate is necessary to maintain transportation infrastructure and sustain economic growth in Oregon. Restrictions on instream aggregate removal operations may limit the supply of affordable aggregate available for roads and construction in some parts of western Oregon, particularly on the coast. A limited supply of affordable aggregate will, in turn, adversely affect the economics of development activities, including public transportation projects. In some regions of the state where removal of instream aggregate is restricted, the aggregate industry may increase use of floodplain and upland sites.

Concerns by the federal agencies about the impacts of aggregate removal from floodplain areas, and particularly the channel migration zone, may lead to future restrictions to mining in these areas. Restrictions on both instream and floodplain aggregate removal will have a significant impact on the supply of aggregate in Oregon, particularly in western part of the state. High quality aggregate is abundantly available from upland sites on the east side of the Cascades, but transporting this aggregate will be expensive, thereby increasing the costs of projects located west of the Cascades that require aggregate. High quality aggregate is also available from upland sites in the Willamette Valley outside the floodplains, but land use approval, and therefore the costs of mining these sites, increases with the proximity of urban and rural residential development.

Actions for consideration:

1. Coordination between state and federal agencies
A coordinated approach among state agencies (DSL, DOGAMI, DEQ, ODFW, ODA, DLCD), working in collaboration with the federal agencies (Corps, USFWS, NMFS, EPA), is necessary to develop strategies for managing aggregate removal consistent with resource protection needs. A better understanding of the various authorities, jurisdictions, and regulatory processes related to aggregate removal is collectively needed among the agencies.

The state has been working with the federal agencies, along with gravel operators, to identify strategies for addressing the current instream issues associated with aggregate removal from the Chetco River. This process may serve as a model for how the state and federal agencies can work together to develop a balanced strategy for aggregate management in other regions/ river systems.

2. Resolve resource use conflicts
The state must work with the aggregate industry, various stakeholders, and the public in seeking reasonable solutions to current and future resource use conflicts. In particular,

increased aggregate removal from upland and floodplain sources may exacerbate conflicts between agricultural and aggregate stakeholders. A continued dialog between the agricultural and aggregate industries will prove pivotal to maintaining a balanced approach to addressing, understanding, and resolving these conflicts. Expanding the scope of discussions to include other public interests and to consider techniques such as mitigation, offsets, credits, and other tools will be necessary to resolve this issue and avoid the potential for a legislative solution that could result in "winners" and "losers." The discussion also needs to be expanded to address biological considerations in floodplain mining, such as avoidance of sensitive habitats, appropriate setbacks and depth of pits to avoid and minimize the adverse effects of pit capture, and the cumulative effects of numerous floodplain pits.

There are data gaps and uncertainties associated with aggregate mining in Oregon. The state needs to assess what data are available and identify data needs related to:

- Current and expected supply and demand of aggregate resources
- Distribution (quantity and quality) of aggregate statewide
- Resource and economic impacts associated with aggregate removal

Conflicts associated with aggregate mining often represent the classic economic problem of allocating a scarce resource among competing uses. A macro-economic analysis of aggregate issues in Oregon will provide decision makers with a better understanding of the effects on the supply and demand of material and the regional economic impacts associated with transitioning sources of aggregate removal in response to competing needs. DOGAMI may be able to provide funds for such an analysis.

The state should continue to work with the federal agencies and the aggregate industry to develop and implement studies to determine appropriate levels of gravel mining in affected watersheds.

3. Develop a statewide aggregate strategy

Ensuring economic development in Oregon and maintaining adequate public transportation infrastructure are primary issues for the Governor and the state. The state needs a supply of aggregate to meet the demand for roads and infrastructure. The state also has an obligation to protect fish and other natural resources of the state, and to consider the impact of these needs and obligations on agricultural and other industries.

A balanced approach consistent with state and federal laws directed towards protecting resources and water quality while recognizing the needs of local communities and regions is necessary to have a stable source of quality aggregate for public and private projects.
As the federal agencies focus attention on the impacts of aggregate mining on the channel migration zone, there may be future restrictions on aggregate removal from floodplain areas. Limited access to both instream and floodplain sources will significantly affect to the supply of aggregate in the western part of the state. High quality aggregate is abundantly available from upland sites on the east side of the Cascades, but transporting this aggregate will be expensive, resulting in significant increases to the costs of projects located west of the Cascades. High quality aggregate is also available from upland sites in the Willamette Valley

outside the floodplains, but land use approval, and therefore the costs of mining these sites, increases with the proximity of urban and rural residential development.

Oregon needs to develop a statewide strategy and policy direction for aggregate mining in order to effectively respond to resource protection requirements, address public and stakeholder interests, and to ensure a stable long-term supply of affordable aggregate for roads, buildings, and other infrastructure. The actions discussed above will inform and facilitate the development of statewide strategies and policies related to aggregate management. A statewide aggregate strategy for Oregon should:

- Focus on geographic regions (i.e., the Willamette Valley, Applegate Valley, southwest Oregon coast) and identify regional issues and solutions that address the needs of the communities.
- Consider aggregate management strategies in the context of other resource management plans and ongoing programs (i.e., Oregon Conservation Strategy, recovery plans for ESA-listed species, TMDL implementation, Oregon Plan for Salmon and Watersheds, Willamette River Legacy Program, Willamette Ecosystem Marketplace/ ecosystem services trading programs).

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Aggregate Resources in Oregon
Summary Briefing

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Aggregate resources are essential to many aspects or Oregon's economy. Ensuring a stable and affordable source of aggregate to meet the infrastructure and development needs of a growing population and expanding economy in Oregon must be balanced with fish and wildlife protection and restoration as well as competing land uses.

Instream gravel removal is a relatively low-cost way to obtain aggregate, particularly in areas of western and coastal Oregon where other sources are limited or non-existent. However, instream aggregate removal is an issue of growing concern, especially in the Willamette Valley and southwest Oregon where ESA-listed fish species are present in many streams and rivers. Recent federal agency decisions related to impacts on ESA-listed species have resulted in restrictions on instream aggregate mining. Restrictions on instream aggregate removal operations may limit the supply of affordable aggregate available for roads and construction in some parts of western Oregon, particularly on the coast. A limited supply of affordable aggregate will, in turn, adversely affect the economics of development activities and transportation projects. In some regions where removal of instream aggregate is restricted, the aggregate industry may increase use of floodplain and upland sites.

Floodplains are important sources of aggregate, especially in the Willamette Valley. In addition to instream impacts, federal and state agencies are concerned about the effects of aggregate mining in floodplain areas, and in particular the channel migration zone. Concerns about the impacts of aggregate removal from floodplain sites may lead to future restrictions to mining in these areas. Restrictions on both instream and floodplain aggregate removal will have a significant impact on the supply of aggregate in Oregon, particularly in western part of the state. High quality aggregate is abundantly available from upland sites on the east side of the Cascades, but transporting this aggregate will be expensive, thereby increasing the costs of projects located west of the Cascades that require aggregate.

In the Willamette Valley, the majority of the aggregate removal is sand and gravel from the floodplain, which often consists of high value agricultural soils. With the largest population density in the state, high rates of urban development, and a historic reliance on alluvial gravel sources, the Willamette Valley will be the region most impacted by increased restrictions to instream and floodplain aggregate removal. Impacts will be in the form of significant changes to the economics of aggregate supply, as easily accessible local sources of aggregate become off limits. The predominance of productive agricultural lands in floodplain aggregate resource areas may result in an intensified conflict between a commitment to preserve farmland and a need to provide aggregate to the region.

A balanced approach consistent with state and federal laws directed towards protecting resources while recognizing the needs of local communities and regions is necessary to have a stable source of quality aggregate for public and private projects. To address aggregate issues in Oregon, the state is considering actions for the following:

1. Coordination between state and federal agencies
   A coordinated approach among state agencies, working in collaboration with the federal agencies, is necessary to develop strategies for managing aggregate removal consistent with resource protection needs. The state has been working with the federal agencies to identify strategies for addressing the current instream issues associated with aggregate removal from the Chetco River. This process may serve as a model to develop a balanced strategy for aggregate management in other regions.

2. Resolve resource use conflicts
   The state must work with the aggregate industry, various stakeholders, and the public in seeking reasonable solutions to current and future resource use conflicts. There are data gaps and uncertainties associated with aggregate mining in Oregon. The state needs to assess what data are available and identify data needs.

3. Develop a statewide aggregate strategy
   Oregon needs to develop a statewide strategy and policy direction for aggregate mining in order to effectively respond to resource protection requirements, address public and stakeholder interests, and to ensure a stable long-term supply of affordable aggregate for roads, buildings, and other infrastructure. A statewide aggregate strategy for Oregon should:
   - Focus on geographic regions and identify regional issues and solutions that address the needs of the communities.
   - Consider aggregate management strategies in the context of other resource management plans and ongoing programs.