

January 13, 2009

MEMORANDUM

To: Jim Burnett, Iron Mountain Quarry

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Subject: Existing habitats, plants and animals at the proposed New Shine Quarry site in Jefferson County, Washington

Introduction

This technical memorandum provides information for the expanded SEPA checklist and Jefferson County's review of the proposed New Shine Quarry. The focus of the memorandum is to describe the existing habitat composition and plant and animal communities on the proposed quarry site, and provide our professional opinion on the potential for, and manner by which, impacts to these species and ecological communities may or may not occur. Emphasis is placed on the likely presence, use, and importance of existing habitats to populations of federally-listed threatened and endangered plant and animal species based upon federal and state government agency lists of species that may potentially occur within the vicinity of the proposed project (Attachment A) as well as correspondence with Washington Department of Fish and Wildlife (WDFW) Area Habitat Biologists. Other sources used in preparing this memorandum, included U.S. Fish and Wildlife Service (USFWS) Environmental Conservation Online System; Washington Department of Natural Resources Natural Heritage Program's list of rare plants for Jefferson County; WDFW Priority Habitat and Species Program's Priority Habitat and Species List (2008), the Washington Herp Atlas, and Jefferson County's Geographic Information System Maps. These sources were accessed online on November 4, 2009.

A number of species listed as potentially occurring in the vicinity of the site by the aforementioned sources do not occur on the site and are therefore unlikely to be adversely affected and are not discussed in detail. Examples of some of these species include marine mammals such as the humpback whale and Steller sea lion that may occasionally occur in the waters of Puget Sound, and the gray wolf and Grizzly bear, which are thought to occur rarely in the north Cascades, but are not found on the Olympic peninsula. Because compliance with existing laws and regulations will require, amongst other measures, development and implementation of mine reclamation plans and stormwater pollution prevention plans, it is unlikely that the waters of Hood Canal and those species associated with associated habitats will be adversely affected by the proposed project. Therefore the recovery of these species will not be influenced by the project and these species are not discussed herein.

Overview of Mine Plan

Proposed mining will be phased over the life of the project (~40 years) so that only relatively small areas (± 21 acres) of the approximately 142-acre mine lease area are disturbed at any given time. Typical phasing will involve removal of merchantable timber, removal and stockpiling of topsoil and subsoil, and removal of underlying rock (basalt). After final mine

elevations have been reached, stockpiled subsoil and topsoil will be replaced and recontoured to restore early successional mixed evergreen and deciduous forest cover types and to reestablish wetlands like those that are now present on the site. Though site topography will change as a result of quarrying activities, direct impacts to drainage patterns and hydrology and forested habitat types will be temporary. Drainage patterns, hydrology, and habitats will be restored through recontouring and habitat restoration required by mine reclamation plans. Indirect impacts from potential increases in stormwater runoff quantity and reduced water quality will be carefully controlled through construction of stormwater ponds, biofiltration swales, and other structural and non-structural best management practices (BMPs) in compliance with all federal, state, and county laws, rules, and regulations. Any discharge after treatment and detention in the proposed stormwater management facilities will be conveyed to a series of wetlands that would be expected to prevent any changes in the background concentrations in total suspended solids (TSS) delivered to receiving waters tributary to Puget Sound (Figure 1). Species likely to use existing habitats, potential effects of the proposed project, and other mitigating measures are described herein. Our understanding of existing habitat conditions and likely species use is based upon more than a week of observations made during site reconnaissance and wetland determination studies completed in late February, end of April and beginning of May, and end of October 2009 as well as familiarity with the habitat requirements and life histories of Washington State's priority species.

Review of Habitat Types on Proposed Quarry Site

Existing Conditions

Most of the site consists of forested upland vegetation types characterized by common associations of native plants. Virtually all of the site within the proposed mine area is composed of relatively young, small (< 16 inches diameter at breast height [dbh] and < 50 ft tall) and uniform age class, early successional evergreen vegetation with a more or less closed canopy and relatively depauperate understory association. Shade in this cover type has contributed to an understory association that is species poor and lacks a shrub stratum. Stand composition is relatively uniform and dominated predominantly by Douglas fir (*Pseudotsuga menziesii*). Other species, including western hemlock (*Tsuga heterophylla*), western red cedar (*Thuja plicata*), Sitka spruce (*Picea sitchensis*), cascara (*Rhamnus purshiana*) and a few other species also are present but generally represent minor components of these forests. Common understory associates include sword fern (*Polystichum munitum*), salal (*Gaultheria shallon*), and dull Oregon grape (*Mahonia nervosa*).

There are few snags and relatively little downed wood on the forest floor. What wood is present on the forest floor is generally composed of younger decay classes and small stature (< 12 inches diameter and < 20 ft long). Scattered among this upland forest type are a number of broad-leaved deciduous, forested wetlands covering a total of about three acres. These are generally characterized by more open canopy structure and relatively well developed shrub and herbaceous-dominated strata that has a much higher species diversity than the adjacent upland forest types. With the exception of a few widely scattered larger trees, trees in the forested wetlands also are < 16 inches dbh and < 50 ft in height. These are found within closed topographic depressions and drainage-like features.

All of the potential mine phasing areas were clear cut harvested within the past 25 to 30 years and both evergreen upland and deciduous forest wetland cover types are dominated by early successional plant associations. A small portion of a low-lying terrace adjacent to the perennial stream near the southeast corner of the mine lease area, contains older evergreen forest vegetation that has more mature and complex forest vegetation structure with multiple strata

and other habitat features that are uncommon elsewhere on the site. Larger western red cedar and western hemlock (> 24 inches dbh) are relatively common but average diameter is less than 21 inches dbh. Some larger snags are present but density is still relatively low. Priority logs, including multiple age and decay classes are present in this association. Though some larger trees, snags, and downed logs are present in this association, it does not appear to meet the WDFW definition of mature forests. Forest associations present within the mine lease area provide habitat for an array of invertebrates, amphibians, reptiles, birds, and mammals commonly found in lowland forests of western Washington, including some priority species. A more detailed description of priority habitats, threatened, endangered and priority species is provided in following sections.

Priority Habitats

The WDFW PHS Program identifies a number of terrestrial, aquatic, and other priority habitat features, including: aspen stands; biodiversity areas and corridors; eastside steppe; herbaceous balds; inland dunes; juniper savannah; old growth – mature forest; Oregon white oak woodlands, riparian; shrub-steppe; westside prairie; freshwater wetlands – fresh deepwater; instream; nearshore – coastal; nearshore – open coast; nearshore – Puget Sound; caves; cliffs, snags and logs; and talus. Only a few of these PHS habitat types and features are present on or near the site. These include riparian; freshwater wetlands; instream; and cliffs. Riparian forests occur outside the proposed mine area adjacent to intermittent and perennial streams. As noted above, there are a number of freshwater wetlands within the proposed mine area. Wetlands and riparian forest habitat associations are the most common priority habitat types. Intermittent streams and the perennial stream, both outside the proposed mine area would be considered instream priority habitats. The only other priority habitat within the proposed mine area is the rock outcrop created during a previous mining operation, which appears to meet the definition of cliff.

Snags and logs observed within the forested habitat types within the proposed mine area do not meet the size specifications identified by WDFW. By definition, priority snags are greater than 6.5 ft and greater than 20 inches dbh in western Washington. Priority logs in western Washington are greater than 12 inches diameter at the largest end and greater than 20 ft long.

Listed Threatened and Endangered Species

As noted above, there are a number of federally-listed threatened or endangered species known to occur in Washington. Many of these species are restricted to Hood Canal, which is unlikely to be affected by the proposed project. A number of the federally-listed species are also state listed threatened or endangered species. All federally- and state-listed threatened or endangered animals and plants that may occur in the freshwater, wetland, and terrestrial habitats in the vicinity of the project are presented in Attachment A. A brief discussion on the likely use of existing habitats on or in the immediate vicinity of the proposed project is provided for these species in the following sections.

Animals

According to the USFWS databases, there are 35 federally-listed threatened or endangered animals that may occur in Washington. Many of these are known only from specific regions or habitats that are not present on or in the vicinity of the site. Most of the federally- or state-listed threatened or endangered fish and wildlife species that may occur in the vicinity of the project area are associated with old-growth or mature forest types, perennial streams, or Hood Canal, such as marbled murrelet (*Brachyramphus marmoratus*), northern spotted owl (*Strix occidentalis caurina*), southern resident killer whale (*Orcinus orca*), and Puget Sound Chinook

Salmon ESU (*Oncorhynchus tshawytscha*). None of these habitats occurs within the proposed lease area or proposed mining area. Therefore, there would be no direct impacts to habitats of any federally- or state-listed threatened or endangered species, including those with identified critical habitats.

Potential indirect impacts to listed species include potential delivery of suspended sediments in stormwater runoff and increases in turbidity and sedimentation in receiving waters, including the unnamed perennial stream and Hood Canal. Significant potential increases in turbidity and sedimentation in receiving water are unlikely for several reasons, including the fact that mining will be phased so only portions of the site are open and disturbed at any time, structural and non-structural best management practices will be used as necessary to comply with NPDES permit and Stormwater Pollution Prevention Plan required for the project, and potential delivery of suspended sediments decreases with increasing distance from the disturbed area.

In addition, forested vegetation types and any impacts to wetlands will be temporary (± 10 years). Forested habitats disturbed by mining will be replaced as part of required mine reclamation and compensatory wetland mitigation permit processes. It is anticipated that any forested wetlands that are impacted by mining operations will be re-established or created at a 1:1 or higher ratio. Another element of the compensatory mitigation strategy will include preservation of existing wetlands and adjacent forested uplands in the same watershed. Preserved forested areas that are part of such preservation would be permanently protected through prohibition of future logging. Restoration of forested upland and wetland habitats will contribute to restoration of infiltration and retention of precipitation, groundwater recharge and discharge and natural hydrologic processes that resemble existing conditions.

Plants

There are nine federally-listed threatened or endangered plant species that may occur in Washington. None of these are likely to occur in the early successional forested habitats present on or in the vicinity of the site. Therefore, there would be no impacts to federally-listed plant species.

In addition, there are four state-listed threatened or endangered plants species known to occur in Jefferson County, according to WDNR. Of these, none are likely to occur in the early successional forest habitats present on or in the immediate vicinity of the site. Therefore, there would be no impacts to any state-listed threatened or endangered species.

Priority Species

In addition to federally- and state-listed threatened or endangered species, there are many species of animals and plants listed by WDFW as priority species and WDNR as rare. Priority wildlife species and rare plants that are likely to use or may occur in the habitats on site or in the vicinity of the site also are listed in Appendix A. Priority species are fish and wildlife species requiring protective measures and/or management actions to ensure their survival and include federal- and state-listed threatened, endangered, or sensitive species; species associated with habitats that are vulnerable to loss from land use change (vulnerable aggregations); and species that are of recreational, commercial, and/or of tribal (i.e., cultural) importance.

Several priority fish species, such as cutthroat trout (*Oncorhynchus clarki clarki*) are associated with streams in Western Washington and with Hood Canal. The perennial stream that traverses the southeast corner of the proposed mine lease area shown in Figure 1 is identified by Jefferson County as a fish-bearing stream. It is expected that this stream supports Coho

salmon and cutthroat trout. Portions of the stream observed during site reconnaissance-level and wetland delineation investigations provide suitable habitat for spawning and rearing. All mining activity is proposed to be located several hundred feet from these streams.

In addition to fish, there are a number of priority bird, amphibian, and mammals (see Attachment A). A number of perching birds and raptors, such as band-tailed pigeon (*Columba fasciata*), Merlin (*Falco columbarius*), and pileated woodpecker (*Dryocopus pileatus*) may use riparian and other forest types on the site or in the vicinity for foraging. Columbian black-tailed deer (*Odocoileus hemionus columbianus*) sign was observed in forested uplands and wetlands. Other mammals, particularly Keen's myotis (*Myotis keenii*) and Townsend's big-eared bat (*Corynorhinus townsendii*) may forage in or over the forested habitats on or in the vicinity of the site.

A total of four rare plants may occur on or in the vicinity of the site. Two of these are sedges (*Carex* spp.) associated with wetland and streambank habitats. Neither of these sedge species was observed in onsite wetlands. A couple of the rare species identified by WDNR, such as Vancouver ground-cone (*Boschniakia hookeri*) and chain-fern (*Woodwardia fimbriata*) are associated with upland forested habitats; however, neither species was observed on site. Though systematic surveys have not been conducted and the presence of these species cannot be ruled out, it appears unlikely that they would be present within the early successional habitats within the proposed mining area.

Potential impacts to these priority species include temporary displacement from loss or habitat for more mobile species and temporary declines in local populations of immobile species associated with alterations to forested habitat types from the proposed mining activities. Temporary impacts from habitat fragmentation during mining also are likely to occur. These could include displacement, reduced remaining habitats, or temporary isolated subpopulations. Although unlikely, such impacts may alter population genetics particularly for less mobile species such as amphibians, reptiles, and small mammals that experience increased mortality from mining operations. There are hundreds of acres of suitable alternative early successional forest habitats on adjacent commercial timberlands for all of these species. Populations of all species would remain in these areas and it is therefore unlikely that significant impacts to population size or genetic integrity would occur even for less mobile species. As more forested and wetland habitats are restored as required by mine reclamation and compensatory wetland mitigation permitting processes, temporary reductions in population sizes are expected to be reversed and local populations of all species would be expected to return to pre-disturbance levels in the future. Significant losses in the genetic integrity of less mobile animal populations would be unlikely assuming that genetic traits of fit individuals from undisturbed populations in adjacent areas would remain.

Conclusions

The proposed mining will temporarily result in the loss of early successional upland and wetland forest habitat types. There will be no direct impacts or loss of designated critical habitat or habitat that is essential to any federally- or state-listed threatened or endangered species. All mining activities will occur beyond established buffers for the identified streams. In addition, compliance with existing laws and required mitigation, including mine reclamation plans and compensatory wetland mitigation plans will ensure that upland and wetland forest habitat types are replaced and there is no significant loss of acreage or functions. Furthermore, it is unlikely there would be any significant indirect impacts, such as water quality degradation and increased sedimentation in receiving waters from the proposed project. Compliance with the required NPDES permit and County stormwater management permit will include development of a

stormwater pollution prevention plan and use of appropriate structural and non-structural BMPs that will prevent significant impacts to receiving waters and potential indirect impacts to federal- or state-listed threatened or endangered species.

Temporary impacts to forested habitat types will result in some displacement of other more common, priority species (sensitive, candidate, species of concern) during mining. However, these are unlikely to be significant as populations of these species will persist on adjacent forested lands, which contain similar habitats and support viable populations of all of these species. Finally, as noted above, restoration of early successional forested and wetland habitat types as required by law, will ensure there is no significant long-term loss of habitats or functions and associated impacts to populations of any priority species.

Attachments:

Figure 1. Location of Proposed New Shine Quarry, Jefferson County, Washington

Attachment A. Federally- and State-listed species that may occur in the New Shine Quarry project vicinity within Jefferson County, Washington



Attachment A. Federally- and State-listed species that may occur in the New Shine Quarry project vicinity within Jefferson County, Washington.

Species	Scientific Name	Federal Status	State Status	Potential Location within Project Vicinity
FISH*				
Bull Trout, Puget Sound/Coastal DPS	<i>Salvelinus confluentus</i>	T	C	Hood Canal
Chinook Salmon, Puget Sound ESU	<i>Oncorhynchus tshawytscha</i>	T	C	Hood Canal
Chum Salmon, Hood Canal Summer-run ESU	<i>Oncorhynchus keta</i>	T	C	Hood Canal
Coastal/Searun Cutthroat Trout	<i>Oncorhynchus clarki clarki</i>	None	None	Hood Canal, unnamed tributaries
Coho Salmon, Puget Sound ESU	<i>Oncorhynchus kisutch</i>	SC	C	Hood Canal, unnamed tributary
Eulachon, Southern DPS	<i>Thaleichthys pacificus</i>	PT	C	Hood Canal, unnamed tributary
Longfin smelt	<i>Spirinchus thaleichthys</i>	None	None	Hood Canal, unnamed tributary
Steelhead, Puget Sound DPS	<i>Oncorhynchus mykiss</i>	T	C	Hood Canal
AMPHIBIANS				
Western Toad	<i>Bufo boreas</i>	SC	C	Wetlands, streams, riparian
BIRDS				
Band-tailed pigeon	<i>Columba fasciata</i>	None	None	Riparian & other forests
Marbled Murrelet	<i>Brachyramphus marmoratus</i>	T	T	Adults may forage in Hood Canal; no nesting habitat
Merlin	<i>Falco columbarius</i>	none	C	More open forests
Northern Goshawk	<i>Accipiter gentilis</i>	SC	C	Unlikely; old-growth or mature forest dependent
Peregrin Falcon	<i>Falco peregrinus</i>	SC	S	Nearshore areas of Puget Sound
Northern Spotted Owl	<i>Strix occidentalis caurina</i>	T	E	Unlikely; old-growth or mature forest dependent
Pileated Woodpecker	<i>Dryocopus pileatus</i>	None	C	Forested uplands and wetlands
Sooty (formerly blue) grouse	<i>Dendragapus obscurus</i>	None	None	Riparian & other forests
Vaux's Swift	<i>Chaetura vauxi</i>	None	C	Unlikely; old-growth dependent
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	C	C	Riparian; possibly extirpated in WA (USFWS 2008)
MAMMALS				
Columbian black-tailed deer	<i>Odocoileus hemionus columbianus</i>	None	None	All habitats
Keen's Myotis	<i>Myotis keenii</i>	None	C	Foraging over forested uplands and wetlands
Townsend's Big-eared bat	<i>Corynorhinus townsendii</i>	SC	C	Foraging over forested uplands and wetlands
Fisher	<i>Martes pennanti</i>	C	E	Unlikely; old-growth dependent
Humpback whale	<i>Megaptera novaeangliae</i>	E	E	Occasional visitor to Puget Sound
Killer Whale, Southern Resident DPS	<i>Orcinus orca</i>	T	E	Hood Canal
Marten	<i>Martes Americana</i>	None	None	Riparian; streams
Steller sea lion, eastern pop	<i>Eumetopias jubatus</i>	T	T	Hood Canal
PLANTS				
Bristly sedge	<i>Carex comosa</i>	None	S	Wetlands
Chain-fern	<i>Woodwardia fimbriata</i>	None	S	Upland forests
Long-styled sedge	<i>Carex stylosa</i>	None	S	Wetlands, streambanks
Vancouver ground-cone	<i>Boschniakia hookeri</i>	None	R1	Upland forests

C = Candidate; DPS = Distinct Population Segment; E = Endangered; ESU = Evolutionary Significant Unit; SC = species of concern; S = sensitive; T = Threatened; * = this is only a partial list of fish species listed as SC or C and does not include a number of rockfish and other species known to or that may occur in Hood Canal.

Sources: WDFW Priority Habitat and Species Program 2009; WDNR Natural Heritage Program Rare Plant List for Jefferson County February 2009; USFWS Species Reports Listings and Occurrences for Washington

http://ecos.fws.gov/tess_public/pub/stateListingAndOccurrenceIndividual.jsp?steat=WA accessed November 4, 2009;