

Draft

Howard Canyon Reconciliation Report

Planning Commission Recommendation

Revised June 2004

Multnomah County
Department of Business and Community Services
Land Use and Transportation Program

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Howard Canyon Reconciliation Report Update June 2004

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Project History

The Howard Canyon Quarry is located approximately two miles southeast of Corbett in eastern Multnomah County. It is on top of a ridge with an east-west orientation between Knieriem Creek (on the north) and Howard Creek (on the south). (See Figure #1)

A quarry has operated on the property since the 1970s, though the size of the quarry has always been relatively small (i.e. less than five acres). The quarry has operated without a state or local permit under a Grant of Total Exemption from the Department of Geology and Mineral Industries (DOGAMI). The exemption allows the extraction of up to 5,000 cubic yards of material or disturbing less than one acre of land within a 12-month period until mining affects five or more acres.

According to Multnomah County records, mining activity on this site began in the early 1970's. In 1971, Multnomah County denied an application for a temporary permit to mine and crush rock (case file BA 78-71). In 1980, a Multnomah County Hearings Officer denied, and the Board of County Commissioners upheld the denial under appeal, of a conditional use application for a gravel mine and crusher. In 1987, Multnomah County again denied a CU for a commercial gravel quarry. These applications were denied based on the conditional use criteria, related to the rural character of the area, impacts to road system, and noise.

In 1987, the Department of Land Conservation and Development (DLCD) notified the county of requirements under state rules to complete work on Statewide Planning Goal 5, and specifically regarding two aggregate sites within the county. In a plan passed by the Board of County Commissioners in 1990 and submitted to DLCD, the Howard Canyon aggregate site was classified "3B, allow conflicting uses", meaning no protection under Goal 5. The "3B" determination was rejected by DLCD in 1993 because the aggregate resource in Howard Canyon was found to be significant. The Board of County Commissioners adopted the Howard Canyon Reconciliation Report (HCRR) in 1995. The 1995 report changed the designation for Howard Canyon from "3B" to "3C, limit conflicting uses", meaning the aggregate resource was protected under Goal 5, and uses which might conflict with the mining operation must be regulated. The property owner appealed the 1995 report to the Land Conservation and Development Commission (LCDC), who directed the county to make some specific changes to the report. The county made the specified changes that included adding the western 1000 feet of the site into the extraction area, eliminating additional noise study requirements, and deleting the provisions allowing the Transportation Division to request additional traffic studies over and above those already required. The Board of County Commissioners finalized the Howard Canyon Reconciliation Report in June, 1996, which became an acknowledged part of Multnomah County's Comprehensive Plan.

In 1999, a conditional use permit application for mining this resource site was submitted to the County. This application proposed a level of mining activity that was dramatically different from the base assumptions in the HCRR. The conditional use permit application

revealed weaknesses or out of date assumptions in the HCRR. Therefore, Multnomah County decided it necessary to revisit the HCRR and re-analyze the impacts of increased production levels and future quarry operations on the site and the surrounding community.

On January 24 and March 6, 2000, the Multnomah County Planning Commission conducted two public hearings on a legislative zone change to place the Protected Aggregate and Mineral (PAM) Overlay Subdistrict onto the zoning map on and around Howard Canyon. This was the final step to implement the program to achieve protection of the resource under the state goal. The Planning Commission recommended on April 3, 2000, that the Board of County Commissioners adopt with conditions the PAM Overlay Subdistrict on properties in and around Howard Canyon quarry. The Board of County Commissioners held a public meeting on June 13, 2000, and agreed with testimony presented that circumstances have changed since the HCRR was originally adopted.

According to the Board's motion, this update to the 1996 HCRR should address:

1. Requirements of the federal ESA to protect the Lower Columbia River Steelhead and its critical habitat and the need for improved stream protection;
2. Changes in mining methods and use of rock in the Howard Canyon Quarry;
3. Associated noise and impacts on surrounding farm operations that had not been adequately addressed in the 1996 HCRR; and
4. The apparent lack of evidence for determining the significance of the westerly 1,000-foot extent of the geologic resource area.

The Board directed staff not to make any revisions to the transportation portion of the HCRR.

In 2001, Multnomah County hired the Winterbrook Planning consultant team to manage the following:

- A geologic assessment of the western 1,000 feet of the resource area.
- A biological assessment of impacts to streams and ESA salmonid habitat.
- A noise impact study.
- A farm and forest impact study.
- An ESEE analysis.
- An update to the 1996 HCRR.

The results of the preliminary impact reports were reviewed in a public meeting on May 16, 2002 at the Corbett School. Based on public comments received at the meeting, the impact reports were finalized and a draft of the updated HCRR was prepared. The July 25, 2002 draft HCRR report was reviewed at a Planning Commission work session on August 5, 2002.

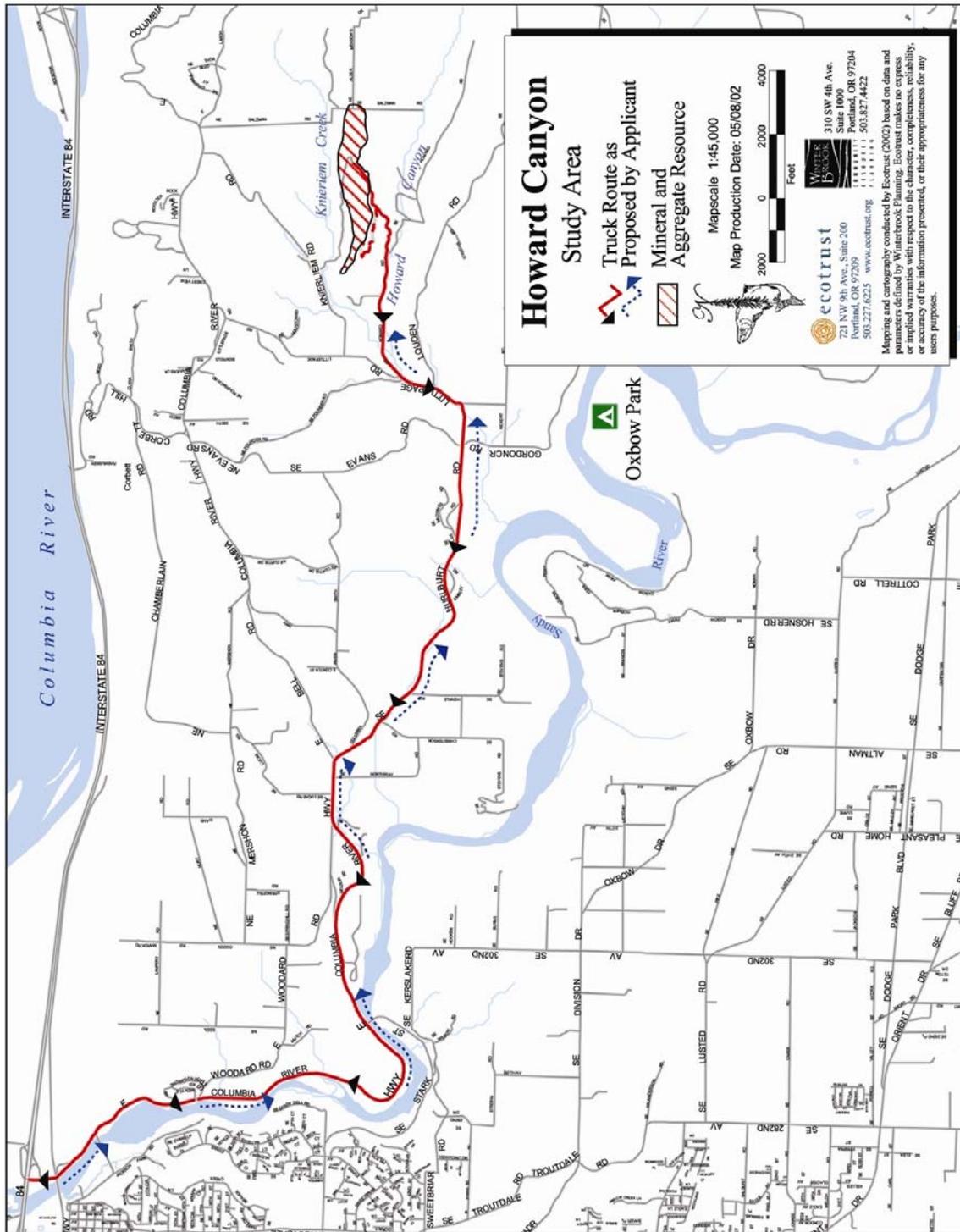


Figure 1. Study Area

Subsequently, the draft report was updated in September 2002 in advance of a Planning Commission public hearing on October 7, 2002. Public testimony from that hearing and subsequent written testimony and evidence submitted to the County was incorporated into the February 2003 draft of the HCRR. Another Planning Commission public hearing was held on March 3, 2003, at which the quarry owners and neighbors agreed to pursue mediation to resolve conflicts.

In March, 2003, Richard Forrester was hired to do an assessment for the mediation and found that the basic requirements for a mediation were in place. As the assessment transitioned to mediation, the neighbors requested another mediator. Carie Fox was hired in June 2003 and met with the key parties individually and in groups, attended a neighbor meeting, and convened an information-sharing meeting with the parties and various experts, including representatives of ODOT and DOGAMI. She also spent considerable time in shuttle negotiations between the parties. The key issues were noise, safety, trust, follow-through, profitability of the operation, the ability to enjoy property rights, and the overlay and its impacts on property values. The mediation broke down because agreement between all parties would have required a higher level of trust than was likely to evolve in the requisite time. On January 5th, 2004, the mediation effort was terminated.

On May 3, 2004, the Planning Commission held a public hearing in Corbett to review the proposed revisions to this report. The County staff recommendation was to protect the resource and limit mining to current levels under the Grant of Total Exemption (5,000 cubic yards per year) with mitigation measures (Appendix H). After lengthy public testimony, the Planning Commission deliberated and reached a tentative decision to recommend to not protect the resource and prohibit mining on the site. The HCRR has been revised to reflect that recommendation.

Overview of the Issues

Streams and ESA Salmonid Habitat

The 1996 HCRR assessed three streams that surround and drain the Howard Canyon Quarry site: Big Creek, Knieriem Creek and Howard Canyon Creek. Knieriem Creek and Howard Canyon are the closest streams to the mine and join to form Big Creek, which flows into the Sandy River. All three streams have been designated by Oregon Department of Fish and Wildlife as Class 1 “significant” streams. Multnomah County has designated these streams as significant Goal 5 resources. The 1996 HCRR concluded that all three streams could be adequately protected from impacts from the proposed quarry operations.

However, in 1998, the National Marine Fisheries Service (NMFS) declared the Lower Columbia River steelhead as a threatened species under the federal Endangered Species Act (ESA). The listing included salmonid populations inhabiting in the Sandy River in east Multnomah County. In 1999, NMFS listed as threatened eight additional salmon populations under the ESA, including fall run chinook salmon, which inhabits east Multnomah County including the Sandy River. Soon thereafter, NMFS identified and officially designated the critical habitat that was required for the long-term survival for

these species. In early 2002, the NMFS withdrew the critical habitat designation for 19 salmon and steelhead populations (including those in the Sandy River) pending a review of the economic impacts on affected businesses, communities, and individuals. However, salmon and steelhead trout habitat remains protected by the essential fish habitat provisions of the Magnusson-Stevens Act. The designation of fish stocks under the ESA and through the Magnusson-Stevens Act gives federal protection to these species and the habitat upon which they depend to live, feed and reproduce. The Sandy River basin, consisting of the Sandy River mainstem and its larger, fish-bearing tributaries, was included in this critical habitat designation for the endangered steelhead and fall chinook salmon.

On June 26, 2002, the US Fish and Wildlife Service determined that the southwestern Washington/Columbia River population of coastal cutthroat trout does not need ESA protection. This determination was based on a review of population data that showed that in a large portion of the southwestern Washington/Columbia River area cutthroat trout populations are relatively robust and the offspring of freshwater populations are likely able to become anadromous. Consequently, the US Fish and Wildlife Service concluded that coastal cutthroat trout in this population segment are not likely to become endangered in the foreseeable future.

This report considers the potential impacts of mining operations on salmonid habitat in Howard Canyon Creek, Knieriem Creek, Big Creek, and the Sandy River.

Noise Impacts

The noise study used in the 1996 HCRR was completed by Daly, Standlee & Associates, Inc. (the Daly, Standlee Report, dated February 19, 1990). It assumed a specific mix of mining equipment for aggregate extraction and the known sound generation of each piece of equipment. Based on this noise analysis, the 1996 HCRR concluded that the noise associated with the assumed aggregate operation would not violate the Oregon Department of Environmental Quality (DEQ) noise standards within a 1,200 foot perimeter. Consequently, the impact area for the Howard Canyon Quarry was determined to be 1,200 feet around the aggregate resource.

The noise study conducted for this report addresses increased level of mining activity and a different mix of equipment.

Farm Impacts

The western portion of the Howard Canyon site and the surrounding area to the west is zoned Exclusive Farm Use (EFU). Multnomah County Framework Plan Policy 16-B, Strategies I and J require an analysis to determine if the proposed mining operation will force a significant change in accepted farm or forest practices or significantly increase costs. In addition, testimony as part of the recent conditional use permit process raised issues related to impacts on surrounding farms, especially livestock.

This report includes a farm and forest impact assessment and considers potential impacts that could significantly change or increase the cost of farming practices.

Geologic Resources

As part of the adoption process of the 1996 HCRR, questions were raised concerning accuracy and reliability of the information related to the location, quality and quantity of the mineral and aggregate resource underlying the western 1,000 feet of the mapped resource area.

This report confirms the location, quantity, and quality of the basalt formation in the western 1,000 feet of the resource site.

Policy Framework

Multnomah County Comprehensive Framework Plan Policy 16-B contains specific criteria for the consideration of post-acknowledgement plan amendments (PAPAs) concerning aggregate resources.¹ Therefore, Policy 16-B is the adopted and acknowledged policy controlling the review of the amendments to the Howard Canyon Reconciliation Report. Policy 16-B, Strategy A specifically states that aggregate resources will be managed consistent with OAR 660, Division 16 (the “old Goal 5 rule”).

A key difference in approach between the 1996 HCRR and this report is a consideration that the County take a more proactive role in regulating protected mining operations and mitigating the impacts. This policy interpretation is consistent with Policy 16-B, Strategy M:

M. The County shall impose conditions on surface mining when necessary to lessen conflicts identified as part of a site-specific Goal 5 analysis. Where such conditions conflict with criteria and standards in the Protected Aggregate and Mineral Resources Overlay, the conditions developed through the Goal 5 process shall control.

In the 1996 HCRR, the County deferred to the Oregon Department of Geology and Mining Industries (DOGAMI) and the Oregon Department of Environmental Quality (DEQ) to ensure compliance with noise, air quality, and water quality standards. Multnomah County Commission expressed concern regarding the ability of these agencies to effectively regulate and enforce Oregon State and Multnomah County laws. In light of the continuing controversy over the mining operations and the potential federal Endangered Species Act and quality of life impacts, this update considers the feasibility of the County establishing specific performance standards to mitigate adverse impacts. These standards would serve as approval criteria for a future conditional use permit. In some cases, these performance standards exceed DOGAMI or DEQ requirements.

Goal 5 Rule Requirements

There are two state administrative rules that implement Statewide Planning Goal 5. The “old” Goal 5 rule refers to OAR 660, Division 16. The “new” Goal 5 rule refers to OAR 660, Division 23, which was adopted by LCDC in 1996. The Department of Land

¹ The “new” Goal 5 rule states that these criteria will apply until the regulations are updated to conform to the requirements of OAR 660, Division 23 at the next scheduled periodic review (OAR 660-023-0180 (7)).

Conservation and Development has determined that the old Goal 5 rule is applicable until the County amends the Framework Plan and land use regulations as part of a periodic review work program.²

The Goal 5 process, includes the following steps:

- Inventory – determine the location (map boundary and impact area), quality (compared to other similar resources), and quantity (relative abundance) of each resource site (OAR 660-016-000).
- Determine significance – three options: 1) not significant (no further action), 2) delay Goal 5 process (inadequate information), or 3) significant (continue Goal 5 process) (OAR 660-016-000 (5)).
- Identify conflicting uses – examine uses allowed in zoning districts within impact area to determine if they have a negative impact on the resource site (OAR 660-016-005). For aggregate resources, need to look at impacts resulting from quarry operations as well as impacts on quarry operations from conflicting uses within impact area. Also, look at quarry conflicts with other Goal 5 resources.
- Analyze ESEE consequences of alternative decision options – Both impacts to the resource site and conflicting uses must be considered. ESEE analysis is adequate if it enables a jurisdiction to provide reasons to explain the consequences of decision options for specific sites (OAR 660-16-0005(2)).
- Adopt a protection program. Assuming there is adequate information, OAR 660-16-0010 requires local jurisdictions to “resolve” conflicts by adopting one of the following three decisions options:
 1. Protect the Resource Site: In the case of aggregate and mineral resource sites, this means to fully allow mining and restrict new conflicting uses within the impact area.
 2. Allow Conflicting Uses Fully: In the case of aggregate and mineral sites, this means prohibiting mining because mining conflicts cannot be restricted to acceptable levels.
 3. Limit Conflicting Uses: In the case of aggregate and mineral sites, this means to allow mining on a limited basis with restrictions on the conflicting uses to mitigate conflicts.

The Goal 5 rule does not require that all significant resource sites be protected. Local governments may choose to fully protect the resource site by allowing mining without local restrictions, prohibit mining activity (allow conflicting uses fully) or allow mining and conflicting uses on a limited basis.

² Letter from Gary Fish, DLCD, September 16, 2002

Significant Goal 5 Resource Determination

OAR 660-16-000 directs local governments to determine the location, quality, and quantity of the resource at a particular site. Based on that evidence, the local government must determine the significance of the site.

The 1996 HCRR determined that the Howard Canyon Quarry was a significant mineral and aggregate resource site.³ The underlying reasons were: the aggregate meets the ODOT specifications; the resource size of over 2 million cubic yards, which was more than the Comprehensive Plan criteria in effect at the time of the report; and the site is the only one in unincorporated East Multnomah County with sufficient, known information on the quality of the resources; and uncertainty regarding future production potential from other sites.

The old Goal 5 rule provides little guidance for determining the significance of mineral and aggregate resources. However, the new Goal 5 rule includes criteria for determining the significance of aggregate resources (OAR 660-23-180(3)(a)) that provides some guidance:

- Representative samples of aggregate material meet ODOT specifications for base rock for air degradation, abrasion, and sodium sulfate soundness
- The estimated amount of material is more than 2,000,000 tons in the Willamette Valley

OAR 660-23-180(1)(a) defines “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. Neither rule defines “mineral resources” nor includes criteria for determining the significance of mineral resource sites.⁴ ORS 517.750(7) defines “Minerals” as soil, coal, clay, stone, sand, gravel, metallic ore and any other solid material or substance excavated for commercial, industrial or construction use from natural deposits situated within or upon lands in this state. The distinction between mineral sites and aggregate sites could be relevant because the resource is a columnar basalt formation that can be used as decorative rock as a building or landscaping material (a mineral resource) or as riprap and crushed rock for road building (an aggregate use).

³ Page III-10, 1996 HCRR

⁴ Proposed Administrative Rule Amendments (May 6, 2004) include the following changes to the definitions in OAR 660-023-0180 (1):

(a) “Aggregate resources” are naturally occurring concentrations of stone, rock, sand, ~~and~~ gravel, decomposed granite, limestone, pumice, cinders, and other naturally occurring solid materials commonly used in road building and other construction.

(f) “Mineral resources” are those materials and substances described in ORS 517.750(7) but excluding materials and substances described as “aggregate resources” under subsection (a) of this section.

Howard Canyon Resource Site

The following analysis provides an overview of the Howard Canyon resource site as whole and summarizes information from the 1996 HCRR. This information is presented for comparison to the geologic assessment conducted on the westernmost 1,000 feet for this report.

The Howard Canyon resource site is a ridge top with an east-west orientation, approximately two miles southeast of Corbett in eastern Multnomah County (Figure 2). The ridge is a Boring Lava formation that runs east-west between Knieriem Creek on the north and Howard Canyon Creek on the south.

The determination of significance in the 1996 HCRR was based on a January, 1989 report by H.G. Schlicker & Associates (the Schlicker report), which is incorporated by reference.⁵

Location

In the 1996 HCRR, the potential resource site was shown on a map submitted by the property owner and confirmed by 31 test pits dug by both the property owner and H.G. Schlicker & Associates (identified on a map in the appendix to the Schlicker report). The westernmost test pit, as shown on the Schlicker report test pit map, is approximately 1,000 feet from the western boundary of the resource site submitted by the property owner. Lacking any conflicting information, this boundary was used for the 1996 HCRR.

As part of this report, the boundary of the westernmost 1,000 feet is assessed and reported below.

Quantity

According to the Schlicker report, the basalt occupies the upper 50 feet or more of the ridge crest except for the thin layer overburden (soil, rocks, and boulders). The test pits indicate the overburden is, on average, about seven feet thick. The top two feet of the basalt is highly weathered and is considered to be overburden. For the purposes of calculating the volume of the formation, the overburden is estimated to be ten feet thick.⁶ Therefore, the basalt formation is estimated to be 40 feet thick. The 1996 HCRR cited a 1986 DOGAMI on-site inspection report that indicated the inspector also thought the basalt layer was 40 feet thick.⁷

⁵ Geologic Reconnaissance, Howard Canyon Quarry, East Multnomah County, Oregon, January 9, 1989 by H.G. Schlicker & Associates is included as Appendix 1 to the Throop Geologic Assessment (Appendix B).

⁶ Page 1, Schlicker Report

⁷ Page III-8, 1996 HCRR

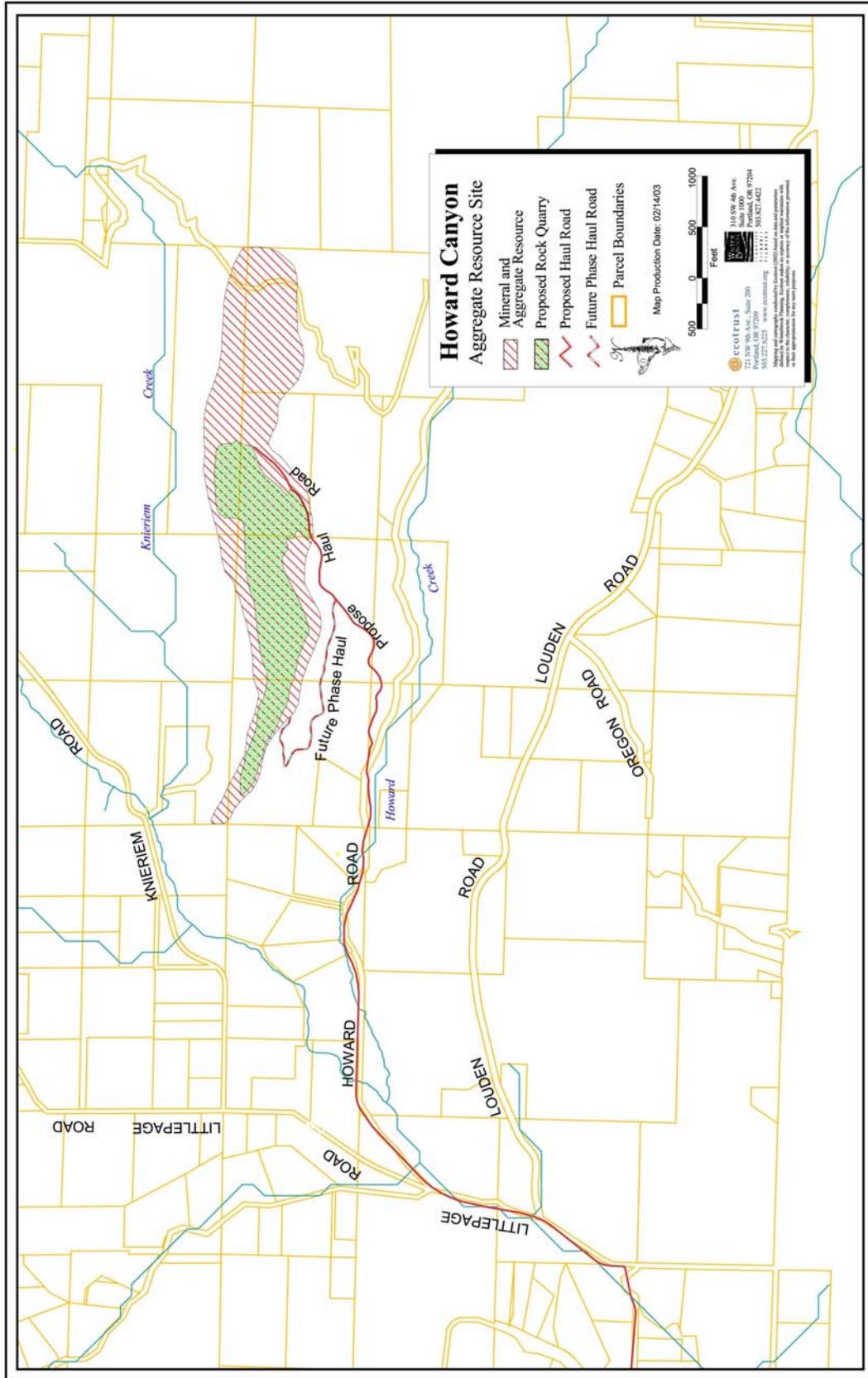


Figure 2. Resource Site

The Schlicker report estimates that the ridge rock deposit is more than 4,200 feet long and 350 feet wide. The volume of rock in place is approximately 2.1 million cubic yards. When rock is crushed the volume expands about 25% therefore the deposit will produce more than 2.7 million cubic yards of crushed basalt, or 4.05 million tons.⁸ The Schlicker report also explains the lava formation is believed to occupy a deep “V” shaped valley and the center of the valley should be much deeper. Schlicker’s subsequent analysis of drilling results in a revised estimate that the basalt formation has a minimum thickness of 51.5 feet, with a revised estimate of 3.57 million cubic yards or 5.35 million tons.⁹

Schlicker’s conversion factor was 1.9 tons per cubic yard. The ODOT test done for the Throop Geologic Assessment found a specific gravity of 2.85, which translates into a conversion factor of 2.4 tons per cubic yard.¹⁰ Calculating the quantity with this conversion rate yields an estimate of 5.04 to 5.76 million tons.

Columnar Basalt

The existing quarry face is columnar basalt, which is a relatively unusual variety of basalt that is particularly well suited to use in landscaping and as building material. To create the columnar formation, the basalt had to solidify and cool quickly to form distinctive formations, which have one long axis and six-sides perpendicular to that axis (columns). Hence, the name columnar basalt. Not all basalt flows have columns. Even where columnar basalt is found, only a portion of the larger basalt formation may have the columnar basalt. The columnar characteristics may not be uniform throughout the entire formation, therefore the actual quantity of columnar basalt is uncertain.

Quality

Aggregate Resource

The 1996 HCRR cites a December 13, 1988 letter from Rittenhouse-Zeman & Associates, Geotechnical & Hydrogeological Consultants, reporting the results of laboratory testing of rock samples from the Howard Canyon Quarry.¹¹ The purpose of the test was to determine the suitability and quality of the rock products for use in construction as defined by the Oregon State Highway Division (OSHD). Attached to the Rittenhouse-Zeman letter was a letter from Northwest Testing Laboratories reporting the results of the American Standard for Materials and Testing (ASTM) test C-535, Resistance to Abrasion of Large Size Course Aggregate by use of Los Angeles Machine, Grading #3. The percent wear of the Howard Canyon sample was 32.7 percent. The OSHD specifications require that the sample can have a maximum of 35 percent wear.

Columnar Basalt

Even where columnar basalt is found, only a portion of the larger basalt formation may have the columnar basalt. Although exposed columnar basalt formations can be found in the Columbia River Gorge, as of July 2002, only three privately owned basalt quarries

⁸ Page 3, Schlicker Report

⁹ Addendum to Schlicker Report, dated March 29, 1989

¹⁰ Page 11, Throop Geologic Assessment (Appendix B)

¹¹ Page III-9, 1996 HCRR

were permitted by DOGAMI in Multnomah County. Another five basalt quarries were permitted in Clackamas County and 13 were permitted in Washington County. A telephone survey of these quarries found that none of the quarries were currently extracting columnar basalt. One local source of columnar basalt was identified in Washougal, Washington, but this quarry reported that its columnar formations were exhausted. Other identified sources include eastern Oregon and the Moses Lake, Washington area.

Confirmation of Western 1,000 feet

The Board of County Commissioners expressed concern about the reliability of the location of the basalt formation in the western 1,000 feet due to the lack of test pits. Multnomah County hired Allen Throop, a registered geologist, to assess the geologic resources of the western 1,000 feet. The Throop report is incorporated by reference as Appendix B to this report and is the basis for the following findings.

Location

Throop conducted a site visit on January 18, 2002 and analyzed stereo-pair aerial photos from 1999 and 2002 to determine the location of the basalt formation. Throop determined that the basalt formation has two distinct areas. The main part of the formation is a broad flat-topped ridge, which extends approximately 125 feet into the western 1,000 foot study area, referred to as Phase 6 on the Olson Mining Plan (Appendix C). West of this flat-topped ridge, the basalt formation becomes a narrow hogback ridge with steep slopes on either side, referred to as Phase 7 on the Olson Mining Plan (Appendix C). It extends approximately 875 feet to the northwest corner of the property. The location of the basalt formation is identified in Figure 2. The Throop report illustrates the different cross-sections for the flat-topped ridge and hogback ridge (see Figure 3).

Quantity

During his site investigation, Throop located the lowest elevation of basalt boulders in a road cut, which he concluded was the bottom of the basalt formation. Using a hand level, he determined that the bottom of the basalt layer was approximately 40 feet below the highest basalt exposed at the upper end of the road.¹²

Throop estimated the hogback ridge (Phase 7) contains a geologic reserve of approximately 140,000 cubic yards of basalt, with a smaller mineable resource.¹³

Quality

A petrographic analysis was conducted to compare rock samples from the existing quarry and the hogback ridge. The petrographer's conclusion is the rocks are from the same formation.¹⁴

¹² Page 5, Throop Geologic Assessment (Appendix B)

¹³ Page 8, Throop Geologic Assessment (Appendix B)

¹⁴ Appendix 5, Throop Geologic Assessment (Appendix B)

Rock samples from the existing quarry and the hogback ridge were sent to the ODOT Materials Laboratory for testing. The test results for the two samples are similar and meet ODOT standards for coarse degradation and abrasion (Table 1).

Table 1. ODOT Rock Quality Test Results

<i>ODOT Standard</i>	Coarse Degradation 30.0% max.	Abrasion 35.0% max.
Hogback Ridge	21.9%	30.2%
Existing Quarry	19.4%	30.4%

The Throop assessment confirms the location of the basalt formation in the western 1,000 feet. Through petrographic analysis, the western 1,000 feet is part of the same formation as the main part of the quarry. Therefore, the western 1,000 feet is part of the Howard Canyon resource site.

Confirmation of Significance Determination

The Howard Canyon site is a significant Goal 5 mineral and aggregate resource, based on the following findings:

- Quantity - The resource site represents a large quantity of basalt material, in excess of 5 million tons.
- Quality - Laboratory testing confirms the basalt meets ODOT standards for air degradation and abrasion and is suitable for aggregate use.
- Quality - The columnar basalt formations are suitable for riprap in road construction as well as decorative rock in landscaping and building construction.

Location – There are a limited number of mineral and aggregate resource sites in east Multnomah County and adjacent portions of Clackamas County. There are no other basalt quarries in the region that actively mine columnar basalt.

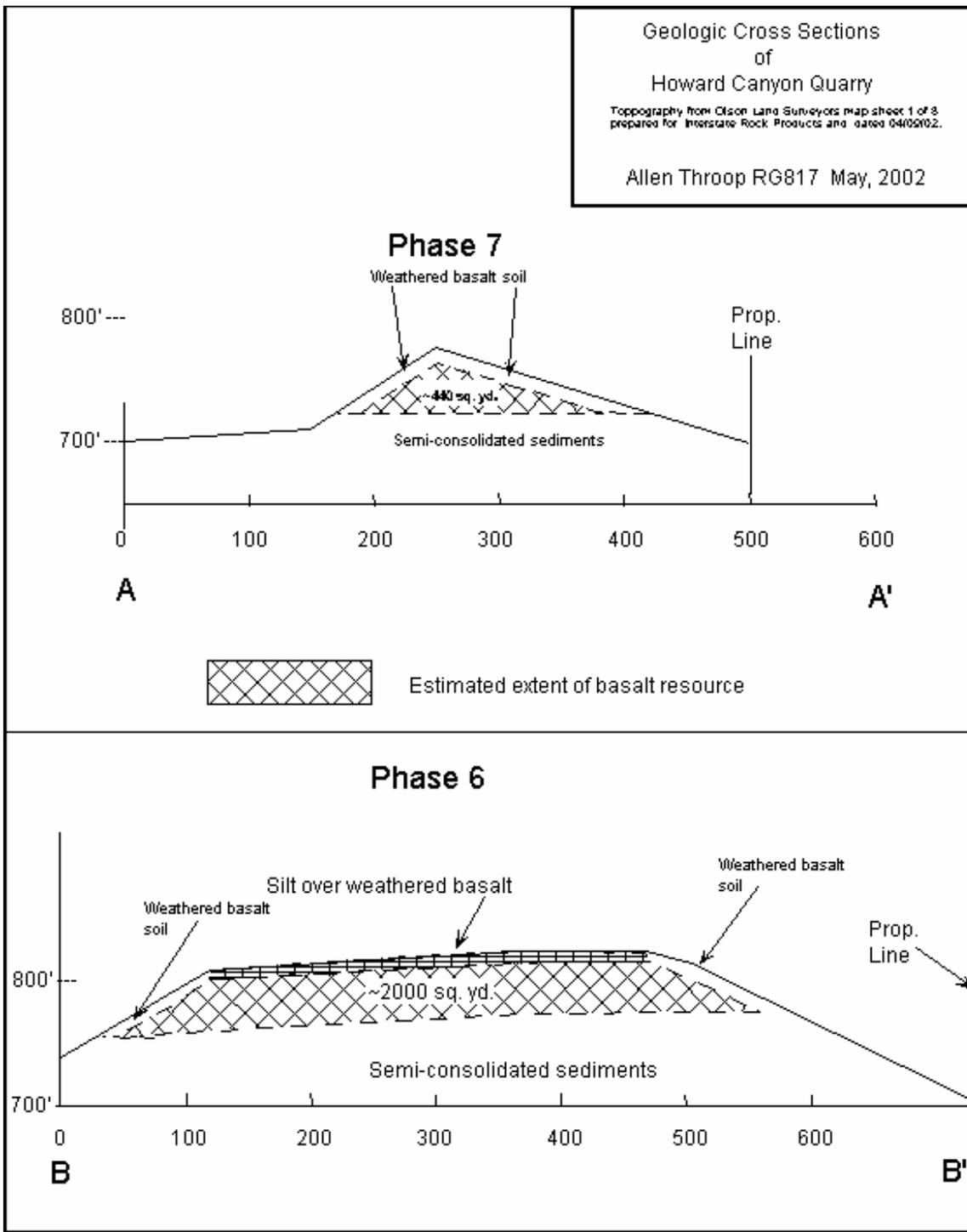


Figure 3. Howard Canyon Cross Sections

Resource Analysis

Proposed Mining Plan

Existing Operations

The existing quarry is currently operating under a small-scale Grant of Total Exemption (GTE) from DOGAMI and does not have a County conditional use permit. DOGAMI has established limits for small-scale mining operations called a Grant of Total Exemption (GTE) (OAR 632-030-0016 (2)). These limits include:

- Mining a quantity of less than 5,000 cubic yards of material or disturbing less than one acre of land within a period of 12 consecutive months; or
- For mining operations begun after July 1, 1975, this exemption terminates as soon as mining operations affect more than five acres of land.¹⁵

The quarry also has a DOGAMI exemption to supply aggregate for forest roads on contiguous parcels. In the past, the owners of the quarry also have supplied aggregate for road building on their substantial forest land holdings in the area that are contiguous to the quarry.

In 1994, when the current Comprehensive Framework Plan policies were adopted, the County included an exemption for Howard Canyon that allows continued lawful mining operations under a DOGAMI GTE without a conditional use permit (Policy 16-B.H.1b). This county exemption allows continued operation of the quarry within the GTE limits. If, and when, DOGAMI finds those limits have been exceeded and the GTE is terminated, then mining operations would be subject to the findings and conclusions in the HCRR.

The columnar basalt is extracted primarily for decorative rock purposes.¹⁶ The mining process begins by loosening the rock with explosives.¹⁷ After blasting, the rock is sorted into three categories: split rock, wall rock, and decorative landscape boulders. The split rock is loaded into a quarry truck and transported to an adjacent pad, where it is manually broken down using an air drill and sledgehammers to split into uniform blocks. The wall rock is processed to size using a hydraulic rock hammer on the arm of an excavator. After stockpiling, the material is loaded into dump trucks for transportation offsite. Approximately 50% of the trucks are loaded with an excavator that lifts the rock into the dump trucks. The remaining 50% of the trucks are loaded with a front-end loader.

¹⁵ It is unclear as to whether the mining operations had to have begun or had to have a GTE certificate, in order to be exempt from this limit.

¹⁶ Verbal communications with Dan Gustafson, Interstate Rock, December 18, 2001

¹⁷ Letter from Olson Engineering, Inc., February 26, 2002 (Appendix C)

Haul trucks enter the quarry via Knieriem Road. After loading, the trucks exit via Howard Road. The number of trucks per day varies depending on orders for the basalt. There is no rock crusher located on site.

Proposed Mining Plan

In 2002, on behalf of the property owners, Interstate Rock Products, Inc. and Olson Engineering prepared a proposed mining plan for an expanded operation that was used as the basis for determining potential conflicts and impacts.

The mining process would be similar to the current operations, but the proposed volumes and levels of activity vary (see Table 2). The total mine area is approximately 31 acres, with about 5 acres impacted at any one time. The amount of material produced for decorative and aggregate purposes would vary, depending on demand. Depending on the level of activity the quarry could supply material over the next 10 to 400 years. The 200,000 cubic yards per year alternative is a demonstration of the level of activity needed to deplete the resource in a relatively short amount of time.

Table 2. Quarry Operations Alternatives

Rate of Extraction	5,000 cy/yr	35,000 cy/yr	75,000 cy/yr	200,000 cy/yr
Percent of Decorative/Aggregate	80/20	60/40	30/70	0/100
Hours of Operation	7am – 5pm	7am – 5pm	7am – 5pm	7am – 5pm
Avg. No. of Trucks Per Day¹	2 (4 trips)	14 (28 trips)	30 (60 trips)	80 (160 trips)
Number of Blasts per Year L = Low Yield H= High Yield	1H	3L 1H	6L 3H	8L 5H
Drilling per Year	5 days	20 days	40 days	100 days
Splitting per Year	50 days	75 days	75 days	-
Crushing per Year	10 days	30 days	100 days	200 days
Loading	0.5 hrs/day	2.2 hrs/day	3.2 hrs/day	5.0 hrs/day
Hauling	0.3 hrs/day	0.8 hrs/day	1.5 hrs/day	3.0 hrs/day

Source: Olson Engineering, April 4, 2002 (Appendix C)

1. Each truck represents two trips – one inbound (empty) and one outbound (full).

As part of this operation, the haul truck route would use Howard Road to enter and exit the site. Knieriem Road would not be used. The proposed truck route travels along local roads for a significant distance (3.9 miles) before reaching a major arterial. Figure 4 illustrates the proposed truck route. From Howard Road, the trucks would travel down Littlepage Road to Hurlburt Road to the Historic Columbia River Highway to Interstate 84.

Define Impact Areas

OAR 660-16-000(2) requires the identification of an impact area for the resource. The impact area is the area in which specific conflicting uses may adversely affect the resource. However, mineral and aggregate resources are different from other Goal 5 resources. The impact area is defined in terms of: 1) surrounding uses that could

adversely affect the resource; and 2) those land uses that could be adversely affected by the expected mining activities.

The 1996 HCRR established a 1,200-foot impact area, primarily based on a 1990 noise assessment study.¹⁸ Also, the 1996 HCRR limited its analysis along the truck route to impacts to the local transportation system and not to adjoining properties along the route. Public testimony at previous hearings for the conditional use permit and the May 16, 2002 community meeting held as part of the preparation of this report have suggested that the 1996 impact area is inadequate (see Appendix G).

¹⁸ Page III-14, 1996 HCRR



Figure 4. Proposed Truck Route

The impact area in this report has two parts: 1) the impact area surrounding the proposed quarry, and 2) the truck route used to transport the material offsite.

Quarry Impact Area

Establishing an impact area for the quarry operations requires judgment. The larger the impact area, the more properties that may be placed under the restrictions of the Protected Aggregate and Mineral (PAM) Resource Overlay Subdistrict (Appendix A), if the resource is a protected site. Therefore, an impact area that extends farther than actual conflicts may result in unnecessary restriction on future permitted land uses for some property owners.

Noise, dust, and blasting associated with mining activities may adversely affect surrounding land uses. The 1996 HCRR established a 1,200 foot impact area, primarily based on a 1990 noise assessment study.¹⁹ This method was based on noise receptor locations that either met or exceeded the DEQ noise standard without any mitigation. However, this methodology does not adequately address the variations in topography surrounding the site that can impact how noise travels. For example, in the noise study conducted for this update, one site at 770 feet from the extraction area was below the DEQ standard, where as a site that is 1,025 feet from the resource area exceeded the standard and another site 1,565 feet from the resource area met the DEQ standard exactly.²⁰

In general, a 1,500 foot impact area is used for this report. The impact area is measured from the edge of the mineral and aggregate resource area. This impact area is large enough to encompass dwellings and farms that could be adversely impacted by mining activities on the site (Figure 5). The 1,500 foot impact area includes the minor drainages off the ridge down to Knieriem Creek and Howard Canyon Creek, which will address potential impacts to the significant Goal 5 stream resources.

The impact area extends beyond 1,500 feet to the south and southeast of the site to include a pocket of 21 parcels zoned for rural residential uses along Loudon Road. These parcels are 150 feet above the quarry on a ridge that forms the south side of Howard Canyon. The higher elevation and lack of intervening topography create potential noise conflicts. This potential was confirmed by public testimony from residents in this area complaining about noise from the existing quarry operations.²¹

Truck Route Impact Area

The proposed truck route will use Howard Road to enter and exit the site (Figure 4). Knieriem Road will not be used. The proposed truck route travels along local roads for a significant distance (3.9 miles) before reaching a major arterial. From Howard Road, the trucks will travel down Littlepage Road to Hurlburt Road to the Historic Columbia River Highway (HCRH) to Jordan Road to Interstate 84. The proposed truck route is preferred

¹⁹ Page III-14, 1996 HCRR

²⁰ See Duple Noise Report (Appendix D)

²¹ May, 2002 Community Meeting Summary (Appendix G).

to alternate routes via Evans Road or Littlepage Road to the Historic Columbia River Highway to Corbett Hill Road and then to Interstate 84 because it is not as steep or nor will it impact the community of Corbett, including the public schools.

Howard Road and Littlepage Road are classified by Multnomah County as local roads, which are designed to provide access to abutting property, but not to serve through traffic. Hurlburt Road is classified as a rural collector, which serves as a link between local roads and rural arterials. Hurlburt Road intersects with the Historic Columbia River Highway in Springdale, approximately 3.9 miles from the Howard Canyon quarry entrance. All local roads are designed to be two-lane roads, with differing lane widths, roadway geometrics, and shoulder improvements. Hurlburt Road and Littlepage Road, from Knierem Road to Hurlburt Road, are designated as a bikeway routes.

The Historic Columbia River Highway (HCRH) is a state highway and is designated by ODOT as a district highway, which is characterized as a traffic distributor between areas in and outside the County. It is also designated as scenic highway and national historic landmark. There are concerns about the ability of the HCRH to accommodate the increased truck traffic, including the design of the roadway (two-lane section with shoulders), limited bridge crossings, designation on the National Register of Historic Places, and a route through Springdale (a rural center). Therefore, the truck route impact area is extended to include the Historic Columbia River Highway from Hurlburt Road to Interstate 84.

Rural residential dwellings are located along the truck route, with varying setbacks. The minimum front setbacks in the zoning districts range from 30 to 60 feet from the centerline of the road. The Duple Noise Study uses an average building setback of 50 feet to evaluate truck noise impact.²² Differences in actual setbacks, changes in grades or truck speeds could increase the noise levels. Therefore, in order to account for possible increased noise levels, the truck route impact area is defined as 100 feet from centerline on either side of the road.

Identify Conflicting Uses

OAR 660-16-005 requires the identification of conflicting uses.²³ This identification is done by examining the uses allowed in each zoning district within the impact area. A conflicting use is one, which, if allowed, could negatively impact a Goal 5 resource site. For mineral and aggregate resource sites, conflicting uses also include those that would be adversely impacted by mining.

²² Page 8, Duple Noise Study (Appendix D)

²³ The new Goal 5 rule limits the conflicting use identification to existing and approved uses, not just allowed uses (OAR 660-23-180(4)(b)). It also limits the conflicts to discharges (noise, dust, etc.), local roads, other Goal 5 resources, and farm practices.

Allowed Uses

Quarry Impact Area

There are four zoning districts within the impact area: Exclusive Farm Use (EFU), Commercial Forest Use - 4 (CFU-4), Multiple Use Agriculture (MUA-20), and Rural Residential (RR). The majority of acreage is zoned CFU-4, primarily the resource site and north, south, and east of the resource site. EFU zoning applies to one (34 acre) parcel within the resource site and nine parcels located due west of the resource site. There is one parcel zoned MUA-20 located in the northwest corner of the impact area. There are 21 parcels with 16 dwellings in the RR zone within the impact area. The permitted uses for each of these districts are listed in Appendix A.

The permitted uses that have the potential to be impacted by mining activities are:

Residential Dwellings (including mobile homes and caretaker residences) – There are 35 residential dwellings within the quarry impact area, including 16 within the rural residential area. These dwellings are considered conflicting uses. The potential for additional dwellings in the impact area is relatively low. There are 14 vacant parcels in the impact area. Recent changes to Goal 3 (agricultural land) and Goal 4 (forest land) limit the potential for new dwellings. Residential dwellings are noise sensitive and therefore conflict with the quarry operations. The adverse noise impacts (conflicts) are discussed below.

Home Occupations – Type A home occupations are allowed uses in the CFU-4, EFU, MUA-20 and RR districts. Type B home occupations are conditional uses in all four districts. Cottage industries and limited rural commercial uses are conditional uses in the MUA-20 district.²⁴ These uses (and conflicts) involve people in activities that might be sensitive to noise impacts from mining activities. For the purposes of this analysis, these types of uses are potential conflicts that are equivalent to residential dwellings. That is, noise impacts to residential uses are similar in nature to impacts to home occupations.

Community Uses – Uses such as parks, campgrounds, schools, churches, and day care facilities are permitted as allowed, review, or conditional uses in the various zoning districts. None of these types of uses are located within the impact area. The nature of these uses (and conflicts) involves people in activities that might be sensitive to noise impacts from mining activities. For the purposes of this analysis, these types of uses are potential conflicts and are considered to be equivalent to residential dwellings.

²⁴ Cottage Industry is defined as “A processing, assembling, packaging or storage industry, generally employing fewer than 20 persons, conducted wholly within an enclosed building located on a site isolated from other such uses, generating low traffic volumes and with little or no noise, smoke, odor, dust, glare or vibration detectable at any property line.” (MCC 33.0005(A)(8))

Farm Uses – Farm uses are allowed in all four districts. Certain agricultural practices, such as raising livestock, can be sensitive to noise impacts from mining activities. Per the requirements of Multnomah County Framework Plan Policy 16-B, Strategies I and J, farm uses are considered to be conflicting uses and are discussed below.

Truck Route Impact Area

The truck route passes through a mix of EFU, CFU, MUA-20, and Rural Residential zoning districts with a similar set of conflicting uses as described within the impact area.

Rural Center – The truck route passes through Springdale, a rural center. Rural centers have a concentration of rural residential uses with limited commercial facilities, small-scale industrial uses, and public uses. The Springdale rural center currently has 55 existing residences with 12 vacant and developable parcels. The rural center also contains several commercial uses and other community-serving uses, including two churches, a fire station, a County road shop, and until 1995 the Springdale Elementary School (now occupied by a children’s theater and museum).²⁵ The rural center represents a concentration of uses that are potentially sensitive to truck traffic from quarry operations. The uses allowed in the Springdale rural center potentially conflict with quarry truck traffic.

Noise

Noise Standards

The DLCDD Goal 5 Aggregate Mining Handbook advises (page 24) that local governments consider Department of Environment Quality (DEQ) regulations that regulate water and air pollution, including noise standards.

There are three different DEQ standards that could apply to this situation, depending on whether the quarry is considered to be an existing use or a new use on a previously used site or a new site. Under OAR 340-035-0015(17):

“Existing Industrial or Commercial Noise Source means any industrial or commercial noise source for which installation or construction was commenced prior to January 1, 1975.”

County records indicate mining activity at the Howard Canyon Quarry as far back as the late 1960s and therefore it may be considered an existing industrial or commercial noise source. However, no land use or zoning permit has ever been issued by Multnomah County.

²⁵ East of Sandy River Rural Plan

Under OAR 340-035-0015(33):

“New Industrial or Commercial Noise Source means any industrial or commercial noise source for which installation or construction was commenced after January 1, 1975 on a site not previously occupied by the industrial or commercial noise in question.”

Under OAR 340-035-0015(47):

“Previously Unused Industrial or Commercial Site means property which has not been used by any industrial or commercial noise source during the 20 years immediately preceding commencement of construction of a new industrial or commercial source on that property.”

The issue then becomes how the terms “site” and “property” are interpreted. The Howard Canyon Quarry is comprised of six discrete parcels, not one encompassing parcel. As such, each parcel is a freely transferable property. The distinction is important in that ORS 92.017 provides that “[a] lot or parcel lawfully created shall remain a discrete lot or parcel, ... as provided by law.” Subsequently, each parcel may be sold as an individual property without any required County zoning or land division review. This could result in new and different ownership of the various parcels within the mapped quarry. It follows then, crossing a parcel line into a previously unused industrial or commercial “site” constitutes a previously unused industrial or commercial “property” and would therefore be a new use on that parcel and hence a new noise source.

Alternatively, the term “property” could be interpreted to mean “contiguous parcels under common ownership”, in which case the expanded quarry could be considered an existing source.

DEQ Daytime Noise Standards

Type of Source	L50 Hourly Standard
Existing Source	55 dBA
New Source on Previously Used Site	55 dBA
New Source on Previously Unused Site	Ambient plus 10dBA

Source: OAR 340-35-0035

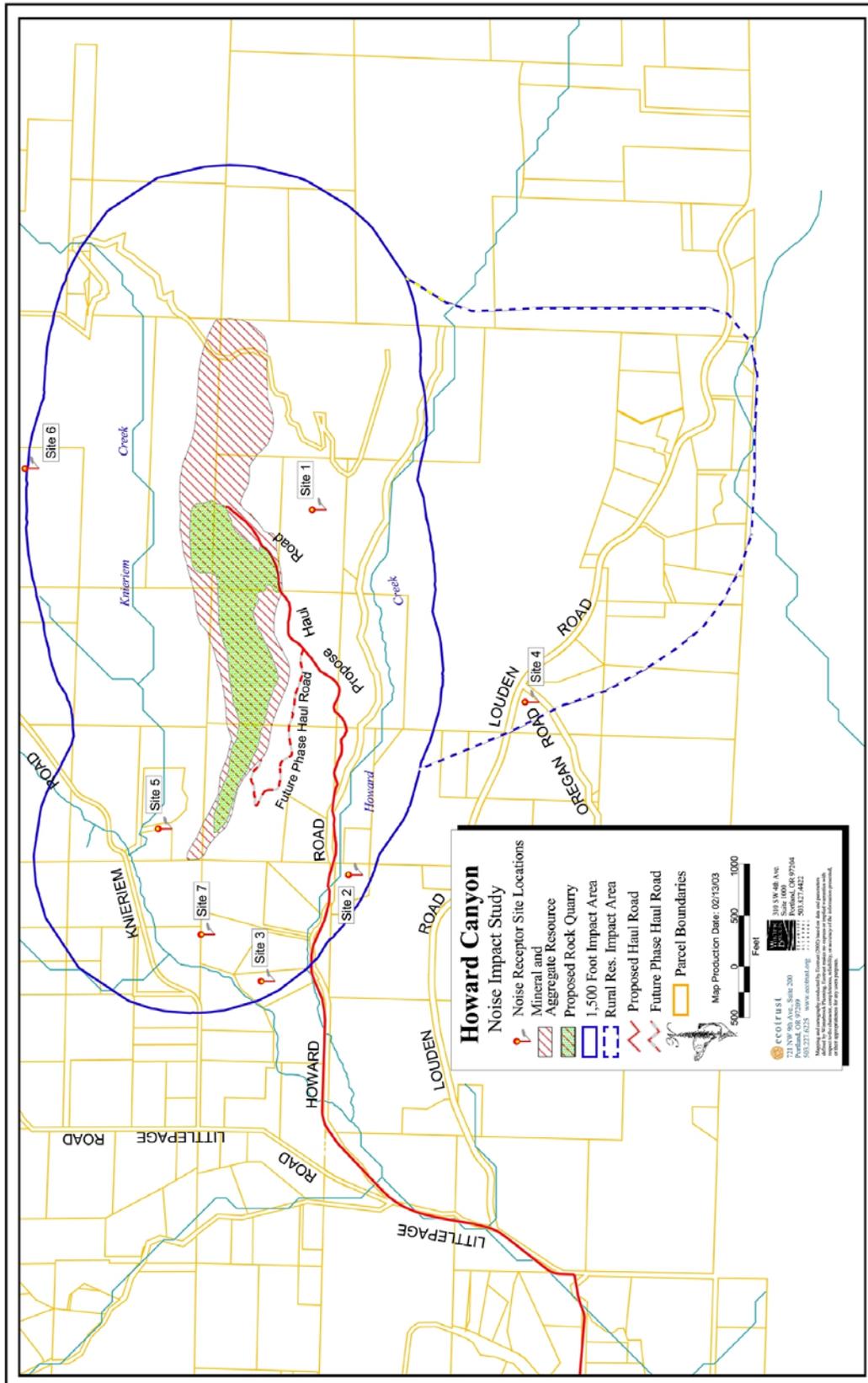


Figure 6. Noise Impact Study

Although the original quarry operations may qualify as an existing source under the DEQ definitions, the quarry has operated under a small-scale Grant of Total Exemption without a permit from the County. Expansion of the quarry will require new permits. The expanded quarry operations also will cross parcel lines onto property that was previously unused. Therefore, for the purposes of evaluating the noise impacts, this analysis will use the stricter standard for New Sources on Previously Unused Sites (Ambient plus 10dBA). Also, per OAR 340-35-0035(1)(b)(ii), the noise analysis will include all noises generated or attributable to the quarry, including the off-site impacts of truck traffic.

Noise Levels

Al Duple, P.E., an acoustical engineer, prepared for Multnomah County a study of the noise impacts of the Howard Canyon Quarry (see Appendix D). Ambient noise was measured at seven residential sites surrounding the resource site in February and March, 2002 (see Figure 6). The noise of rock extraction and processing sources also were measured. Future noise levels were calculated with “Noisecalc”, a popular computer sound propagation program.

Table 3. Predicted Noise Levels Compared To Ambient Levels

Site No.	Distance To Future Extraction ¹	Quietest Daytime Hour (Ambient)	Predicted Noise Level	Difference
1 – Howard Rd.	1,025 ft	39dBA	51dBA	+12dBA
2 – Howard Rd.	1,400 ft	62dBA ²	44dBA	-18dBA
3 – Howard Rd.	1,375 ft	37dBA	43dBA	+6dBA
4 – Louden Rd.	2,750 ft	37dBA	40dBA	+3dBA
5 – Knierem Rd.	400 ft	40dBA	53dBA	+13dBA
6 – Salzman Rd.	1,565 ft	38dBA	48dBA	+10dBA
7 – Howard Rd.	770 ft	38dBA	47dBA	+9dBA

1. Per the Olson Engineering Mining Plan (Appendix C).

2. This site abuts Howard Canyon Creek, which raises the ambient noise level.

Table 4. Predicted Noise Levels Compared To Ambient plus 10 dBA Standard

Site No.	Distance To Future Extraction	DEQ Hourly Standard (Ambient plus 10 dBA)	Predicted Noise Level	Difference
1 – Howard Rd.	1,025 ft	49dBA	51dBA	+2dBA
2 – Howard Rd.	1,400 ft	62dBA	44dBA	-18dBA
3 – Howard Rd.	1,375 ft	47dBA	43dBA	-4dBA
4 – Louden Rd.	2,750 ft	47dBA	40dBA	-7dBA
5 – Knierem Rd.	400 ft	50dBA	53dBA	+3dBA
6 – Salzman Rd.	1,565 ft	48dBA	48dBA	0
7 – Howard Rd.	770 ft	48dBA	47dBA	-1dBA

Two locations (Sites #1 and 5) are predicted to exceed the more restrictive DEQ Ambient Degradation Standard, and a third location (Site #6) meets the standard exactly. These

predicted noise levels create conflicts that need to be mitigated or addressed through the ESEE analysis.

Blasting Noise

Blasting noise was calculated based on distance to each site and charge weight and compared to the DEQ blast noise standard of 98dBC.

Table 5. Predicted Blast Noise Levels

Site No.	Distance To Future Extraction	Scaled Distance	Calculated Noise Level	DEQ Blast Standard	Difference
1 – Howard Rd.	1,025 ft	47 ft	96 dBC	98 dBC	-2dBC
2 – Howard Rd.	1,400 ft	114 ft	83 dBC	98 dBC	-15dBC
3 – Howard Rd.	1,375 ft	112 ft	82 dBC	98 dBC	-16dBC
4 – Louden Rd.	2,750 ft	224 ft	71 dBC	98 dBC	-27dBC
5 – Knieriem Rd.	400 ft	37 ft	99 dBC	98 dBC	+1dBC
6 – Salzman Rd.	1,565 ft	128 ft	84 dBC	98 dBC	-14dBC
7 – Howard Rd.	770 ft	63 ft	94 dBC	98 dBC	-4dBC

Only one site (site 5) exceeds the DEQ blast noise standard. However, the calculated noise levels exceed ambient levels, so are expected to be audible within the impact area.

Truck Noise

Truck noise was studied based on a maximum hourly volume of five trucks per hour (10 round trips), or 40 trucks per day. This volume exceeds the 30 trucks per day in the most intensive mining scenario at the 75,000 cubic yards per year extraction rate. At five trucks per hour, the calculated truck L10 noise level is 51 dBA. The L10 standard (ambient plus 10dBA) for the seven sites range from 51-63 dBA, with three sites at 51 or 52 dBA. Therefore, the haul trucks (at five trucks per hour) could meet this standard. If the truck volume decreases from five truck per hour to two per hour, the L10 truck noise would decrease to 43 dBA, well within the ambient plus 10dBA L10 standard.

However, the truck noise level is based on a reference point of 50 feet, a reference speed of 35 mph, and a flat grade. Noise levels for houses located closer than 50 feet to the road will be louder.²⁶ If the distance decreases from 50 feet to 25 feet, then the noise is expect to increase 6 dBA.²⁷ Trucks traveling faster than 35 mph will be louder. Trucks accelerating uphill or using their engine “Jake” brakes on a downhill section will be louder. All of these conditions exist along the truck route, and therefore have the potential to create conflicts.

The predicted noise levels for trucks have the potential to create conflicts that need to be mitigated or addressed through the ESEE analysis.

²⁶ The minimum front setback in the Rural Residential and Rural Center zones is 30 feet.

²⁷ Page 8, Duple Noise Study (Appendix D)

Quality of Life Issues

The DEQ hourly noise standard does not adequately reflect the impact from continuous quarry activities. It does not distinguish between one hour of operation or eight hours of operation. It does not distinguish between one day of operation or eight months of operation. However, there is no objective standard to measure or quantify this impact to the quality of life to the surrounding area.

Therefore, the long-term noise impacts on quality of life are potential conflicts that need to be mitigated or addressed through the ESEE analysis. These impacts will be addressed as a social impact, especially in terms of impacts to the rural quality of life. Noise impacts may be considered an environmental impact, related to air quality, or an economic impact, related to the cost of mitigation measures, such as additional sound insulation. For this study, the impacts are related to the social impacts, in that, mitigation measures to mitigate social impacts will reduce any environmental or economic impact.

Local Transportation Network

The Howard Canyon Quarry is only accessible from local roads and is 3.9 miles from the nearest arterial at the intersection of Hurlburt Road and the Historic Columbia River Highway (HCRH) and another 4.8 miles (a total of 8.7 miles) to Interstate 84. The Corbett area is located between the Sandy and Columbia Rivers with only three access routes across the Sandy River to the Portland metropolitan area – the HCRH, Corbett Hill Road to Interstate 84, and Gordon Creek Road to the south.

Other operating quarries in Multnomah County, such as the Angell Brothers site and the County's 190th Ave site, have direct access to collector, major collector, or arterial streets.

Bridges and Culverts

Water and topography limit the point of ingress and egress to the rural area east of the Sandy River and require all traffic to pass over one of several bridges or viaducts. Bridge Inventory Ratings differ for different truck configurations. The typical aggregate haul truck is a Type 3 truck, which has tandem (double) rear axels and a total maximum weight of 25 tons when fully loaded. The proposed truck route limits the number of bridge or culvert crossings to the following:²⁸

Littlepage Road Culvert over Big Creek: This 12-foot span concrete culvert is about 2,000 feet south of the Howard Road intersection. A 1992 evaluation by the County's Bridge Section listed the culvert as a Type 3 Inventory Rating, which is defined as 25 tons for Type 3 trucks. The Inventory Rating is defined as the load that can safely utilize an existing structure for an indefinite period. The listed Operating Rating for the culvert is 33.3 tons.

²⁸ Multnomah County, Division of Transportation, Bridge Office

Hurlburt Road Culvert (#520-03) over Smith Creek: This culvert is at milepost 0.380 on SE Hurlburt Road. According to the IRIS database, the cast-in place concrete culvert is a 70' long box, with a height of 36" and width of 48". There is a headwall on the inlet. Cover depth is 10' with fall slope of 2% from inlet to outlet. The pipe has a 10 degree skew off of perpendicular of the road. There is only 1 pipe at this crossing. Maintenance crews regularly inspect the culverts, but the original inventory was done at August 1994, and the non-engineering inventory team view the pipe as "Adequate" in meeting the draining needs. The pipe is in Fair condition. This pipe is identified as one of the County's 45 fish passage culverts, but it's rating places it in the lowest third of program priority.

Howard Road Culverts over Howard Canyon Creek: A February 6, 2003 letter by Brian Freeman, P.E., of Group Mackenzie on behalf of the property owner identified four culverts along Howard Road that require improvements to provide adequate cover, structural support, or pipe strength.

Roads

The 1996 HCRR included an assessment of the local road segments nearest the Howard Canyon Quarry.²⁹ This assessment is supplemented by an overlay analysis by Pavement Services, Inc. (PSI) prepared for the quarry owner.³⁰

Howard Road: This road is designated as a local road on the Multnomah County Functional Classification for Trafficways. The distance from the site driveway to the Littlepage Road intersection is 6,300 feet and runs parallel to Howard Canyon Creek and Big Creek with four culvert crossings. The roadway appears to be in fair to good condition with no evident distress. The existing structural section of the road is 2.75 to 4.0 inches of asphalt concrete on a 5 to 13 inch thick aggregate base. The PSI overlay analysis indicates that an overlay of about 0.5 to 2.0 inches (average of 1.3 inches) thick is needed to handle the haul trucks from the quarry.

Littlepage Road: This road is designated as a local road on the Multnomah County Functional Classification for Trafficways. Littlepage Road, from Hurlburt Road to Knieriem Road, is designated as a bikeway, but rural area bikeway standards do not require paved shoulders or a bike lane. The distance from Howard Road to Hurlburt Road is 2,200 feet and runs parallel to Big Creek with one culvert crossing. The roadway appears to be in very good condition with no evident distress. The existing structural section of the road is seven inches of asphalt concrete on a four inch aggregate base. The PSI overlay analysis indicates that, on average, a 1.5 inch overlay is needed north of Loudon Road, but no overlay is required south of Loudon Road to handle the haul trucks from the quarry.

²⁹ Page III-18, 1996 HCRR

³⁰ *Howard Canyon Quarry Haul Route Pavement Evaluation*, December 18, 2001 by Pavement Services, Inc.

Hurlburt Road: This road is designated as a rural collector road on the Multnomah County Functional Classification for Trafficways. The distance from Littlepage Road to the Historic Columbia River Highway is 2.3 miles with one culvert crossing. The roadway surface has been chip sealed and generally appears to be in good condition, with occasional areas of low severity alligator cracking. The roadway has two travel lanes that are 10-feet and wider with varying shoulder widths. The existing structural section of the roadway is 7.0 to 9.75 inches of asphalt concrete on a 5 to 10 inch thick aggregate base. The PSI overlay analysis indicates that no overlay is required except for two isolated locations that require 0.6 inches overlay to handle the haul trucks from the quarry.

Hurlburt Road is a designated bikeway, but rural area bikeway standards do not require paved shoulders or bike lanes. Improving the bikeway along Hurlburt Road is a \$1,000,000 project and is on Multnomah County's Fiscal Year 2003-2007, Transportation Capital Improvement Plan (TCIP), but is not scheduled to be constructed.

Historic Columbia River Highway (HCRH): This road is designated as a district highway in the Oregon Highway Plan (1999). The distance from Hurlburt Road to the Troutdale Bridge across the Sandy River is 4.33 miles and runs parallel to the Sandy River. The highway is a registered national historic landmark starting at the Lewis & Clark State Park through Springdale and Corbett and east into the Columbia River Gorge National Scenic Area. The HCRH has two 12-foot wide travel lanes with varying shoulder widths. Some shoulder widths are paved with the rest gravel. The roadway surface appears to be in good condition except for a very few locations of low severity distress and one location of a small sinkhole failure marked for repair. The existing structural section of the road is 6.0 to 8.5 inches of asphalt concrete on a 4 to 10 inch aggregate base. The PSI overlay analysis indicates that strengthening the roadway is required at approximately 30% of the test locations, with an average overlay of about 0.3 inches to handle the haul trucks from the quarry.

Jordan Road: This road is a short (0.69 mile) connector between the Sandy River bridge and I-84. It is not classified by Multnomah County or ODOT, but is under the jurisdiction of Oregon State Parks with a maintenance agreement with ODOT. Jordan Road has two 12-foot wide travel lanes with varying shoulder widths. The northbound lane width narrows to 10 feet as the road passes under the railroad bridge, with the bridge buttress approximately 2 feet from the edge of the roadway. At this point, the roadway curves and northbound trucks are forced to cross the centerline into the southbound lane. An expansion of the road at this location requires approval by the Union Pacific railroad as well as potential impacts to the Sandy River, a national scenic waterway.

The roadway surface is in fair to good condition except for the area near the I-84 interchange, which is in poor condition. The existing structural section of the road is 4.25 inches of asphalt concrete on a 10 inch aggregate base. The PSI

overlay analysis indicates that strengthening the roadway is required at two locations, with an average overlay of about 0.7 inches to handle the haul trucks from the quarry.

The only planned road maintenance or improvement projects along the route is a shoulder widening project for pedestrian and bicycle use for Hurlburt Road from Littlepage Road to the Historic Columbia River Highway. The project is identified as a Bike Fund project on the 2003-2007 Transportation Capital Improvement Program. The cost is estimated at \$1,000,000. This project ranks 66th out of 75 projects on the list and is not scheduled for construction.

The following conflicts exist on the local transportation network:

- The proposed truck route crosses at least 6 bridges or culverts that may not be able to handle a significant increase in truck traffic over a long term basis.
- The proposed truck route is on local roads that are unable to carry a significant increase in truck traffic over a long term basis.
- Hurlburt Road and Littlepage Road are designated bikeways without bicycle lanes or paved shoulders, which could create conflicts between quarry truck traffic and pedestrians, bicyclists and equestrians.
- The northbound lane of Jordan Road as it passes under the railroad bridge is too narrow, which causes northbound trucks to cross the centerline into the southbound lane.
- The Historic Columbia River Scenic highway is a designated national historic landmark, scenic byway, a primary accessway for the area, and a regional attractor for tourism and recreation.

The potentially significant impacts to local roads are conflicts that need to be mitigated or addressed through the ESEE analysis. Road maintenance and improvement projects will be addressed as an economic impact. Safety issues and conflicts between users, especially pedestrians, bicyclists, and equestrians, will be addressed as a social issue.

No specific road improvement projects have been identified at this time, so the environmental impacts are difficult to determine. However, road improvement projects could involve removal or replacement of culverts that are barriers to fish passage. Therefore, given all road projects are required to comply with federal ESA rules to minimize impacts to salmonids and their habitat, road projects are assumed to have minimal environmental impacts and will not be considered as part of the ESEE analysis.

Other Goal 5 Resources

Multnomah County has conducted four analyses of significant natural resources in the East of the Sandy River Rural Plan area. As part of the initial adoption of the Multnomah County Comprehensive Framework Plan in 1980, the first survey identified several large-scale significant resource sites (or combinations of many significant resources categories), wildlife habitat areas and historic sites. In 1990, a second inventory identified significant wetlands and associated wildlife habitat areas. The third analysis was the 1996 HCRR. The fourth analysis was the *East of Sandy River Wildlife Habitat and Stream Corridor ESEE Report*, completed in 1997. Based on these analyses, the other Goal 5 resources that potentially conflict with the Howard Canyon Quarry, include:

- Significant Streams
- Big Game Wintering Habitat Areas
- Historic Resources

Significant Streams

The 1996 HCRR determined that Howard Canyon Creek, Knieriem Creek, and Big Creek are significant Goal 5 resources.³¹ Howard Canyon Creek and Knieriem Creek are tributaries to Big Creek, which in turn is a tributary of the Sandy River (see Figure 7). The drainage area of all three creeks is approximately 4,134 acres. The Oregon Department of Fish and Wildlife (ODFW) designates all three creeks as Class 1 streams. The Sandy River is designated by the County as a significant Goal 5 resource and as a state scenic waterway and a federal wild and scenic waterway.

Multnomah County has protected all three streams with the SEC (Significant Environmental Concern) overlay zone that applies within 300 feet of the stream centerline. This zoning overlay limits new development within 300 feet of the streams and requires full mitigation of any impacts through proper design and revegetation of disturbed areas. In areas where damage is unavoidable, the development must show other stream enhancements will improve the overall quality of the stream from its previous state. Forestry and agriculture activities are exempt from this ordinance.

For this report, Multnomah County contracted with Pacific Habitat Services, Inc. to prepare a Biological Assessment (BA) to address the potential effects of expanding the existing Howard Canyon Quarry on species currently listed or candidates proposed for listing under the federal Endangered Species Act (ESA) and the State of Oregon's ESA (see PHS Biological Assessment, Appendix E). A list of the species potentially affected by the quarry expansion is included in Table 6.

³¹ Pager II-8, 1996 HCRR

Table 6. Federal ESA Status of Species Found in the Howard Canyon area

Species	Scientific Name	Evolutionary Significant Unit (ESU)	ESA Listing Status	Listing Decision Date
Steelhead Trout**	<i>Oncorhynchus mykiss</i>	Lower Columbia River	Threatened	March 13, 1998
Coastal Cutthroat Trout**	<i>Oncorhynchus clarki clarki</i>	Southwest WA/Columbia River	Proposed as Threatened	Since March 1999
Chinook Salmon**	<i>Oncorhynchus tshawytscha</i>	Lower Columbia River	Threatened	March 16, 1999
Coho Salmon**	<i>Oncorhynchus kisutch</i>	Lower Columbia River/Southwest WA	Candidate to Propose as Threatened	July 1995

* The state of Oregon has classified steelhead trout stocks, coastal cutthroat trout, and lower Columbia River coho salmon as Sensitive Species of Critical Concern under the Oregon ESA.

** Steelhead and coho salmon are under the jurisdiction of the National Marine Fisheries Service (NMFS). Coastal cutthroat trout are under the jurisdiction of the US Fish and Wildlife Service (USFWS).

Salmon and steelhead trout habitat in the Sandy River and its larger fish-bearing tributaries are federally protected by the essential fish habitat provisions of the Magnusson-Stevens Act. The 80-foot high waterfall in Big Creek precludes passage by Chinook salmon and steelhead trout from the Sandy River. As such, these species do not inhabit Big Creek, Howard Canyon Creek or Knieriem Creek. However, these creeks do provide habitat for resident cutthroat trout.

Although the waterfall restricts anadromous fish from entering the three creeks, the quality of water in the creeks still influences the quality of anadromous salmonid habitat in the Sandy River. For example, downstream of the confluence of the Sandy River and Big Creek are spawning gravels. These gravels could be negatively affected by changes in water quality stemming from riparian degradation or in-stream impacts to the three creeks. If the operation of the quarry impacts the spawning gravels, then NMFS could consider it as significantly modifying or impairing essential behavioral patterns (e.g. spawning), which is a “take,” as defined within the ESA.

The BA assesses the potential effects of mining within the watersheds. It includes an assessment of the current quality and quantity of riparian habitat along the three creeks and an assessment of the in-stream habitat and fish presence within the three creeks. This information is used to determine the environmental baseline of the watershed. Potential impacts from expanding the proposed quarry are weighed against how the environmental baseline could be affected by the mining operation. Proposed conservation measures to ensure that the environmental baseline is not adversely affected are included.

Stream Characteristics

The northern slope from the quarry area into Knieriem Creek is relatively undissected by drainages; suggesting that most of the surface and ground water from the quarry area goes south to Howard Canyon Creek. Howard Canyon Creek, which lies approximately 1300 feet south of the quarry area, has a gradient of approximately 2%. Tributary drainages to the creek from the quarry area have a variable spacing and strike with an average spacing of 370 feet. The gradient of these small tributary channels varies from 0.15 to 0.25.

A general pattern for the creeks is the change from canopied streams, with better quality riparian habitat, stable banks and better large woody debris (LWD) recruitment in the upper watershed, to less complex, increasingly channelized and exposed streams lower in the watershed. A common feature of the creeks within the vicinity of the quarry is the general lack of complex instream habitat, which primarily stems from the lack of large woody debris (LWD) within the streams. Logging, agricultural activities, and other local land use practices have reduced LWD recruitment in the watersheds. It also appears that several landowners within the area keep their streams and banks “clean”.

Water quality was not directly measured during field visits. Therefore, the environmental baseline for water quality can only be indirectly addressed. Upstream of the quarry where human influence is minimal, the water quality of Howard Canyon Creek, Knieriem Creek and its small tributary Ross Creek appeared very good. Canopy cover is good which maintains lower temperatures during the summer. Chemical influences and sedimentation are likely not a problem. Though it was raining during one site visit, all streams ran clear. Downstream, where the streams run through yards and pastures, it is likely that nutrients and fecal coliform from livestock and septic tanks enter the streams. Chemicals leaching into the stream systems likely occurs where there are insufficient buffers from roads (hydrocarbons) and when the creeks flow through yards and pastures or yards (herbicides, fertilizers). Additionally, the streams probably become slightly more turbid due to the unstable and failing banks.

Although the quality of the water degrades in all of the streams lower in the watershed, the quality does not appear to be sufficiently poor to inhibit populations of cutthroat trout from persisting along the entire stream network even during the summer.

The riparian areas of the creeks have been impacted by grazing, agricultural activities, rural road construction, and landscaped areas associated with residential construction. In general, the upper reaches of Howard Canyon Creek and Knieriem Creek both have undisturbed sections of riparian vegetation and human influences are minimal. The lower ends of the drainages have already been altered. There are significant impacts from roads, houses and yards, and livestock with access to the stream. Near the confluence of Knieriem Creek and Big Creek, tree cover is entirely lacking from the riparian areas. In general, Big Creek has been impacted by roads, culverts, clearing and residential development. However, areas below Hurlburt Road appear to have an undisturbed

riparian cover extending through Oxbow Park to the Sandy River. The riparian areas have not been directly impacted by the existing quarry operation.

There is no anadromous fish passage from the Sandy River into Big Creek, Howard Canyon, Creek and Knieriem Creek. A large natural 80 foot waterfall exists on Big Creek just above the confluence with the Sandy River. The cutthroat trout that exist upstream of the barrier are not prevented from traveling downstream and may add to the genetic diversity of cutthroat trout in the Sandy River. Upstream of the waterfall, a number of culverts provide difficult or impossible barriers to upstream migration of juvenile and adult cutthroat on Big Creek, Howard Canyon Creek, and Knieriem Creek. The barriers result from the long length of several culverts, the steep slope of several culverts, and eroded outfalls creating jump barriers greater than 6 inches high.

Where property access was granted, a backpack electroshocker (permit issued by the Oregon Department of Fish and Wildlife) was used to assess the presence of fish in Knieriem Creek, Howard Canyon Creek, and Big Creek. The survey determined that only two fish taxa: cutthroat trout and a sculpin species tentatively identified as the reticulate sculpin (*Cottus perplexus*), reside in the three creeks.³² Only sculpins were found in lower Knieriem Creek. The numbers of fish found through the survey were relatively low. All fish appeared in good health with no obvious anomalies including sores, fin rot, or parasites. Collected fish were revived in buckets, identified and returned to the streams.

Potential Effects from Quarry Operations

The impact of quarry operations is dependent of several parameters of watershed health, including: temperature, turbidity, chemical contaminants/nutrients, physical barriers, substrate, large woody material, percent pool area, pool quality, pool frequency, off-channel habitat, refugia, width/depth ratio, streambank condition, floodplain connectivity, peak/base flows, drainage network increase, road density/location, disturbance history, and riparian reserves.

It is unlikely that the quarry will have direct impact on the creeks or the riparian vegetation along the creeks. However, impacts to water quality can have a detrimental effect on fish populations, even within the Sandy River. Increasing the sediment load decreases the viability of the cutthroat trout populations, many of which are isolated to certain reaches of the creeks by substandard culverts that do not allow fish passage and, therefore, the ability to escape from impaired water quality conditions. A spawning gravel bar in the Sandy River, located just downstream of the mouth of Big Creek, could be detrimentally influenced by an increase in sediment deposition resulting from the proposed quarry expansion.

Stormwater runoff from the quarry could become a very large sediment source, especially if overburden stockpiles are washed down into Howard Canyon Creek. Also, increased truck traffic on adjacent roads also may contribute to sediment entering the creeks from mud, dirt, and dust blowing off the trucks and load. Vehicle refueling and maintenance

³² Page 4, PHS Biological Assessment (Appendix E)

as well as accidental chemical spills could impact water quality. Implementation of strict conservation measures will be needed to reduce adverse impacts to water quality.

Potentially significant impacts to streams and listed salmonid species will be mitigated or addressed as an environmental impact through the ESEE analysis.

Sensitive Big Game Wintering Areas Habitat

The East of Sandy Rural Plan incorporated by reference the finding of *The East of Sandy River Wildlife Habitat and Stream Corridor ESEE Report*, completed in 1997. This report concludes that the Howard Canyon quarry is located near three types of wildlife habitat area – primary, secondary and impacted. Primary wildlife habitat, consisting of large connected blocks of forest land in various successional stages, is located to the east. Secondary wildlife habitat (mixed forest and agriculture areas) and impacted wildlife habitat (rural residential and agricultural areas) areas are located to the west. Primary and secondary wildlife habitat areas were found significant.

In response to the previous conditional use permit application, the Oregon Department of Fish and Wildlife (ODFW) identified Howard Canyon and its environs as winter range for blacktail deer and Roosevelt elk.³³

Impacts to winter range for blacktail deer and Roosevelt elk are addressed as an environmental impact in this ESEE analysis.

Historic Resources

Public comments and testimony have raised the issue of potential impacts to the historic resource qualities of the HCRH. The County's 1980 inventory identified two historical sites within the East of Sandy River rural area outside of the Columbia Gorge National Scenic Area. These are the Mountain View Cemetery, which is county-owned and thus protected, and the Graff house, a Queen Anne-style structure located on Loudon Road, erected in 1885, and privately owned. This house is on the National Register of Historic Places. It also has a Historic Preservation Overlay zone, which requires review of any alterations for their effect on the site's historic nature. There are many County-designated historic sites within the Columbia Gorge National Scenic Area, which are now protected under the National Scenic Area Management Plan. In addition, a 1981 Oregon Department of Transportation (ODOT) study (*the Columbia River Highway Project*) inventoried historic resources along the HCRH. The inventory studied five structures in Springdale which have some historic significance, including the Springdale School Building. The study documented the well-known historic nature of the HCRH itself, which also is on the National Register of Historic Places. ODOT has determined that widening the HCRH to include turn lanes would have an adverse effect on the historic designation.

³³ Email from Gregory Hobart, Habitat Biologist, ODFW to Virginia Bowers, Multnomah County, dated March 29, 2001

Farm and Forest Impact Study

The Board of Commissioners directed County staff to review potential impacts to surrounding farms. Because Multnomah County policies address farm and forest impacts, this study was expanded to include forests as well as farms.

The Farm and Forest Impact Assessment included a windshield survey and a mail survey to determine possible impacts from quarry operations. The windshield survey of the impact area and truck route was conducted to observe and note different farm and forest practices. An impact survey was mailed to all property owners within the impact area and along the truck route to identify potential conflicts between the quarry operations and existing farm and forest practices.³⁴ The summary of survey results is in Appendix F. In addition, a significant number of letters and public testimony has been submitted to document adverse impacts to farms in the surrounding area and along the truck route.

Current Farm and Forest Practices

In general, agricultural practices within the impact area and along the truck routes are a mix of small-scale farms, primarily raising livestock (horses, cattle, sheep, goats, llamas, and alpacas) with pastures for grazing or growing hay. There are a few farms that grow crops (vegetables and berries) or nursery stock.

Commercial forest lands are located primarily to the east of the quarry site. There are few small-scale wood lots located along the truck route.

Potential Changes to Farm and Forest Practices

Many of the survey respondents did not identify any impacts from the existing quarry or potential changes from an expansion.

Some respondents identified negative impacts to livestock related to blasting and truck traffic. These noise impacts scare animals, causing them to panic, breakdown fences and get loose. These respondents indicated a need to be more cautious with handling livestock, such as creating buffer zones and keeping them away from the edge of the road. A few respondents indicated breeding problems such as miscarriages or animals too nervous to breed. One respondent indicated negative impacts, especially from truck traffic, on their show horses. The trucks distract and otherwise make the show horse too nervous to train properly. They said increased operating hours and truck traffic would limit their training time.

One respondent indicated the need to wear masks and other protective measures to mitigate dust impacts while cutting and baling hay.

A few respondents indicated that it might be necessary to change hauling hours during harvest time to avoid heavy truck traffic.

³⁴ Of 344 surveys mailed to property owners, 48 surveys were returned. Not all survey returns were from farm or forest property owners. Some were from rural residential owners with no farm or forest activity. Some addressed traffic and other quality of life impacts unrelated to farm or forest impacts. The survey results are summarized in Appendix F.

None of the forest property owners indicated a potential impact to their practices from the proposed quarry operations.

Potential Cost Increases to Farm and Forest Practices

A couple of respondents indicated increased feed costs due to the loss of pasture land as they try to create a buffer zone by moving livestock away from the truck traffic. In the case of the show horses, the respondent indicated that there would be additional costs to transport the horses to an alternative training grounds or added lighting costs to be able to train at night.

A few respondents indicated added costs for landscaping or fence improvements including adding additional rails or hot wires.

One respondent indicated they would have increased hauling and handling costs if they changed their harvesting and hauling times to off peak hours to avoid truck traffic.

Additional Public Testimony

Testimony at the public hearings and written testimony submitted to the record confirm the impacts identified in the farm survey with additional detail. Selected excerpts include:

Charles Diebert owns a 120-acre farm on NE Salzman Road, northeast of the resource site. Mr. Diebert has testified about conflicts between his livestock and noise from existing quarry operations and truck traffic (exhaust brakes).³⁵ In particular, his animals have experienced miscarriages and have died as a result of stress from loud noises. He is no longer able to utilize “field breeding” and had to build a breeding place at a significant cost.

Michael Bogden owns a farm on Knieriem Road, where he raises livestock, including horses, goats, and llamas.³⁶ Mr. Bogden describes existing conflicts with respect to training his show horse, breeding his llama, and panicked goats in his pastures, which will require additional fencing.

Sue Clark owns a farm on SE Littlepage Road, where she raises show horses.³⁷ Conflicts with truck traffic limits use of local roads for training, which could require transporting horses to another site for training. Also, noise from truck traffic interrupts the breeding of mares brought to the farm.

Leslie Roach owns R&R New Options Equine, which operates on leased pastures on Littlepage Road.³⁸ The farm rehabilitates sick or injured horses and raises and/or trains horses. The farm also offers riding lessons. Existing truck traffic, especially the exhaust brakes, spooks young and inexperienced horses. One barn

³⁵ Letter from Charles Diebert

³⁶ Letter from Michael Bogden, March 1, 2003

³⁷ Letter from Sue Clark, March 1, 2003

³⁸ Letter from Leslie Roach, March 3, 2003

located near the road is used to house pregnant mares, and there is a concern about the noise impact from quarry truck traffic.

Alan Stokes owns a farm on SE Howard Road, where he raises cattle and grows hay.³⁹ Moving farm equipment along SE Howard Road is difficult due to its narrow width and blind corners. Also, quarry activities, especially blasting, could cause cattle to stampede or miscarriages at calving time. The alternative will be to create buffers in the pastures, which will increase feeding costs.

Adverse Impacts

Potentially significant impacts or increased costs on farm practices are related to noise and truck traffic and are potential conflicts that need to be mitigated or addressed through the ESEE analysis. To extent that mitigation measures reduce noise and truck traffic impacts for other conflicting uses (i.e. residential dwellings), some of the impacts to farms will be reduced. However, as evidenced by the conflicts with the existing small-scale GTE quarry operations, there is an inherent conflict between trucks and livestock.

Farm impacts will be primarily addressed as an economic impact, in terms of added cost of farming practices as a result of the quarry operations.

³⁹ Letter from Alan Stokes

ESEE Consequences

OAR 660-016-005 (2) requires that if conflicting uses to the resource are identified, then the economic, social, environmental and energy (ESEE) consequences of the conflicts must be identified and analyzed. Both the impacts on the resource site and on the conflicting use must be considered. The applicability and requirements of other Statewide Planning Goals, where appropriate, must also be considered. (OAR 660-16-0005)

The ESEE analysis is divided into three major components:

1. The consequences of the main quarry operations as a function of the amount of material extracted.
2. The consequences of mining on the hogback ridge.
3. The consideration of other Statewide Planning Goals.

Overview

The ESEE analysis is based on three basic scenarios outlined in OAR 660-16-010:

Fully Allow Mining (Protect the Resource Site without Local Restrictions)

Allow unlimited extraction of mineral and aggregate material, with minimal mitigation measures to comply with minimum state standards for noise and stormwater impacts. It assumes no additional local requirements or conditions of approval. ESEE consequences are summarized in Table 7. In general, there are no or minimal positive economic benefits in providing a regional and local source of mineral and aggregate material, with negative impacts to the surrounding area, in terms of reduced quality of life, increased costs to farms, increased potential of water quality impacts and sedimentation in the streams, and increased costs related to road maintenance and improvement projects.

Fully Allow Conflicting Uses (Prohibit Mining)

This scenario evaluates the consequences of no quarry activities. It assumes that the conflicts with existing and new residential dwellings and farms effectively prevent extraction of the aggregate and mineral resource. The ESEE Consequences are summarized in Table 7. In general, eliminating a regional and local source of mineral and aggregate material will have no or minimal negative economic impacts to the county and the region. Prohibiting extraction would have a major economic impact to the quarry owner and operator, however, this impact would be mitigated by the continuing operations under the DOGAMI GTE. These impacts are balanced by positive impacts to the surrounding area, in terms of improved quality of life and decreased costs to farms.

Limit Mining and Conflicting Uses

This scenario explores three alternatives of balancing the conflicts between extraction and the surrounding uses. The ESEE Consequences are summarized in Table 7.

1. Base Measures plus Severe Limits on Volume – The scenario includes Base Mitigation Measures for stormwater and noise with strict limits on volume of material

to represent continued operation of the quarry at levels similar to the DOGAMI GTE limits. In general, there will be no economic impacts to the county and the region because there will be a continuation of the supply at historic levels. The quarry owner will continue to realize some economic benefit, but it will be reduced by the added cost of the mitigation measures. The negative impacts to the surrounding area, in terms of impacts to quality of life and to farms, are reduced but still present.

2. Base Measures plus Moderate Limits on Volume of Material – This scenario includes Base Mitigation Measures plus limits extraction to a maximum of 17,500 cubic yards per year. In general, there are no or minimal positive economic benefits in providing a regional and local source of mineral and aggregate material, with increased economic benefits to the quarry owner and operator. These economic benefits are offset by increased costs for mitigation measures, such as additional noise and water quality monitoring or more extensive road improvements. There are increased negative impacts to the surrounding area, in terms of reduced quality of life and increased costs to farms. The negative impacts are related to the overall level of quarry activities (duration of operations) and volume of truck traffic.
3. Base Mitigation Measures – This scenario allows extraction up to 35,000 cubic yards per year. In general, there are no or minimal positive economic benefits in providing a regional and local source of mineral and aggregate material, but greatly increased economic benefits to the quarry owner and operator. These economic benefits are offset by increased costs for mitigation measures, such as additional noise and water quality monitoring and more extensive road improvements. There are increased negative impacts to the surrounding area, in terms of reduced quality of life, increased costs to farms, and increased costs related to road maintenance and improvement projects. The negative impacts are related to the overall level of quarry activities (duration of operations) and volume of truck traffic.

Table 7. Summary of ESEE Consequences

	Fully Allow Mining	Limit Mining and Conflicting Uses	Prohibit Mining
Economic	<ul style="list-style-type: none"> • No or minimal positive effects to the region and east Multnomah County. • Positive economic effects to quarry owner and operator. • Possible negative effects to property values in the area. • Negative effects from increased cost of farm practices. • Negative effects from decreased development in rural center. • Negative effects due to lower water quality and increased treatment costs. • Negative effects due to decreased outdoor recreation opportunities. • Negative impacts due to increased road maintenance costs. • Marginal positive impacts in providing local aggregate source. 	<ul style="list-style-type: none"> • No or minimal positive effects to the region and east Multnomah County. • Decreasing positive economic effects to quarry owner and operator. • Decreasing negative effects to property values in the area. • Decreasing negative effects from increased cost to farms. • Decreasing negative effects from decreased development in rural center. • Decreasing negative effects from improved water quality and lower treatment costs. • Decreasing negative effects due to decreased outdoor recreation opportunities. • Decreasing negative impacts due to increased road maintenance costs. • Marginal positive impacts from a local aggregate source. 	<ul style="list-style-type: none"> • No or minimal negative effects to the region and east Multnomah County. • Negative economic effects to quarry owner and operator. • Possible positive impact on property values for quarry impact area. • Positive economic effects on farm practices due to reduced costs. • Positive effects from increased development in rural center. • Possible positive impacts on water quality and decreased treatment costs. • Positive impacts due to lower road maintenance costs. • Positive effects due to increased outdoor recreation opportunities. • Marginal negative effects from loss of local aggregate supply.
Social	<ul style="list-style-type: none"> • Negative impacts on quality of life due increased noise levels from the quarry operations and truck traffic. • Negative effects from ped, bike, and equestrian conflicts with truck traffic. • Negative impacts from reduced outdoor recreation opportunities. 	<ul style="list-style-type: none"> • Decreasing negative impacts on quality of life due to lower noise levels from quarry operations and lower truck traffic. • Decreasing negative effects from conflicts with truck traffic. • Decreasing negative impacts on reduced outdoor recreation opportunities. 	<ul style="list-style-type: none"> • Increased quality of life due to elimination of noise impacts. • Positive impacts from eliminating ped, bike, and equestrian conflicts with truck traffic. • Positive impacts from increased outdoor recreation opportunities.
Environmental	<ul style="list-style-type: none"> • Negative effects to streams due to lower water quality and increased potential of sedimentation. • Negative effects on big game wintering habitat due to increased quarry activities and truck traffic. 	<ul style="list-style-type: none"> • Positive effects to streams due measures to protect water quality and decreased sedimentation. • Decreasing negative effects on big game wintering habitat due to mitigation measures on quarry activities and truck traffic. • Positive effects if road projects result in removal of fish barriers. 	<ul style="list-style-type: none"> • Positive effects to streams due decreased sedimentation. • Positive effects on big game wintering habitat. • Possible negative effects if road projects are delayed that would result in removal of fish barriers.
Energy	<ul style="list-style-type: none"> • Positive effects from decreased travel distances for aggregate. 	<ul style="list-style-type: none"> • Positive effects from decreased travel distances for aggregate. 	<ul style="list-style-type: none"> • Negative effects from increased travel distances for aggregate.

ESEE Consequences of Alternatives Scenarios

Fully Protect the Mineral and Aggregate Resource (Allow Mining without Local Restrictions)

This scenario assumes extraction of mineral and aggregate material with no local restrictions. Federal and state (DEQ and DOGAMI) rules that mitigate noise and stormwater impacts apply, but there are no local limitations on the amount of extraction, except for compliance with DEQ standards for truck noise, which may limit truck traffic to 5 trucks per hour, or 40 trucks per day. This scenario assumes the County only imposes limited conditions of approval, even for local roads, and defers to the state agencies for enforcement of noise and stormwater standards.

Economic Consequences

▪ Region and Countywide

Aggregate is an important construction material used in building foundations and roads. The Portland metropolitan region is a net importer of quality aggregate rock.⁴⁰ Multnomah County imports aggregate from Columbia County and Clark County, Washington. Production numbers for Multnomah County are unavailable, but the total production for 2000-01 for Multnomah, Washington, and Clackamas counties was 9.1 million tons.⁴¹ Total demand for aggregate in the three counties was estimated at 15.5 million tons.⁴²

Multnomah County has 11 permitted quarries, including Howard Canyon.⁴³

Extraction at 75,000 cubic yards per year represents less than one percent of the estimated regional demand for aggregate. Therefore, the quarry is expected to have minimal influence on the regional price of aggregate.

The Howard Canyon Quarry will create jobs in terms of quarry operators, truck drivers, and processors. However, the total number of jobs is expected to be negligible in terms of the total employment in the county or the region.

Result: Minimal positive economic impacts for the county and the region.

▪ Local (East of Sandy River)

Howard Canyon Quarry is the only known source of quality aggregate material east of the Sandy River.⁴⁴

The local market for mineral and aggregate resources has three components:

⁴⁰ Whelan, Robert M., Mineral Economist, DOGAMI, An Economic Analysis of Construction Aggregate Markets and the Results of a Long-Term Forecasting Model for Oregon, DOGAMI Special Paper 27, 1995.

⁴¹ DOGAMI, July 10, 2002

⁴² Whelan, 1995.

⁴³ DOGAMI Database, July 10, 2002

⁴⁴ DOGAMI Database, July 10, 2002

1. Maintenance of existing improvements.
2. New development.
3. Major public (road) projects.

The demand for maintenance of existing improvements and new development is expected to be low given the surrounding area is rural in character and outside the Urban Growth Boundary with the vast majority of land designated as resource land. One current supplier estimated that local demand is approximately 2,000 tons per year.⁴⁵ The demand for major public road projects is variable. All of the local roads will require maintenance at some point, but given the current lack of transportation improvement funding, the timing of such projects is uncertain.

Based on telephone surveys to regional suppliers, the cost of aggregate is relatively inexpensive (\$12-36 per ton).⁴⁶ A local source could reduce transportation costs up to one-third according to public testimony.⁴⁷ Therefore, assuming these transportation cost reductions were passed on to the customer, then a 16-ton load of aggregate could cost \$50 to \$110 less. Assuming the total local demand is 2,000 tons per year and the local cost is \$24,000 to \$72,000 annually, which could be a positive economic benefit of \$8,000 to \$24,000 per year.

Result: Minimal positive economic effects in east Multnomah County by reducing the transportation costs for aggregate.

▪ Quarry Owner and Operator

Full extraction with minimum regulatory standards represents a major economic benefit to the Howard Canyon Quarry owners and operators. Gross revenue of 75,000 cubic yards of material is calculated in Table 8, based on prices quoted in telephone surveys to regional suppliers.⁴⁸

Table 8. Quarry Gross Revenue Projection

Volume (cubic yards)	Weight (tons) (2.4 tons per cy)	Gross Revenue Decorative: \$100/ton Aggregate: \$7.25/ton	Total Gross Revenue
75,000 cy per year			\$6.31 million
Decorative – 30%	54,000 tons	\$5.40 million	
Aggregate – 70%	126,000 tons	\$0.91 million	

Result: Major positive economic effects to quarry owner and operator.

⁴⁵ Public Testimony by Sherwood Davis (local hauler), Planning Commission Public Hearing, October 7, 2002.

⁴⁶ Public Testimony by Peter Finley Fry (dated October 1, 2002) and Robert Grott (October 7, 2002).

⁴⁷ Public Testimony by Sherwood Davis (local hauler), Planning Commission Public Hearing, October 7, 2002.

⁴⁸ Public Testimony by Robert Grott (October 7, 2002).

- Residential

Public testimony from several property owners from the surrounding area expressed strong opinions that their property values are reduced due to impacts associated with the current small-scale quarry operations, and that expansion of the quarry would further reduce their property values. Testimony by Bruce Lockwood, a real estate broker, indicated a negative impact to property values due to noise from the quarry activities, truck traffic, and the PAM overlay zone.⁴⁹ Proponents of the quarry have submitted conflicting evidence indicating quarries do not have a negative effect on property values based on photographs, aerial photographs, and tax assessment data for parcels adjacent to operating quarries in Clark County, Washington.⁵⁰ However, this information was not assembled by real estate professionals; is based on sites that are surrounded by urban development; two of the four sites front onto a state highway; and the analysis does not adequately explain the orientation of the quarry which may limit noise or truck impacts.

A protection program to allow full development of the resource may have an economic effect in limiting use or development of property within the impact area through the application of the County's Protected Aggregate and Mineral Resource (PAM) overlay zone. Most of the property within the impact area is zone EFU or CFU, which already carry strict limits on new residential dwelling development. There are 28 vacant parcels within the impact area, 12 of which are in contiguous ownership under the owner of the Howard Canyon Quarry.

Result Negative economic effects to surrounding property owners from decrease in property values due to adverse noise impacts and truck traffic.
Possible negative economic effects to surrounding property owners who would be restricted in future development of their property through the application of the PAM overlay zone.

- Farms

The farm impact analysis and public testimony indicates significant economic costs to surrounding farms in the form of increased fencing costs to keep livestock under control when startled by quarry activities or haul trucks; increased feed costs due to the loss of pasture land reserved as a buffer to reduce impacts to livestock; loss of revenue due to adverse impacts to breeding, such as miscarriages; and loss in quality and/or quantity of crop production due to dust impacts.

Farms also require aggregate as part of their on-going operations for driveways and access roads. A local source will reduce transportation costs to deliver aggregate for these uses.

Result: Negative economic effects from increased cost of farm practices.
Minimal positive economic effects from a local source of aggregate for area farms.

⁴⁹ Letter from Bruce Lockwood, Oregon Realty Co., dated August 20, 2003.

⁵⁰ Letter from Tim Ramis, Ramis, Corrigan & Bachrach, dated February 5, 2003.

- **Rural Center**

Springdale is an unincorporated rural community at the junction of Hurlburt Road and the Historic Columbia River Highway along the proposed truck route. There are 16 dwellings with frontage on Hurlburt Road and another 15 dwellings along the Historic Columbia River Highway. Many of these dwellings are closer than the 50-foot setback used in the truck noise calculations. These shorter setback distances increase noise levels and adverse noise impacts, which in turn can decrease property values. In addition, a significant increase in truck traffic could decrease the attractiveness of Springdale for commercial development, which may threaten the viability of existing businesses or discourage new businesses from locating in Springdale.

Any new development will need for aggregate for driveways and access roads. Howard Canyon Quarry is the only known source of quality aggregate material east of the Sandy River. A local supply will reduce travel distances required to deliver aggregate where it is needed.

Result: Negative economic effects due to possible reduced property values and decreased attractiveness for development in the Springdale rural center. Minimal positive economic impacts to new development due to decreased transportation costs for aggregate.

- **Streams**

The negative economic impacts could be lower water quality and increased treatment costs for downstream users due to increased runoff, turbidity, and pollutants. Minimum stormwater controls would be required by state regulations. However, a site visit by County staff and consultants in November, 2001, raised concerns about adequate maintenance of these facilities and the ability of state agencies to enforce even the minimum standards. These shortcomings raise the possibility of increased runoff and sedimentation into the adjacent streams. However, given the distance between the quarry and the streams, the intervening drainages and vegetation reduce the amount of sediment reaching the stream.

The three creeks are part of the Sandy River watershed, which is an important salmon and steelhead fishery. The Sandy River is a popular sport fishing area that attracts visitors who create substantial economic activity for a variety of businesses in the region. Water quality is an important factor in salmon recovery plans. Lower water quality and reductions in the salmon fishery could cause negative economic impacts.

Result: Possible negative economic effects to downstream water users due to lower water quality and increased treatment costs.
Possible negative economic effects to region if lower water quality reduces salmon fishery.

- **Big Game Wintering Habitat**

Hunting and outdoor recreation (wildlife watching) have positive economic consequences for local businesses and the travel industry. To the extent that unrestricted mining operations adversely affect the quantity of big game in east Multnomah County, there could be a corresponding adverse impact on the local economy.

Result: Possible negative economic effects to local businesses and the travel industry due to decreased outdoor recreation opportunities.

- **Roads**

Fully allowing mining of Howard Canyon will result in a significant increase in truck traffic on local roads and bridges. Some of these roads have the minimum or substandard structural support. The truck traffic will accelerate wear and tear and increase maintenance costs.

However, a local source will reduce transportation costs to deliver aggregate for local maintenance and improvement projects.

Result: Negative economic impacts due to increased road maintenance costs.
Possible positive economic effects from a local source of aggregate for local projects.

Social Consequences

- **Residential**

At the public meetings, in the farm survey returns, and in written testimony, several property owners from the surrounding area expressed strong opinions about noise impacts and negative effects on the rural quality of life. Many commented that they choose to live in the area for peace and quiet of a rural area and that the existing small-scale quarry operations were a nuisance.

Under this scenario, the minimum regulatory standard for noise levels would be 55dBA, the DEQ L50 hourly standard for existing uses. The Doble noise study predicted the noise levels from future quarry operations would be below the 55dBA level (see Table 3 above).⁵¹ However, the DEQ standard may not adequately measure the impacts from the duration of the quarry activities. The DEQ standard is an hourly standard and does not adequately account for the continuous operations of the quarry. Unfortunately, there is no objective, measurable standard that distinguishes between one hour of operations and eight hours of operations, or one month of operations or eight months of operations.

⁵¹ Page 9, Doble Noise Study (Appendix D)

Dust is another potential nuisance. Sources include rock crushers and unpaved private access driveways. Rock crushing equipment previously used at the site have obtained DEQ air contaminant discharge permits that require dust control.⁵²

Public comments at the community meeting raised concerns about adequate enforcement of noise and dust standards, and the ability or willingness of the quarry operator to comply with those standards.

Result: Negative social impacts from a perceived reduction in the rural quality of life due to noise and dust impacts from the quarry operations.

- Farms

Possible social effect on farms are addressed either as a noise-related quality of life issue under residential uses (above) or as a safety conflict between trucks and equestrians under roads.

- Rural Center

At the community meeting and in the farm survey returns, several property owners commented about the noise impact of truck traffic traveling through Springdale and a perceived negative impact on the quality of life and Springdale's function as a community center.

Under this scenario, the minimum regulatory standard for truck noise levels would be 60dBA, the DEQ L10 hourly standard for existing uses. The Doble noise study predicted the noise levels from future truck traffic generated by quarry operations would be 51dBA, below the L10 standard.⁵³ The setback of residential dwellings in Springdale is less than the 50 feet used in the noise calculations. If an average setback of 25 feet is used, then the noise level increases to 57dBA, but is still below the DEQ L10 hourly standard. The DEQ standard is an hourly standard and does not adequately account for the continuous operations of the quarry.

Result: Negative social impacts from a reduction in the rural quality of life due to increased truck traffic from the quarry operations.

- Streams

Fishing is enjoyed by many regional residents. To the extent that unrestricted mining operations adversely affect fish in adjacent streams, there could be a corresponding adverse social impact on residents due to reduced fishing opportunities.

Result: Negative social impacts from a reduction in fishing opportunities.

- Big Game Wintering Habitat

Hunting and outdoor recreation (wildlife watching) are enjoyed by many regional residents. To the extent that unrestricted mining operations adversely affect the quantity

⁵² Page III-33, 1996 HCRR

⁵³ Page 8, Doble Noise Study (Appendix D)

of big game in east Multnomah County, there could be a corresponding adverse social impact on residents due to reduced hunting and recreational opportunities.

Result: Negative social impacts from a reduction in hunting and recreational opportunities.

- Roads

At the public meetings, in the farm survey returns, and written testimony, several property owners from the surrounding area expressed concerns about their inability to ride horses on local roads due to conflicts with truck traffic. They indicated that they ride along local roads to access trails along the Sandy River and Oxbow Regional Park. Many of the local roads are narrow and do not have shoulders, which limit the space for trucks to pass and create unsafe conditions for horse riders along the side of the road.

The Historic Columbia River Highway is a popular bicycle route and Littlepage Road and Knieriem Road are designated bicycle routes. There is a planned improvement project to add shoulders to Hurlburt Road for pedestrian, bicycle, and equestrian use, but no specific construction date. Increase truck traffic on these narrow, two-lane roads will increase conflicts with other users, especially on weekends when recreational use is higher.

Result: Negative social impacts from unsafe conditions for pedestrians, bicyclists, and equestrians due to conflicts with truck traffic on narrow local roads.

Environmental Consequences

- Residential

The possible air quality impacts from noise and dust are addressed as a social consequence.

- Farms

Environmental effects on farms, primarily due to dust, are addressed as an economic consequence.

- Rural Center

The possible air quality impacts from noise and dust are addressed as a social consequence.

- Streams

The negative environmental impacts to the streams could be lower water quality due to increased runoff, turbidity, sedimentation and pollutants. Minimum stormwater controls would be required by state regulations. However, a site visit by County staff and consultants in November, 2001, raised concerns about adequate maintenance of these facilities and the ability of state agencies to enforce even the minimum standards. These shortcomings raise the possibility of increased runoff and sedimentation into the adjacent streams.

The three creeks are part of the Sandy River watershed, which is an important salmon and steelhead fishery. Water quality is an important factor in salmon recovery plans. Lower water quality could have negative impacts on the salmon fishery.

Result: Negative environmental effects to adjacent streams and the Sandy River watershed and salmon fishery due to lower water quality and sedimentation.

- **Big Game Wintering Habitat**

According to ODFW, fully allowing mining of Howard Canyon could disturb deer and elk in the area, especially during the winter.⁵⁴

Result: Negative environmental impacts from quarry operations on big game wintering habitat.

- **Roads**

Increased truck traffic will increase the need for maintenance and improvement projects on local roads, which could have adverse impacts if not done in an environmentally, fish-friendly manner. Wider roads with shoulders could result in the loss of riparian areas at the stream crossings.

However, road improvement projects represent an opportunity to improve culverts, which will remove barriers to fish passage.

Result: Negative environmental effects to streams and riparian areas due to road maintenance and improvements projects required by increased truck traffic. Positive environmental effects to fish habitat if road improvement projects include culvert replacement and removal of barriers to fish passage.

Energy Consequences

- **Residential**

Any new residential development in the surrounding area will need for aggregate for driveways and access roads. Howard Canyon Quarry is the only known source of quality aggregate material east of the Sandy River. A local supply will reduce travel distances required to deliver aggregate where it is needed.

Result: Positive energy effects to new residential development due to decreased travel distances for aggregate.

- **Farms**

Farms in the area have a need for aggregate for driveways and access roads. Howard Canyon Quarry is the only known source of quality aggregate material east of the Sandy River. A local supply will reduce travel distances required to deliver aggregate where it is needed.

⁵⁴ Email from Gregory Hobart, Habitat Biologist, ODFW to Virginia Bowers, Multnomah County, dated March 29, 2001

Result: Positive energy effects to farms due to decreased travel distances for aggregate.

- Rural Center

Any new development will need for aggregate for driveways and access roads. Howard Canyon Quarry is the only known source of quality aggregate material east of the Sandy River. A local supply will reduce travel distances required to deliver aggregate where it is needed.

Result: Positive energy effects to new development due to decreased travel distances for aggregate.

- Streams

There is no identified energy effect on streams.

- Big Game Wintering Habitat

There is no identified energy effect related to big game wintering habitat.

- Roads

Road maintenance and improvement projects need large quantities of aggregate. Howard Canyon Quarry is the only known source of quality aggregate material east of the Sandy River. A local supply will reduce travel distances required to deliver aggregate where it is needed.

Result: Positive energy effects to road projects due to decreased travel distances for aggregate.

Fully Allow Conflicting Uses (Prohibit Mining)

This scenario evaluates the consequences of prohibiting extraction of the resource. It assumes that the conflicts with existing and new residential dwellings and farms would effectively prevent extraction of the aggregate and mineral resource.

Economic Consequences

- Region and Countywide

If extraction is prohibited, then regional supplies will be slightly reduced and the cost for these products could increase due to scarcity and increased transportation costs to import from outside the region. But given the small potential production volumes and the large regional demand, the impact is expected to be minimal.

Result: No or minimal negative economic impacts in the County and the region due to potential increases in the cost of mineral and aggregate material.

- Local (East of Sandy River)

This scenario reflects the current situation in that all of the local market demand for aggregate is supplied from outside the area. Based on telephone surveys to regional

suppliers, the cost of aggregate delivered to the area is relatively inexpensive (\$12-36 per ton).⁵⁵ Presumably a local source would reduce the transportation costs, which could be up to one-third of the cost. Therefore, assuming these transportation cost increases were passed on to the customer, then a 16-ton load of aggregate could cost \$50 to \$110 more than one coming from a local source. Assuming the total local demand is 2,000 tons per year and the local cost is \$24,000 to \$72,000 annually, then the local market area could save \$8,000 to \$24,000 per year in transportation costs by not having to bring in aggregate from outside the area.

Result: Minor negative economic effects in east Multnomah County by increasing the transportation costs for aggregate.

▪ Quarry Owner and Operator

County prohibition of mining would only prohibit the quarry from obtaining a conditional use permit from the County. It does not prevent the quarry from continuing to operate under the terms of the DOGAMI Grant of Total Exemption for a small-scale quarry. The quarry could continue to operate by limiting the physical extent of the quarry area to five acres and mining down into the formation.⁵⁶ If the quarry operations are found to have begun prior to July 1, 1975, then they can continue in perpetuity provided they meet the annual limits of 5,000 cubic yards of material and one acre of disturbance. In addition, the site qualifies for a different DOGAMI exemption to provide aggregate for roads on contiguous parcels. These exemptions allow for the continued operation of the quarry at historic levels, which will mitigate some of the economic impact of prohibiting the full exploitation of the resource.

Result: Negative economic effects to quarry owner and operator.

▪ Residential

At the public meetings, in the farm survey returns, and written testimony, several property owners from the surrounding area expressed strong opinions that their property values are reduced due to impacts associated with the current small-scale quarry operations. If the quarry operations were to cease and adverse noise impacts and truck traffic were to be eliminated, then property values may increase.

Any new residential development may have added transportation costs to deliver aggregate for foundations and driveways.

Result Possible positive economic effects to surrounding property owners from perceived increase in property values due to the elimination adverse noise impacts and truck traffic.
Marginal negative economic effect to new residential development due to added transportation costs for aggregate.

⁵⁵ Public Testimony by Peter Finley Fry (dated October 1, 2002) and Robert Grott (October 7, 2002).

⁵⁶ DOGAMI, the Schlicker report and the Throop assessment have estimated the formation to be up to 40 feet thick.

- Farms

The farm impact analysis indicates the potential of economic costs to surrounding farms from existing quarry operations in the form of: 1) increased fencing costs to keep livestock under control when startled by quarry activities or haul trucks; 2) increased feed costs due to the loss of pasture land reserved as a buffer to reduce impacts to livestock; 3) loss of revenue due to adverse impacts to breeding, such as miscarriages; and 4) loss in quality and/or quantity of crop production due to dust impacts. If the quarry operations were to cease and adverse noise impacts and truck traffic were to be eliminated, then these economic costs would be eliminated.

Farms also require aggregate as part of their on-going operations for driveways and access roads. Without a local source, transportation costs to deliver aggregate for these uses will increase.

Result: Positive economic effect to farms due to elimination of adverse noise and truck traffic impacts.
Marginal negative economic effect to farms due to added transportation costs for aggregate.

- Rural Center

At the public meetings and in written testimony, several property owners from Springdale testified about the adverse impacts of truck noise through the community. The minimum front setback in the Rural Center zone is 30 feet and many of the dwellings in Springdale are built close to the roadway. If the quarry operations were to cease and truck traffic were to be eliminated, then property values may increase and the attractiveness of Springdale for commercial development may increase.

Any new development will need aggregate for driveways and access roads. Without a local source, transportation costs to deliver aggregate for these uses will increase..

Result: Marginal negative economic effect to new development due to added transportation costs for aggregate.
Positive economic effects on property values and increased attractiveness for development in the Springdale rural center due to the reduction in truck traffic and related noise impacts.

- Streams

Fishing has positive economic consequences for local businesses and the travel industry. To the extent that prohibiting mining operations benefits the streams and fish habitat, there could be a corresponding positive impact on the local economy.

Result: Possible positive economic effects to local businesses and the travel industry due to increased fishing opportunities.

- **Big Game Wintering Habitat**

Hunting and outdoor recreation (wildlife watching) have positive economic consequences for local businesses and the travel industry. To the extent that prohibiting mining operations positively affects the quality of the wintering habitat and the quantity of big game, there could be a corresponding positive impact on the local economy.

Result: Possible positive economic effects to local businesses and the travel industry due to increased hunting opportunities.

- **Roads**

Prohibiting mining of Howard Canyon will reduce truck traffic on local roads and bridges, which could reduce the need for road maintenance and improvement projects.

Result: Positive economic impacts due to reduced road maintenance and improvement costs.

Social Consequences

- **Residential**

At the public meetings, in the farm survey returns, and written testimony, several property owners from the surrounding area expressed strong opinions about noise impacts and negative effects on the rural quality of life of the existing quarry operations. Elimination of these operations would result in improved of the quality of life.

Result: Positive social impacts from an improvement in the rural quality of life due to elimination of noise and dust impacts from the quarry operations.

- **Farms**

Possible social effect on farms are addressed either as a noise-related quality of life issue under residential uses (above) or as a safety conflict between trucks and equestrians under roads.

- **Rural Center**

At the public meetings, in the farm survey returns, and written testimony, several property owners commented about the negative noise impact of truck traffic traveling through Springdale. Elimination of truck traffic from current operations would result in a perceived improvement of the quality of life.

Result: Positive social impacts from a perceived improvement in the rural quality of life due to elimination of truck traffic from existing quarry operations.

- **Streams**

Fishing is enjoyed by many residents. To the extent that prohibiting mining operations benefits the streams and fish habitat, there could be a corresponding positive social impact due to increased fishing opportunities.

Result: Positive social impacts from increased fishing opportunities.

- Big Game Wintering Habitat

Hunting and outdoor recreation (wildlife watching) are enjoyed by many regional residents. To the extent that prohibiting mining operations positively affect the quality of the wintering habitat and the quantity of big game in Multnomah County, there could be a corresponding positive impact due to increased hunting opportunities.

Result: Positive social impacts from increased outdoor recreation opportunities.

- Roads

At the public meetings, in the farm survey returns, and written testimony, several property owners from the surrounding area expressed concerns about conflicts between truck traffic from the existing quarry operations and pedestrians, bicyclists, and equestrians on the narrow, two-lane local roads. Elimination of truck traffic from the quarry will decrease conflicts with other users.

Result: Positive social impacts from elimination of unsafe conditions for pedestrians, bicyclists, and equestrians due to reduction of truck traffic on narrow local roads.

Environmental Consequences

- Residential

There are no environmental effects on residential dwellings.

- Farms

Environmental effects on farms, primarily due to dust, are addressed as an economic consequence.

- Rural Center

There are no environmental effects on the rural center.

- Streams

The eliminating the existing quarry operations could have positive environmental impacts to the streams due to the elimination of potential runoff, turbidity, and pollutants from the site.

Result: Potential positive environmental impacts to adjacent streams and the Sandy River watershed due to eliminating potential major sources of sedimentation.

- Big Game Wintering Habitat

Prohibiting mining could lessen disruptions and have a positive impact on the wintering habitat.

Result: Potential positive impacts due to fewer disruptions from quarry activities.

- Roads

Decreased truck traffic will decrease the need for maintenance and improvement projects on local roads, which could minimize adverse impacts to riparian areas at the stream crossings.

However, decreased need for road improvement projects could delay improvements to culverts and removal barriers to fish passage.

Result: Positive environmental impact to streams and riparian areas due to fewer road maintenance and improvements projects.
Negative environmental effects to fish habitat if road improvement projects that include culvert replacement and removal of barriers to fish passage are delayed.

Energy Consequences

- Residential

Prohibiting mining is not expected to increase or decrease energy consumption for existing residential uses. Any new residential development may expend more energy in transporting aggregate from outside of the area.

Result: Negative energy effects to new residential development due to increased transportation distances for aggregate.

- Farms

Farms in the area have a need for aggregate for driveways and access roads. Lack of a local supply will increase travel distances required to deliver aggregate where it is needed.

Result: Negative energy effects to farms due to increased travel distances for aggregate.

- Rural Center

Any new development may expend more energy in transporting aggregate from outside of the area.

Result: Negative energy effects to new development due to increased travel distances for aggregate.

- Streams

There is no identified energy effect on streams.

- Big Game Wintering Habitat

There is no identified energy effect on big game wintering habitat.

- Roads

Road maintenance and improvement projects need large quantities of aggregate. Howard Canyon Quarry is the only known source of quality aggregate material east of the Sandy River. Lack of a local supply will increase travel distances required to deliver aggregate where it is needed.

Result: Negative energy effects to road projects due to increased travel distances for aggregate.

Limit Conflicting Uses

Limiting conflicting uses implies more restrictions and mitigations measures on the quarry operations in an attempt to reduce conflicts or impacts on the surrounding area. This scenario assumes a more active role on the part of the County to impose conditions of approval and to monitor and enforce those conditions. It also assumes utilizing higher (or more restrictive) standards, such as DEQ's ambient degradation noise standard. It also assumes a more aggressive monitoring and enforcement role for the County to ensure stormwater runoff does not impact water quality and salmonids in the surrounding streams.

This scenario has three alternatives to explore ways of balancing the conflicts between extraction and the surrounding uses. The variations include mitigation measures that are more restrictive than the minimum state standards and feature decreasing levels of quarry activities, reduced volumes of material and reduced truck traffic. The variations are summarized in Table 9.

1. Base Measures plus Severe Limits on Volume – The scenario includes Base Mitigation Measures for stormwater and noise with strict limits on volume of material to represent continued operation of the quarry at levels similar to the DOGAMI GTE limits.
2. Base Measures plus Limits on Volume of Material – This scenario includes Base Mitigation Measures plus limits extraction to a maximum of 17,500 cubic yards per year.
3. Base Mitigation Measures – This scenario allows extraction up to 35,000 cubic yards per year with the Base Mitigation Measures.

Table 9. Limit Conflicting Uses Variations

	Low Volume	Moderate Volume	Mitigation Measures
Rate of Extraction	5,000 cy/yr	17,500 cy/yr	35,000 cy/yr
Hours of Operation	9am – 4pm	9am – 4pm	9am – 4pm
Max. No. of Trucks Per Day	2	7	14
Number of Blasts per Year L = Low Yield H= High Yield	1H	2L 1H	3L 1H
Drilling per Year	5 days	12 days	20 days
Splitting per Year	50 days	60 days	75 days
Crushing per Year	10 days	20 days	30 days
Loading	0.5 hrs/day	1.5 hrs/day	2.2 hrs/day
Hauling	0.3 hrs/day	0.5 hrs/day	0.8 hrs/day

Note: Estimated extrapolation from Olson Mining Plan (Appendix C).

Mitigation Measures

Noise

Expansion of the quarry will require permits that not been required to date. The expansion will cross parcel lines onto property that was previously unused. Therefore, for the purposes of evaluating the noise impacts, this analysis will use the stricter DEQ standard for New Sources on Previously Unused Sites (Ambient plus 10dBA). Also, the noise impacts include all noises generated or attributable to the quarry, including the off-site impacts of truck traffic.

The Duble Noise Study recommends several modifications to normal quarry operations that could serve to lower noise levels.⁵⁷ The noise study shows that rock drill and excavation noise are the major contributors to the noise levels.⁵⁸ Noise mitigation recommendations include:

- Hydraulic rock drills should be used with a vinyl plastic 1-psf noise barrier, or a straw bale barrier around the rock drill when operating. This barrier should be at least 2 feet higher than the top of the drill.
- Advance notice of blast events should be publicized to the surrounding community. A qualified registered acoustical engineer should monitor noise at several sites during the first blast event. Adjustments to blasting parameters, such as total charge weight, number of holes and stemming, should be made as necessary to meet the DEQ blast noise standard.

⁵⁷ Page 12, Duble Noise Study (Appendix D)

⁵⁸ Page 8, Duble Noise Study (Appendix D)

- A 25 to 30 foot rock wall should be maintained to enclose the processing area on at least three sides. The excavation depth should be maximized as much as possible.⁵⁹
- Overburden should be used to establish a 10 foot high berm at the crest of the ridge at each new excavation location.⁶⁰
- Excavation vehicles, such as front loaders and bulldozers, should be fitted with “residential” quality mufflers. This type of muffler should yield an 8dBA reduction for the low frequency exhaust, which is about 5dBA lower than the typical industrial grade muffler normally supplied with these machines. These mufflers are relatively inexpensive (\$250-500 per vehicle).
- For crushed rock, conveyor belts, instead of haul trucks, should be used to convey excavated rock to the processing area. Transfer points should be enclosed with 20 gauge steel enclosure lined with 1” inch fiberglass panels. Although expensive, use of conveyors belts could reduce overall noise levels by 6dBA.
- Use of engine “jake” brakes should be prohibited along the truck route, except in case of emergency to avoid accidents. If these brakes must be used due the extreme down grade of the haul road, the installation of special mufflers to reduce “jake” brake noise will be required. These mufflers are relatively inexpensive (\$250-500 per vehicle). This measure may be difficult to enforce because not all trucks coming to and from the site will be owned and operated by the quarry operator, some will be independent contractors.
- A qualified registered acoustical engineer should conduct semi-annual noise measurements for the first year at three of the closest residential sites to current quarry operations. After the first year, require annual measurements at the same three sites for a period of three years. The engineers’ report should be submitted to Multnomah County.
- If a crusher is used, it should be surrounded with 1-psf vinyl plastic panel barriers supported by a suitable steel framework. Such a barrier should extend at least 2 feet over the highest point of the crusher.
- To reduce quality of life impacts, operating hours should be limited to 9 a.m. to 4 p.m., with no operations on Saturday or Sunday.

Table 10 shows that total noise with these mitigation measures is predicted to be below the stricter DEQ ambient noise standard at all sites. In addition to mitigation measures, the noise levels could be up to 5 dBA less due to ground cover and trees.

⁵⁹ This measure is not possible along the hogback ridge due to steep slopes.

⁶⁰ This measure is not possible along the hogback ridge due to steep slopes.

Table 10. Predicted Mitigated Noise Levels⁶¹

Site No.	DEQ Hourly Standard (Ambient plus 10 dBA)	Predicted Noise Level	Difference
1 – Howard Rd.	49dBA	48dBA	-1dBA
2 – Howard Rd.	62dBA	41dBA	-21dBA
3 – Howard Rd.	47dBA	40dBA	-7dBA
4 – Louden Rd.	47dBA	40dBA	-7dBA
5 – Knieriem Rd.	50dBA	49dBA	-1dBA
6 – Salzman Rd.	48dBA	41dBA	-7dBA
7 – Howard Rd.	48dBA	43dBA	-5dBA

The DEQ hourly noise standard does not adequately address the quality of life or annoyance factor for continuous quarry operations all day, every day. However, there is no objective standard to measure or quantify this impact to the quality of life to the surrounding area. These mitigation measures are designed to help to reduce the annoyance and reduce the impact to the quality of life, primarily by prohibiting quarry operations during times when surrounding residents are most likely to be outside (evenings and weekends).

Public comments raised concerns about adequate enforcement of noise standards, and the ability or willingness of the quarry operator to comply with those standards. These scenarios assume a more active role for the County in monitoring and enforcing compliance with the mitigations measures which would be imposed as conditions of approval for any future conditional use permit.

The truck noise level is based on a reference point of 50 feet, a reference speed of 35 mph, and a flat grade. There are houses located closer than 50 feet along the truck route and trucks will need to accelerate from a stop at four intersections, which will create noise louder than the predicted noise levels. These conditions are amplified in the Springdale rural center, where there is a higher density of houses that are closer to the roadway. These conditions are difficult to mitigate, except in regulating the volume of truck traffic along the truck route.

At five trucks per hour, the calculated truck L10 noise level is 51 dBA. The L10 standard (ambient plus 10dBA) for the seven noise receptor sites range from 51-63 dBA, with three sites at 51 or 52 dBA. If the truck volume decreases from five truck per hour to two per hour, the L10 truck noise would decrease to 43 dBA. Again, the DEQ hourly noise standard does not adequately address the quality of life or annoyance factor for continuous quarry operations all day, every day.

Streams

This scenario includes an aggressive approach to mitigating potential adverse water quality impacts from the quarry. It is imperative that quarry activities do not increase the sediment load in the surrounding creeks. An erosion control plan should include

⁶¹ Page 16, Duple Noise Study (Appendix D)

measures designed to keep turbidity below ambient plus 10 percent conditions, 100 feet downstream from the quarry during a 10-year storm event. The largest source of sediment could originate from haul roads, processing areas, and overburden stockpiles. An erosion control plan should include the following measures:

- Weed-free straw bales and silt fences at the bottom of newly constructed slopes. Whenever straw bales are used, they should be staked and dug into the ground at least 12 cm (5 in);
- Construction of sediment settling basins, where appropriate. Berms shall be constructed, where appropriate, to divert runoff into these basins;
- Temporary plastic sheeting for immediate protection of open areas (where seeding/ mulching are not appropriate);
- Erosion control blankets or heavy duty matting (e.g., jute) should be used on steep unstable slopes;
- Sills or barriers should be placed in drainage ditches along cut slopes and on steep grades to trap sediment and prevent scouring of the ditches. The barriers should be constructed from rock and straw bales and be regularly maintained. Sills or barriers will be necessary in roadside ditches if water bars or cross-ditches are constructed within the haul roads to intercept and direct runoff from a road;
- On the pit or quarry floor, establish a slope that directs turbid water to flow to a low point where it can be collected in a detention pond;
- Biobags, weed-free straw bales and loose straw may be used for temporary erosion control. Temporary erosion and sediment controls should be used on all exposed slopes that could potentially create sediment-laden runoff into the creeks;
- On cut slopes steeper than 1:2 (v:h) where runoff will impact the creeks, a tackified seed mulch should be used so that the seed does not wash away before germination and rooting occurs. In steep locations, a hydro-mulch should be applied at 1.5 times the rate;
- No clearing within 100-feet of the creeks should be allowed unless mitigation is provided.
- Overburden should be removed from limited areas; concurrent or segmental reclamation should be encouraged to limit disturbed areas within the quarry.
- Material removed during excavation shall only be placed in locations where it cannot enter the surrounding creeks or their riparian areas;
- Stockpiles of overburden should be completely protected to ensure that sediment-laden runoff does not enter the adjacent creeks;

- Coir mats and coir logs, filter berms, or porous materials, such as sand and gravel that contains no 200-mesh or smaller material, should be used where appropriate to control erosion;
- All creek crossings should be fish passage friendly and constructed with open bottomed arched culverts or bridges with sufficient water passage capacity to withstand 100-year flood events;⁶²
- Excavated areas should be recovered “as you go” so that only 5-10% of the proposed mining area is impacted at any one time.⁶³
- Haul roads should be impervious surfaces with adequate erosion control best management practices to prevent sedimentation into adjacent creeks;⁶⁴
- Erosion control devices that are failing should be immediately repaired to ensure that sediment-laden water does not leave the project site and discharge into the surrounding creeks;
- A permanent truck or wheel wash facility should be constructed to ensure that excess dirt and mud is washed off of all truck tires. The design could incorporate a series of railroad rails spaced approximately 2 to 8 inches apart to shake off the excess dirt while the truck is driving through the wheel wash. All water used to clean the trucks should be treated to remove sediment;
- Regular inspections should be made to inspect all erosion control devices; needed repairs and/or replacement should be identified; quarry staff should be provided with written directives to replace and/or update the devices, as needed; field inspections shall be made to ensure repairs and/or replacement of devices has occurred within specific timelines, and;
- Regular inspections with County staff should be made to review all erosion control devices and identify needed corrections and/or enhancements.

Also, water quality is susceptible to chemical contamination from pollutants such as vehicle fuels and maintenance or accidental chemical spills. A pollution control plan should be prepared to prevent point and non-point source pollution, and include the following measures:

- No pollutants of any kind (petroleum products, fresh concrete, silt, blasting material, etc.) shall come in contact with an active flowing stream or its riparian area;

⁶² Email from Gregory Hobart, Habitat Biologist, ODFW to Virginia Bowers, Multnomah County, dated March 29, 2001

⁶³ Ibid.

⁶⁴ Ibid.

- Vehicle maintenance, refueling of vehicles and storage of fuel shall be conducted at designated refueling areas located at least 150 feet from the creeks. The refueling areas should only be used if they are sufficiently contained and present no possibility for contamination;
- No toxicant (including petroleum products) will be stored within 150 feet of the creeks. Fuel and lubricant storage areas should be regularly monitored for leakage. A spill control kit should be maintained onsite at all times, and;
- Flocculants used to clean stormwater discharges or water recycled from rock-washing operations must be non-toxic and not harmful to fish or aquatic organisms. At least two ponds should be used to remove suspended solids. Settling time should be at least eight hours. The ponds should be easily accessible and maintained on a regular basis. Material removed from the ponds should be disposed of in an upland location.

From October to April, the quarry operator shall submit monthly monitoring reports, which includes water quality samples taken 100-feet downstream from the quarry. With these mitigation measures, the quarry may affect, but is not likely to adversely affect species currently listed or candidates proposed for listing under the federal or state ESA.⁶⁵

Big Game Wintering Habitat

In response to the previous conditional use permit application, ODFW proposed the following conditions to minimize impact to wintering deer and elk:⁶⁶

- Crushing and hauling of rock limited to daylight hours only.
- No crushing of rock from November 1 to March 31.

Farm and Forest

Impacts identified through the farm and forest survey and additional public testimony are primarily related to noise and dust from quarry operations and truck traffic. To a great extent, these impacts are addressed by mitigation measures proposed under the stream assessment (dust/sediment) or noise impact study. For example, measures to limit dust and potential sediment into the streams, such as truck washes, will also reduce dust impacts to adjacent farms.

The noise impact study identifies measures to reduce blasting impacts, such as advanced notification and monitoring to adjust charge weights to comply with DEQ noise standards. Advance notification would allow livestock owners the opportunity to move animals into barns or to other locations or to otherwise prepare for any adverse impacts, although this measure would require a change in accepted farming practices.

⁶⁵ Page 25, PHS Biological Assessment (Appendix E)

⁶⁶ Email from Gregory Hobart, Habitat Biologist, ODFW to Virginia Bowers, Multnomah County, dated March 29, 2001

Truck traffic impacts are more difficult to address. The proposed noise mitigation measures limit the volume of truck traffic and the route. However, there is evidence that the existing level of truck traffic causes conflicts with livestock. Even the lowest extraction levels (5,000 cy/yr) will result in truck traffic that is equivalent to existing conditions and will not mitigate existing impacts along the proposed route.

Transportation

The 1996 HCRR required a traffic management plan as a conditional of approval in recognition of the inadequacy of Howard Road, Littlepage Road, and possibly other nearby roads to handle increased levels of heavy truck traffic.⁶⁷ The traffic management plan should identify improvements to address the following issues:

- Bridge Load Capacities – demonstrate the structural strength of bridge crossings are adequate to handle the expected truck traffic or make structural improvements to bridges and culverts or agree to weight limits for trucks crossing certain bridges.
- Roadway Design – all local roads, rural collectors, and intersections along the truck route between the site and Interstate 84 shall be improved to handle the expected quarry truck traffic. These standards include road width (including shoulders), curve radii, and structural integrity.
- Bikeways – designated bikeway routes along Hurlburt Road and Littlepage Road shall be improved by paving and striping an adequate shoulder area to mitigate the impacts of truck traffic on the bikeway routes.

Based on the results of a traffic management plan, the County Engineer will stipulate a schedule for necessary improvements and/or payments for road improvements.

Economic Consequences

▪ Region and Countywide

Limits on the quantity of rock extracted will have limited impact on the supply of rock available to the regional market. The net effect of the three variations of the limited scenario is increasing cost of quarry operations, which will reduce the competitive advantage of the site and further limit the minimal influence on the cost of rock in the region.

Result: No or minimal positive economic impacts for the County and the region due to the increasing cost of operations and declining volume of material.

▪ Local (East of Sandy River)

Based on previous calculations in the Fully Allow scenario, a local source of aggregate could represent a positive economic benefit of \$8,000 to \$24,000 per year to the local market. The Severely Limit (5,000 cy/yr) alternative assumes that the focus would

⁶⁷ Page IV-25, 1996 HCRR

continue to be on decorative columnar basalt with little or no aggregate material production, which would eliminate the economic benefit to the local area.

Result: Minimal positive economic effects in east Multnomah County by reducing the transportation costs for local aggregate needs.

- Quarry Owner and Operator

Under this scenario, the mitigation measures will increase production costs of the quarry, which will reduce profit margins. In addition, limits on the total annual volume of material to extracted will reduce gross revenues, as calculated in Table 11.

Table 11. Gross Revenue from Quarry Operations

Volume (cubic yards)	Weight (tons) (2.4 tons per cy)	Gross Revenue Decorative: \$100/ton Aggregate: \$7.25/ton	Total Gross Revenue
5,000 cy per year			\$1.2 million
Decorative – 100%	12,000 tons	\$1.2 million	
Aggregate – 0%	-	-	
17,500 cy per year			\$3.44 million
Decorative – 80%	33,600 tons	\$3.36 million	
Aggregate – 20%	8,400 tons	\$0.06 million	
35,000 cy per year			\$5.28 million
Decorative – 60%	50,400 tons	\$5.04 million	
Aggregate – 40%	33,600 tons	\$0.24 million	

Result: Reduced, but still positive economic effects to quarry owner and operator.

- Residential

Public testimony from several property owners from the surrounding area expressed strong opinions that their property values are reduced due to impacts associated with the current small-scale quarry operations, and that expansion of the quarry would further reduce their property values. Testimony by Bruce Lockwood, a real estate broker, indicated a negative impact to property values due to noise from the quarry activities, truck traffic, and the PAM overlay zone.⁶⁸ Proponents of the quarry have submitted conflicting evidence indicating quarries do not have a negative effect on property values based on photographs, aerial photographs, and tax assessment data for parcels adjacent to operating quarries in Clark County, Washington.⁶⁹

Mitigation measures and reduced operating hours with limits on the level of extraction should lessen the adverse impacts on surrounding properties, and could mitigate any additional negative impact on property values from expanded quarry operations. However, even continuation of the small-scale (5,000 cy/yr) operations will have a continuing negative impact on surrounding property values.

⁶⁸ Letter from Bruce Lockwood, Oregon Realty Co., dated August 20, 2003.

⁶⁹ Letter from Tim Ramis, Ramis, Corrigan & Bachrach, dated February 5, 2003.

A protection program to allow full development of the resource may have an economic effect through the application of the County's Protected Aggregate and Mineral Resource (PAM) overlay zone. Application of the PAM overlay zone could limit use or development of property within the impact area, which could have a negative impact on property values. Most of the property within the impact area is zone EFU or CFU, which already carry strict limits on new residential dwelling development. There are 28 vacant parcels within the impact area, 12 of which are in contiguous ownership by the owner of the Howard Canyon Quarry.

Result Decreasing negative economic effects to surrounding property owners as adverse noise impacts and truck traffic are mitigated or reduced.
Possible negative economic effects to surrounding property owners through the application of the PAM overlay zone.

▪ Farms

As discussed above, the farm impact analysis and public testimony indicates potential increased costs to surrounding farms. Mitigation measures and reduced operating hours and volume limits could lessen the impact from quarry operations on farm practices. Limits on the number of trucks will not mitigate the existing conflicts between trucks and livestock.

Farms also require aggregate as part of their on-going operations for driveways and access roads. A local source will reduce transportation costs to deliver aggregate for these uses.

Result: Decreasing negative economic effects from increased cost of farm practices.
Decreasing positive economic effects from a local source of aggregate for area farms.

▪ Rural Center

Mitigation measures and limits on the quantity of rock extracted or on truck traffic should reduce truck noise levels and adverse noise impacts, which in turn should lessen potential negative impacts on property values. In addition, a reduced increase in truck traffic could lessen any adverse impact on the attractiveness of Springdale for commercial development. However, even continuation of the small-scale (5,000 cy/yr) operations will have a continuing negative impact on surrounding property values.

Any new development will need for aggregate for driveways and access roads. Howard Canyon Quarry is the only known source of quality aggregate material east of the Sandy River. A local supply will reduce travel distances required to deliver aggregate where it is needed.

Result: Decreasing negative economic effects from possible reduced property values and decreased attractiveness for development due to lower levels of truck traffic.

Decreasing positive economic effects to new development due to increasing costs for aggregate.

- Streams

The mitigation measures should decrease the potential for runoff, turbidity, and pollutants from reaching the streams. These measures should reduce negative economic impacts due to possible increased treatment costs for downstream users. They also should improve the fish habitat in the three creeks and the Sandy River watershed, which in turn will have a positive economic impact due to increased fishing opportunities.

Result: Reduced possible negative economic effects to downstream water users due to improved water quality.
Reduced possible negative economic effects to region due to improved water quality and improved fish habitat.

- Big Game Wintering Habitat

Hunting and outdoor recreation (wildlife watching) have positive economic consequences for local businesses and the travel industry. To the extent that limited mining operations will have decreasing adverse effects on the wintering habitat, there could be a corresponding lessening of the potential adverse impact on the local economy.

Result: Reduction in possible negative economic effects to local businesses and the travel industry due to decreased adverse impacts to wildlife habitat.

- Roads

The mitigation measures include road maintenance and improvement projects, which will mitigate the cost and impact of increased heavy truck traffic. Limits on the quantity of rock extracted or on truck traffic will reduce wear and tear and maintenance costs.

A local source will reduce transportation costs to deliver aggregate for local maintenance and improvement projects.

Result: Decreasing negative economic impacts due to increased road maintenance costs.
Positive economic effects from a local source of aggregate for local projects.

Social Consequences

- Residential

At the public meetings, in the farm survey returns, and in written testimony, several property owners from the surrounding area expressed strong opinions about noise impacts and negative effects on the rural quality of life. Many commented that they choose to live in the area for peace and quiet of a rural area and that the existing small-scale quarry operations were a nuisance.

Mitigation measures and reduced operating hours and level of extraction should lessen the noise impact from quarry operations. However, even continuation of the small-scale

(5,000 cy/yr) operations will have a continuing negative impact on surrounding quality of life.

Result: Decreasing negative impacts on quality of life due to a reduction of noise impacts from the quarry operations and decreasing levels of truck traffic.

- Farms

Possible social effects on farms are addressed either as a noise-related quality of life issue under residential uses or as a safety conflict between trucks and equestrians under roads.

- Rural Center

At the community meeting and in the farm survey returns, several property owners commented about the noise impact of truck traffic traveling through Springdale and a perceived negative impact on the quality of life.

With increasing limits on the quantity of rock extracted and a corresponding decrease in truck traffic, the noise impacts decrease, but are not eliminated.

Result: Decreasing negative social impacts from truck traffic noise.

- Streams

Fishing is enjoyed by many residents, therefore fish and stream habitat are important to the environment and the quality of life. To the extent that limited mining operations have decreasing adverse effects on fish in adjacent streams, there could be a corresponding decrease in adverse social impact on residents due to reduced fishing opportunities.

Result: Decreasing negative social impacts from a reduction in fishing opportunities.

- Big Game Wintering Habitat

Hunting and outdoor recreation (wildlife watching) are enjoyed by many local residents. To the extent that limited mining operations have decreasing adverse effects on the quality of wintering habitat and the quantity of big game in east Multnomah County, there could be a corresponding decrease in the adverse social impact on residents due to reduced hunting opportunities.

Result: Decreasing negative social impacts from a reduction in adverse impacts to wildlife habitat.

- Roads

Many of the local roads are narrow and do not have shoulders, which limit the space for trucks to pass and create unsafe conditions for pedestrians, bicycle and equestrians along the side of the road. Road improvements and limits on truck traffic, especially on weekends during the summer months when recreational use is higher will reduce these conflicts.

Result: Decreasing negative social impacts from unsafe conditions for pedestrians, bicyclists, and equestrians due to reduce truck traffic on narrow local roads.

Environmental Consequences

- Residential

The possible air quality impacts from noise and dust are addressed as a social consequence.

- Farms

Environmental effects on farms, primarily due to dust, are addressed as an economic consequence.

- Rural Center

The possible air quality impacts from noise and dust are addressed as a social consequence.

- Streams

Potential negative environmental impacts to the streams related to a decrease in water quality due to increased runoff, turbidity, sedimentation and pollutants. This scenario includes a more aggressive approach to mitigating potential adverse water quality impacts from the quarry. With proper implementation, the potential adverse water quality impacts should be reduced. Given the mitigation measures are part of all three variations, the consequences are expected to be the same.

Result: Reduced potential negative environmental effects to Sandy River watershed and salmon fishery due measures to protect water quality and reduce sedimentation.

- Big Game Wintering Habitat

Provided that ODFW conditions are implemented, limited mining of Howard Canyon will result in an a marginal increase in quarry activities and truck traffic during the winter, which could limit disturbance to deer and elk in the area.

Result: Reduced possible negative environmental impacts on big game wintering habitat.

- Roads

Decreased truck traffic will reduce the need for maintenance and improvement projects on local roads, which could limit adverse impacts.

However, decreasing truck traffic could reduce need for road improvement projects and delay opportunities to improve culverts, which will remove barriers to fish passage.

Result: Reduced possible negative environmental effects to streams and riparian areas due to decreased need for road maintenance and improvements projects required by decreasing truck traffic.

Reduced possible positive environmental effects to fish habitat if road improvement projects that include culvert replacement and removal of barriers to fish passage are delayed.

Energy Consequences

- Residential

Any new residential development will need for aggregate for driveways and access roads. Howard Canyon Quarry is the only known source of quality aggregate material east of the Sandy River. A local supply will reduce travel distances required to deliver aggregate where it is needed.

Result: Positive energy effects to new residential development due to decreased travel distances for aggregate.

- Farms

Farms in the area have a need for aggregate for driveways and access roads. Howard Canyon Quarry is the only known source of quality aggregate material east of the Sandy River. A local supply will reduce travel distances required to deliver aggregate where it is needed.

Result: Positive energy effects to farms due to decreased travel distances for aggregate.

- Rural Center

Any new development will need for aggregate for driveways and access roads. Howard Canyon Quarry is the only known source of quality aggregate material east of the Sandy River. A local supply will reduce travel distances required to deliver aggregate where it is needed.

Result: Positive energy effects to new development due to decreased travel distances for aggregate.

- Streams

There is no identified energy effect on streams.

- Big Game Wintering Habitat

There is no identified energy effect on big game wintering habitat.

- Roads

Road maintenance and improvement projects need large quantities of aggregate. Howard Canyon Quarry is the only known source of quality aggregate material east of the Sandy River. A local supply will reduce travel distances required to deliver aggregate where it is needed.

Result: Positive energy effects to road projects due to decreased travel distances for aggregate.

Hogback Ridge ESEE Consequences

The hogback ridge that makes up the bulk of the western 1,000 feet of the resource site is distinctly different in character than the rest of the resource site. A separate ESEE analysis is conducted to highlight these conditions and consider the unique impacts related to mining this portion of the resource.

In the western 1,000 feet of the resource area, the basalt formation becomes a narrow hogback ridge with steep slopes on either side. This narrow ridge extends approximately 875 feet to the northwest corner of the property. The location of the basalt formation is identified in Figure 2. The Throop report illustrates the different cross-sections for the flat-topped ridge and hogback ridge (see Figure 3). Also, most of the hogback ridge is forested, whereas the flat-topped ridge has been used as pasture land.

The Olson Engineering mining plans show that the hogback ridge will be mined using a completely separate infrastructure of roads and stormwater control systems from those used to mine the main quarry area along the flat-topped ridge.

A mining plan for the hogback ridge would be subject to DOGAMI's steep-slope review. Removal of a thick layer of overburden that consists of soil and large boulders mixed with tree stumps will be difficult to complete without negative off-site environmental impacts such as rolling boulders and turbid stormwater.⁷⁰ While topsoil removal is difficult but possible, stockpiling the removed overburden on steep slopes as shown on the Olson Engineering mining plan is not recommended. A letter from Landslides Technology to Interstate Rock, dated January 25, 2001, recommends no construction of such stockpiles on ground steeper than 2:1.⁷¹ In addition, more overburden will be removed from the hogback ridge than could be stored in the locations identified in the mining plan.

The access road and a major stormwater retention pond are located on the south side of the ridge. The Landslides Technology letter mentions that these south slopes are probably old landslide areas, and should require additional geotechnical mapping before any construction.

The hogback ridge has an estimated geologic reserve of 160,000 tons. This amount is a small fraction of the overall reserve of the main flat-topped ridge, which is in excess of 5 million tons. The narrowness of the hogback ridge is such that excavation is only expected to produce about 210 cubic yards of rock for each yard the quarry excavates along the ridge.⁷² This level is about ten percent of the yield of the main quarry area.

Excavation of the hogback ridge brings the quarry operations closer to the surrounding dwellings and farms. At its furthest extent, the quarry operation would be within 400 feet

⁷⁰ Page 11, Throop Geologic Assessment (Appendix B)

⁷¹ Letter is attached as Appenix 5 to Throop Geologic Assessment (Appendix B)

⁷² Page 12, Throop Geologic Assessment (Appendix B)

and 770 feet of adjacent dwellings. This extension could severely increase noise impacts on adjacent dwellings

Economic Consequences

▪ Regional, Countywide, and Local Markets

The hogback ridge has an estimated geologic reserve of 160,000 tons. This amount is a small fraction of the overall reserve of the main flat-topped ridge, which is in excess of 5 million tons. The relatively small amount of material will have no impact on the regional or local market for aggregate.

Result: No economic effects on the cost of mineral and aggregate material.

▪ Quarry Owner and Operator

The hogback ridge has an estimated geologic reserve of 160,000 tons. This amount is a small fraction of the overall reserve of the main flat-topped ridge, which is in excess of 5 million tons. Extraction would require a new haul road and other mitigation measures that will increase costs.

Result: Marginal negative economic effect from forgone revenue due to leaving resource in place.

▪ Residential

The hogback ridge is the closest portion of the resource site to adjacent residential uses. As such, mining the ridge could increase the negative impacts on property values.

Result: Increased negative economic effects from decreases in property values as quarry operations move closer to surrounding properties.

▪ Farms

The hogback ridge sits above pasture land on the south side. Quarry operations could have adverse impacts on livestock.

Result: Possible increased negative economic effects as quarry operations move closer to surrounding farms.

▪ Rural Center

Mining the hogback ridge is expected to yield a marginal amount of rock compared to the main quarry. Therefore, it is not expected to have any additional economic impacts.

▪ Streams

Overburden stockpiles and stormwater detention facilities will need to be placed on the side of steep and potentially unstable slopes. Failure of these facilities could lead to a major sediment load into adjacent streams. This increased turbidity could lower water quality and could increase treatment costs for downstream users.

Result: Possible negative economic effects to downstream water users due to lower water quality and increased treatment costs.

- **Big Game Wintering Habitat**

Allowing mining of hogback ridge will increase in quarry activities and truck traffic, which could disturb deer and elk in the area, especially during the winter and reduce hunting opportunities.

Result: Possible negative economic impacts due to reduced hunting opportunities.

- **Roads**

Mining the hogback ridge is expected to yield a marginal amount of rock compared to the main quarry. Therefore, it is not expected to require additional road improvement projects and is not expected to have any additional economic impacts.

Social Consequences

- **Residential**

The hogback ridge is the closest portion of the resource site to adjacent residential uses. The Duple Noise Study assumed mining of the ridge in predicting future noise levels. Therefore, it should be possible to mitigate noise impacts to comply with DEQ hourly standards. However, mining the ridge could increase the negative impact on quality of life because the quarry operations would move closer to existing residential uses.

Result: Increased negative social effects from perceived reduction in the rural quality of life as quarry operations move closer to surrounding properties.

- **Farms**

Possible social effect on farms are addressed either as a noise-related quality of life issue under residential uses.

- **Rural Center**

Mining the hogback ridge is expected to yield a marginal amount of rock compared to the main quarry. Therefore, it is not expected to have any additional social impacts.

- **Streams**

Fishing is enjoyed by many regional residents. To the extent that mining the hogback ridge will have an adverse effect on water quality and fish habitat, there could be a corresponding adverse social impact on residents due to reduced fishing opportunities.

Result: Negative social impacts from a reduction in fishing opportunities.

- **Big Game Wintering Habitat**

Hunting and outdoor recreation (wildlife watching) are enjoyed by many local residents. To the extent that mining the hogback ridge will have an adverse effect on the quality of wintering habitat and the quantity of big game in east Multnomah County, there could be a corresponding adverse social impact on residents due to reduced hunting opportunities.

Result: Negative social impacts from a reduction in outdoor recreation opportunities.

- Roads

Mining the hogback ridge is expected to yield a marginal amount of rock compared to the main quarry. Therefore, it is not expected to have any additional social impacts.

Environmental Consequences

- Residential

Mining the hogback ridge is expected to yield a marginal amount of rock compared to the main quarry. Therefore, it is not expected to have any additional environmental impacts related to noise and dust.

- Farms

Environmental effects on farms, primarily due to dust, are addressed as an economic consequence.

- Rural Center

There are no environmental effects on the rural center.

- Streams

Overburden stockpiles and stormwater detention facilities will need to be placed on the side of steep and potentially unstable slopes. Failure of these facilities could lead to a major sediment load into adjacent streams. This increased turbidity could lower water quality and could negatively impact fish habitat.

Result: Possible negative environmental effects to the Sandy River watershed and fish habitat due to lower water quality and increased turbidity.

- Big Game Wintering Habitat

Allowing mining of hogback ridge will increase in quarry activities and truck traffic, which could disturb deer and elk in the area, especially during the winter.

Result: Possible negative environmental impacts on big game wintering habitat.

- Roads

Mining the hogback ridge is expected to yield a marginal amount of rock compared to the main quarry. Therefore, it is not expected to require additional road improvement projects. Therefore, it is not expected to have any additional environmental impacts.

Energy Consequences

Mining the hogback ridge is expected to yield a marginal amount of rock compared to the main quarry. Therefore, it is not expected to significantly impact travel distances to supply aggregate and is not expected to have any additional energy impacts.

Other Applicable Statewide Planning Goals

OAR 660-16-0005(2) requires the ESEE consequences analysis to consider the applicability and requirements of other Statewide Planning Goals, where appropriate.

Goal 2

Goal 3 – Agricultural Lands

Counties may authorize nonfarm uses on agricultural lands that will not have significant adverse effects on accepted farm or forest practices. Multnomah County has incorporated these requirements into Framework Plan Policy 16 – B (Mineral and Aggregate Resources), Strategy I:

- I. To approve a surface mining at a site zone Exclusive Farm Use (EFU) the County shall find, as part of the conditional use approval criteria, that the proposed activity:*
- 1. Will not force a significant change in accepted farm or forest practices on surrounding lands devoted to farm or forest use; and*
 - 2. Will not significantly increase the cost of accepted farm or forest practices on lands devoted to farm or forest use.*

Public testimony and survey returns from the farm and forest impact assessment indicate that result in changes to farm practices and increased costs to surrounding farms. These changes include increased fencing costs to keep livestock under control when startled by quarry activities or haul trucks; increased feed costs due to the loss of pasture land reserved as a buffer to reduce impacts to livestock; and loss of revenue due to adverse impacts to breeding, such as miscarriages.

The proposed noise mitigation measures reduce potential noise impacts from the quarry operations and limit the volume of truck traffic and the route. However, even the lowest extraction levels (5,000 cy/yr) will result in truck traffic that is equivalent to existing conditions and will not mitigate existing impacts along the route.

Goal 4 – Forest Land

The goal and administrative rule designate mining and processing of mineral and aggregate resources as locationally dependent uses. Such uses may be allowed when it is found that:

- The proposed use will not force a significant change in, or significantly increase the cost of, accepted farming or forest practices on agriculture or forest land.
- The proposed use will not significantly increase fire hazard or significantly increase fire suppression costs or significantly increase risks to fire suppression personnel.

There is no indication that mining activities would force a significant change in, or significantly increase the cost of forest practices on surrounding forest lands. As part of the DOGAMI Grant of Total Exemption, a portion of the existing quarry area has been used for supplying aggregate for forest roads on contiguous parcels. Most of the surrounding properties to the south and east of the quarry have been used for forest resource production without adverse impact. An expanded operation should similarly have no impact. The results of the survey conducted as part of the Farm and Forest

Impact Analysis also did not identify significant impacts to forest practices on forest resource land. Also, most of the quarry operations take place within the confines of the quarry, which limits the potential for an increase fire hazard or the costs and risks associated with fire suppression.

Goal 5 – Open Spaces, Scenic and Historic Areas, and Natural Resources

The ESEE analysis has included impacts to Howard Canyon Creek, Knieriem Creek, and Big Creek, and big game wintering habitat, which have been designated as significant Goal 5 resources. A significant increase in truck traffic could have an adverse impact on the historical character of the Historic Columbia River Scenic Highway, but a more definitive assessment must be made as part of a future conditional use permit application.

Goal 6 – Air, Water and Land Resources

Goal 6 requires “All waste and process discharges from future development, when combined with such discharges from existing developments shall not threaten to violate, or violate applicable state or federal environmental quality statutes, rules, or standards.”

With mitigation measures, the quarry operations could meet minimum DEQ standards for noise and stormwater runoff. In the past, DEQ air quality permits were obtained to operate a rock crusher on the site.

Goal 7 – Areas Subject to Natural Disasters and Hazards

Goal 7 requires “Developments subject to damage or that could result in loss of life shall not be planned or located in known areas of natural disasters and hazards without appropriate safeguards.”

Steep slopes and potential soil instability on the southern slope, especially along the hogback ridge, are designated as potential development hazard areas on the County’s “Slope Hazard Map”. A letter from Landslides Technology indicates that the south slopes are probably old landslide areas, and should require additional geotechnical mapping before any construction.

Goal 12 – Transportation

The purpose of Goal 12 is to provide and encourage a safe, convenient and economic transportation system.

Public comments consistently raised the issue of the inadequate existing rural road system to handle the existing truck traffic, nor is it designed to handle an increase in the volume of traffic associated with a significant expansion of the quarry.

The proposed truck route includes local roads that are inadequate to handle increased levels of heavy truck traffic. In order to review specific road impacts, additional information is needed. As part of a conditional use permit, a traffic management plan should demonstrate the adequacy of the existing roads or identify improvements to address the following issues:

- Bridge Load Capacities – demonstrate the structural strength of bridge crossings are adequate to handle the expected truck traffic or make structural improvements to bridges and culverts or agree to weight limits for trucks crossing certain bridges.
- Roadway Design –the truck route between the site and the Historic Columbia River Highway should meet minimum County roads standards, in terms of road width (including shoulders), curve radii, and structural integrity.
- Bikeways – designated bikeway routes along Littlepage Road and Hurlburt Road may need additional shoulder areas to mitigate the impacts of truck traffic on the bikeway routes.

Goal 5 Decision

Decision Framework

The ESEE consequences analysis provides reasons to explain the Goal 5 program decisions for specific resource sites. A jurisdiction is expected to “resolve” conflicts between the resource and any conflicting uses. OAR 660-016-0010 provides three options to resolve the identified conflicts:

1. **Protect the Resource Site.** For mineral and aggregate resources, this option fully allows mining of the resource with the prohibition of conflicting uses. It means that the resource site is of such importance, relative to conflicting uses, and the ESEE consequences of allowing conflicting uses are so great that the resource site should be protected and all conflicting use prohibited on the site and possibly within the identified impact area.

In order to adopt this option, the County would have to narrowly determine the impacts of the quarry operations in terms of mitigation to meet minimum state standards. For example, noise impacts need only be mitigated to meet DEQ standards of existing noise sources. The County also would have to limit potential conflicting uses through a broad application of the PAM Overlay.

2. **Allow Conflicting Uses Fully.** For mineral and aggregate resources, this option fully allows conflicting uses (e.g. rural residential dwellings) and, essentially, prohibits mining because the impacts to surrounding uses are too great. It means that the conflicting uses are of such importance that they should be allowed fully, notwithstanding the possible impacts on the resource site.

In order to adopt this option, the County would have to determine impacts on surrounding uses cannot be mitigated to minimize adverse impacts. For example, noise impacts on the rural quality of life cannot be mitigated to an acceptable level or the farm impacts will cause a significant change in farm practices or a significant increase in farm costs. Under this option, the quarry would continue to operate under the DOGAMI GTE until the 5-acre disturbance area limit is exceeded.

3. **Limit Conflicting Uses.** For mineral and aggregate resources, this option allows both the mining use and the conflicting uses. It means that both the resource site and the conflicting uses are important relative to each other, and that the ESEE consequences should be “balanced” so as to allow the conflicting use but in a limited way so as to protect the resource site to some desired extent.

As part of “balancing” the ESEE consequences, the County would limit quarry operations to minimize adverse impacts. This report presents three options to limit the conflicts between the quarry and the surrounding uses.

1. Base Measures plus Severe Limits on Volume – The scenario includes Base Mitigation Measures for stormwater and noise with strict limits on volume of material to represent continued operation of the quarry at levels similar to the DOGAMI GTE limits.
2. Base Measures plus Limits on Volume of Material – This scenario includes Base Mitigation Measures plus limits extraction to a maximum of 17,500 cubic yards per year.
3. Base Mitigation Measures – This scenario allows extraction up to 35,000 cubic yards per year with the Base Mitigation Measures.

Conflict Resolution

Balancing ESEE Consequences

Economic:

- The quarry will have no or minimal impact on the cost of mineral and aggregate rock products in the region or the county, because it represents less than one percent of the estimated regional demand for aggregate. Therefore, the quarry is expected to have minimal influence on the regional price of aggregate.
- The quarry will have minimal impact on the local market area because the demand for aggregate is expected to be low given the surrounding area is rural in character and outside the Urban Growth Boundary with the vast majority of land designated as resource land. One current supplier estimated that local demand is approximately 2,000 tons per year.⁷³ The potential benefit of a local source of aggregate is reduced transportation costs, however with low volumes and relatively low costs, these savings only amount to an estimated \$8,000 to \$24,000 per year.
- The quarry may have an adverse impact on the quarry owners by lost income from future extraction opportunities. However, mitigation costs associated with larger scale extraction would be significant and might not result in a net benefit to the owner. In addition, a County determination to allow conflicting uses fully under Goal 5 does not prevent the quarry from continuing to operate under the

⁷³ Public Testimony by Sherwood Davis (local hauler), Planning Commission Public Hearing, October 7, 2002.

terms of the Department of Geologic and Mineral Industries (DOGAMI) Grant of Total Exemption for a small scale quarry. The quarry could continue to operate by limiting the physical extent of the quarry area to five acres and mining down into the formation.⁷⁴ If the quarry operations are found to have begun prior to July 1, 1975, then they can continue in perpetuity provided they meet the annual limits of 5,000 cubic yards of material and one acre of disturbance. These exemptions allow for the continued operation of the quarry at historic levels, which will mitigate some of the economic impact of prohibiting the full exploitation of the resource.

- The quarry has a negative impact on property values. There is conflicting evidence in the record on this issue. Testimony from neighbors and a real estate broker indicate a loss in property value due to noise impacts and application of the PAM overlay zone.⁷⁵ The quarry owners have submitted evidence that, in general, quarries have little or no impact on surrounding property values. However, this information is insufficient because:
 1. It was not assembled by real estate professionals;
 2. Is based on sites surrounded by urban levels of development;
 3. Two of the four sites front onto a state highway, which minimizes the impact of truck traffic; and
 4. The analysis does not adequately explain the orientation of the quarry, which may limit noise or truck impacts.

Having considered the conflicting evidence, the Planning Commission finds that even with mitigation measures, the quarry negatively impacts property values in the surrounding area.

- The quarry has a significant negative impact on farms, primarily due to conflicts between truck noise and livestock. Noise mitigation measures and limits on the number of trucks will reduce these impacts. However, some measures, such as advance notification of blasting, would require a change in accepted farming practices. In addition, public testimony indicates that there are conflicts with the current operations such that even limiting truck volumes to the current GTE extraction levels (5,000 cubic yards per year), would still have a negative impact on surrounding farms along the truck route.
- Truck traffic from the quarry adversely impacts Springdale, a rural center. There are 16 dwellings with frontage on Hurlburt Road and another 15 dwellings along the Historic Columbia River Highway. Many of these dwellings are closer than the 50-foot setback used in the truck noise calculations. These shorter setback distances increase noise levels and adverse noise impacts, which in turn can decrease property values. In addition, a significant increase in truck traffic could decrease the attractiveness of Springdale for commercial development, which may

⁷⁴ DOGAMI, the Schlicker report and the Throop assessment have estimated the formation to be up to 40 feet thick.

⁷⁵ Letter from Bruce Lockwood, Oregon Realty Company, dated August 20, 2003

threaten the viability of existing businesses or discourage new businesses from locating in Springdale. Noise mitigation measures, including speed restrictions and prohibiting the use of engine “Jake” brakes, and limits on the number of trucks could reduce these impacts to meet DEQ standards. However, the DEQ standard is an hourly standard and does not adequately account for the continuous operations of the quarry. Even continuation of the small-scale (5,000 cy/yr) operations will have a continuing negative impact on surrounding property values.

- Economic impacts to streams and big game habitat, such as lower water quality and increased treatment costs for downstream users due to increased runoff, turbidity, and pollutants, can be mitigated.
- The Hogback Ridge is relatively small and not extracting aggregate from that area will have marginal loss of economic value for the region, countywide, the local market area, and the quarry owner and operator.

Social:

- Quarry activities can be mitigated to comply with DEQ noise standards.
- Quarry truck traffic can be mitigated to comply with DEQ noise standards.
- DEQ noise standards do not fully account for the extended duration and long-term effects of the quarry activity and truck traffic. These impacts can be reduced during peak periods of outdoor use (evenings and weekends) with measures such as annual limits on the total volume of material to be extracted, limits on the number of trucks (per day or per hour) going to and from the quarry, and limits on the operating hours and days. However, the truck traffic associated with the continuation of the small-scale (5,000 cy/yr) operations will have a continuing negative impact on the quality of life for the surrounding area.
- Potential dust impacts will be mitigated by the terms and conditions of the required DEQ permits and sedimentation control measures (truck wash) required to protect area streams.
- Quarry truck traffic can create conflicts with pedestrians, bicyclists, and equestrians. These conflicts might be mitigated to some extent through road improvements (widen roads and shoulders) and operating restrictions (hours and days) that prohibit truck traffic during peak periods of use (evenings and weekends).
- The Hogback Ridge is the portion of the resource site nearest to residences and farm uses with only a minor amount of aggregate resource and yet the most potential for adverse impacts from noise.

Environmental:

- Potential quarry impacts to streams can be mitigated with erosion control and pollution control plans so that the quarry is not likely to adversely impact water quality or ESA listed salmonid species in local streams.
- Impacts to big game habitat can be minimized.
- The Hogback Ridge has the steepest and potentially unstable slopes that make erosion control measure difficult with increased risk of failure. Therefore, mining of the Hogback Ridge has environmental impacts that cannot be resolved.

Energy:

- The quarry could have a positive impact in supplying a local source of aggregate, which will reduce travel distances and fuel consumption.

Conclusion

The 1996 HCRR ESEE Analysis indicated the consequences of fully protecting the resource (fully allowing extraction without local mitigation measures) and fully allowing the conflicting uses (prohibiting extraction) were too extreme and that an appropriate course of action was to limit the conflicting uses and find an appropriate set of mitigation measures to allow the quarry operations.

This update of the HCRR reaches a different conclusion.

Fully allowing mining with minimal mitigation measures would impose significant negative impacts on the surrounding community, in terms of quality of life, public safety, condition of local roads, streams, and big game habitat.

Allowing mining on a limited basis, with mitigation measures and a more active role for the County in terms of monitoring and enforcement, offers the opportunity to mitigate some of the identified negative impacts. However, as evidenced by the conflicts with the current low level of mining, there will still be significant negative impacts on surrounding rural residential and farm uses. These negative impacts include:

- Noise impacts reduce the quality of life to the surrounding area due to continuous operations of the quarry and truck traffic along local roads for a significant distance (3.9 miles) before reaching a major arterial.
- Noise impacts from existing (low levels) of truck traffic create conflicts with livestock that requires significant changes to farming practices and increased costs to farms along the truck route.

Fully prohibiting mining would resolve many of the negative impacts on the surrounding community but impose a significant negative economic impact on the quarry owner. However, under current Comprehensive Framework Plan policies, the quarry could continue to operate under DOGAMI's Grant of Total Exemption (GTE), which will

mitigate some of these negative impacts.⁷⁶ These impacts are balanced by positive impacts to the surrounding area, in terms of increased property values, improved quality of life and decreased costs to farms.

Therefore, the Planning Commission recommendation is to prohibit mining and not protect the Goal 5 resource so as to reduce adverse impacts on the surrounding area and along the truck route.

Program To Achieve Goal Recommendations

The Howard Canyon site is a significant site, but will not be protected and will no longer be included on Multnomah County's list of *Protected Sites* as provided for under the provisions of OAR 660-16-010(2), Allow Conflicting Uses Fully (also referred to a 3B designation).

Determination of Significance

The Howard Canyon site is a significant Goal 5 mineral and aggregate resource, based on the following findings:

- Quantity - The resource site represents a large quantity of basalt material, in excess of 5 million tons.
- Quality - Laboratory testing confirms the basalt meets ODOT standards for air degradation and abrasion and is suitable for aggregate use. In addition, the columnar basalt formations in Howard Canyon are suitable for riprap in road construction as well as decorative rock in landscaping and building construction.
- Location – There are a limited number of mineral and aggregate resource sites in east Multnomah County and adjacent portions of Clackamas County. There are no other known basalt quarries in the region that actively mine columnar basalt.

Level of Protection

The Planning Commission recommendation is to Allow Conflicting Uses Fully and prohibit mining under the provisions of OAR 660-16-010(2) (also referred to a 3B designation).

The Howard Canyon site will be removed from Multnomah County's list of *Protected Sites*.

Implementation Actions

- Adopt the Howard Canyon Reconciliation Report, a site-specific Goal 5 analysis for a significant aggregate resource site.
- Amend references to Howard Canyon in the "East of the Sandy River Rural Area Plan, July 1997":

⁷⁶ The DOGAMI limits for a Grant of Total Exemption are: less 5,000 cubic yards of material or disturbing less than one acre of land within a period of 12 consecutive months until mining affects five or more acres.

“One of the Goal 5 resources ~~to be protected~~ is mineral and aggregate materials. The Howard Canyon quarry is a small operation located between Howard and Knieriem Roads which currently operates under an "exempt" permit. Under state law, any quarry which produces less than 5,000 cubic yards of material and disturbs less than five acres per year is exempt from state and county mining statutes. The owner of the Howard Canyon quarry has applied several times since the 1960's to expand the quarry beyond this level, always unsuccessfully. In 1990, the Multnomah County Board of Commissioners decided not to designate the Howard Canyon quarry site as a significant and protected Goal 5 aggregate resource. However, in 1993, the Oregon Land Conservation and Development Commission remanded this decision back to Multnomah County because the County's rationale for denying protection was not acceptable. In response, the Board of Commissioners granted protection of the aggregate resource for most of the site in 1994, but with significant conditions related to air quality and traffic mitigation (see Howard Canyon Reconciliation Report). The quarry owner objected to these conditions, and in response the matter was once again returned to Multnomah County by the state for more work. In 1995, the Board of Commissioners once again adopted protection for the quarry site, with some modifications in the conditions. On March 7, 1996, the Oregon Land Conservation and Development Commission(LCDC) approved the County's work, but with two exceptions, and ordered the County to make specific changes which would protect all of the site for mineral & aggregate mining and would also not allow the County to independently monitor on-going air quality issues associated with quarry operations. Multnomah County adopted these changes in June, 1996.

~~The result of this complicated story is that the Howard Canyon quarry is now a protected mineral and aggregate site. In order to actually mine the site further, an applicant must receive approval from Multnomah County of a conditional use permit and receive approval from the Oregon Department of Geology and Mineral Industries for a reclamation plan to be implemented once mining is complete. The conditional use permit must meet all of the requirements set forth in the Howard Canyon Reconciliation Report.~~

In 1999, a conditional use permit application for mining this resource site was submitted to the County. This application proposed a level of mining activity that was dramatically different from the base assumptions in the Howard Canyon Reconciliation Report. Therefore, Multnomah County decided it necessary to revisit the HCRR and re-analyze the impacts of increased production levels and future quarry operations on the site and the surrounding community.

The results of the preliminary impact reports were reviewed in a public meeting on May 16, 2002 at the Corbett School. Based on public comments

received at the meeting, the impact reports were finalized and a draft of the updated HCRR was prepared. A draft Howard Canyon Reconciliation Report was reviewed by the Planning Commission in 2002 and early 2003. In March, 2003, all parties agreed to try to resolve the conflicts through mediation. The mediation broke down because agreement between all parties would have required a higher level of trust than was likely to evolve in the requisite time.

In 2004, the Planning Commission held public hearings proposed revisions to the Howard Canyon Reconciliation Report. The Planning Commission deliberated and recommended to not protect the resource and prohibit mining on the site. The Howard Canyon Reconciliation Report has been revised to reflect that recommendation.

Mineral and Aggregate Resource Policies

35. Allow Prohibit mining on the Howard Canyon quarry site under the conditions set forth in the Howard Canyon Reconciliation Report, part of the Multnomah County Comprehensive Framework Plan.

- Amend the County's Aggregate Inventory Map to delete the Howard Canyon site.