Testimony to the Oregon House Committee on Rural Communities, Land Use, and Water
concerning
House Bill 2666
Relating to mining on resource lands

16 April 2015

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As a University of Oregon geology professor specializing in resources, I have studied gravel resources in the Willamette Valley for fifteen years, starting when Eugene Sand and Gravel proposed to mine 250+ acres of Class 1 and Class 2 farmland next to Thistledown Farm and Lone Pine Farm just north of Santa Clara. I speak here on my own behalf.

HB 2666 is bad for jobs, bad for Oregon agriculture, and would cause permanent damage to Oregon food production capability. The bill would eviscerate the existing minimal protections under Goal 5 for the best farmland in the Willamette Valley.

Rock aggregate is essential for construction of highways, buildings, bridges and railroads. That rock production, and the employment it provides, can be fully supplied from basalt quarries, as explained in the attached testimony (PDF document filed with the committee administrator). Nearly half of Willamette Valley aggregate comes from sand and gravel pits on floodplains of the Willamette River and its tributaries, and the other half is from Willamette Valley quarries. Nearly all of the valley bottom gravel pits cut into Class 1 and 2 soils that were productive farmland before being mined for gravel.

Of all places on the planet, the Willamette Valley is certainly one of best for supplying aggregate by quarrying basalt from the hills while preserving the best soils for agricultural production. The half of aggregate demand that is met by existing quarry basalt production comes at fully competitive costs, and can readily supply much more. Just as other regions of the country have done, it is time for Oregon to step into the 21st century by shifting aggregate production from sand and gravel to quarried basalt and thereby meet its obligation to current and future generations by preserving our very best farm soils for farm production while we still have them to preserve. We either save the soils now or lose them forever. The maps in the appended testimony, Figures 4 and 5, show the large supply of basalt in the valley and the small amount of top quality farm soil underlain by sand and gravel.

HB 2666 would kill jobs because the gravel mining jobs will exist whether the rock is mined from the valley bottom or quarried from the nearby hills shown in Figure 5 in attached written testimony; both valley gravel mining and hillside quarry mining require workers, and the demand for rock and a workforce to mine it will be there regardless of the source, as demonstrated in a study by economist Dr. Ed Whitelaw of EcoNorthwest in a report of 17 July 2000, and again in testimony of 7 August 2001 (both attached in PDF). In the latter testimony, Dr. Whitelaw states the following on the employment issue (p.7):

> "**Claim:** 'If there is a layoff at a [gravel mining] company . . . there is still a net loss of jobs.' **Response:** . . . Whether ES&G [Eugene Sand and Gravel] mines gravel at the proposed site (a supply side effect), demand for aggregate in Lane County will remain unchanged. There will still be demand for roads, streets, commercial developments and all other sources of demand for rock materials. And if, on the supply side, ES&G closes down, then the other gravel suppliers . . . would satisfy the demand by employing ES&G's employees or some other employees."

The obvious conclusion is that whether we mine sand and gravel or we mine basalt from quarries, the demand for rock determines employment, thus gravel mining does not increase employment.

In fact, ***mining of valley-bottom gravel decreases total employment*** because gravel mining destroys farmland and the livlihood of farm workers who work that land. The farming jobs are lost forever. Valley-bottom gravel mining eliminates the most labor-intensive farming in the state–farming of fruits, vegetables, nursery stock, and nuts on Class 1 and Class 2 soils. The lost jobs include those of farmers, laborers, and sales staff, plus the many who sell equipment and services to the farming operations. As Dr. Whitelaw's argument shows, the aggregate mining jobs will be there regardless of whether rock is mined from upland quarries or valley-bottom gravel pits.

The fundamental problem with HB 2666 is that it would eliminate the existing protection of farmland under Goal 5, which requires that new mining not cause significant change in farming practices and not cause significant increase in farming costs on adjacent farmland. Both of those criteria were the basis for the Lane County commission vote against the Eugene Sand and Gravel proposal. Both conservatives and liberals on the County Commission voted against the gravel mining proposal because they recognized the adverse impacts on farmers of dust, truck traffic, noise, and decreased ground water supply.

I urge you to stop HB 2666 and thereby preserve our dwindling supply of highly productive farm soils. What we really need is quite the opposite of HB 2666: better protection for Class 1 and Class 2 farm soils in the entire Willamette Valley.

Testimony to the Oregon House Committee on Rural Communities, Land Use, and Water

Gravel mining on Willamette Valley prime farmland

16 April 2015*

Mark H. Reed
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Summary

Hundreds of acres per year of the Willamette Valley's best farm soils are being permanently lost to gravel mining. Such destruction of farm production capacity is absolutely unnecessary because alternative aggregate supply from basalt quarries abounds and is already in production.

The best farm soils are Class 1, Class 2, Prime and Unique–soils that mantle Valley bottomlands and typically produce crops of high value such as vegetables, berries, filberts, nursery stock, and orchard fruits such as peaches, pears, apples, cherries and prunes. Given the ongoing dramatic rise in transportation costs as fuel prices rise, it has become obvious that Oregon needs to protect what's left of its best farm soils. Local farming minimizes energy demand for food production, and is a fundamental part of a sound economic system to support the current and future citizens of Oregon, both for food and for the economic value of farm production.

Rock aggregate is essential for construction of highways, buildings, bridges and railroads. Nearly half of Willamette Valley aggregate comes from sand and gravel pits on floodplains of the Willamette River and its tributaries. A substantial majority of the pits cut into Class 1 and 2 soils that were productive farmland before being mined for gravel. Of all places on the planet, the Willamette Valley is certainly one of best for supplying aggregate by quarrying basalt from the hills while preserving the best soils for agricultural production. Valley quarry basalt production currently meets more than half of the demand for aggregate at fully competitive costs, and can readily supply much more. Just as other regions of the country have done, it is time for Oregon to step into the 21st century by shifting aggregate production from sand and gravel to quarried basalt and thereby meet its obligation to current and future generations by preserving our very best farm soils for farm production while we still have them to preserve. We either save the soils now or lose them forever.

Overview of Oregon aggregate sources and production: Round rock and crushed basalt

Oregon is endowed with modest aggregate resources in the form of sand and gravel, "round rock" (Figure 1), but very large resources of basalt , which is crushed for use as aggregate (Figure 2). In the Willamette Valley alone, as for the state as a whole, somewhat more than half of the aggregate production is crushed basalt and the rest is sand and gravel, as shown by

* Testimony originally given in 2008 to the House committee on Agriculture and Natural Resources.of the

Figure 1. Alluvial aggregate ("round rock").

Figure 2. Crushed basalt ("quarry rock").

DOGAMI data in Table 1. In the Willamette valley, most sand and gravel is mined from pits in the active floodplain of the Willamette River. Crushed basalt is mined from basalt rock layers deposited by ancient volcanic activity. Such basalts underlie the Salem Hills and hills of Portland, as well as many other hills within the Willamette Valley and along its edges, providing a ready source of hard rock for quarrying (e.g. Figure 3).

Willamette Valley Aggregate production (tons)
(Data from DOGAMI, Dec 2006 and Dugdale, 2007)

Year	1996-97	1997-98	1998-99	1999-00	2000-01
Basalt	19,315,389	15,911,847	14,873,522	14,845,659	14,342,209
Sand and Gravel	11,706,351	13,831,462	11,655,086	12,282,310	10,770,761
Total	31,021,740	29,743,309	26,528,608	27,127,969	25,112,970

Year	2001-02	2002-03	2003-04	2004-05
Basalt	11,987,258	11,800,446	12,508,306	14,348,255
Sand and Gravel	10,279,621	9,750,750	11,620,461	12,906,523
Total	22,266,879	21,551,196	24,128,767	27,254,779

Table 1. Aggregate production in Willamette Valley Counties (Benton, Clackamas, Columbia, Lane, Linn, Marion, Multnoma, Polk, Washington, Yamhill; Lane county production includes small production from the coast). Year column headings indicate year within which the 12-month reporting period ended, the month of which differs from one producer to another.

Oregon production by region

DOGAMI data for aggregate production statewide in 2004-2005 is broken down by region in Table 2, showing that production from the Willamette Valley region is, by far, the largest in the state at 66% of the state total. The concentration of production in the Willamette Valley reflects the concentration of population and urban areas in the Willamette Valley, where agricultural production from Class 1 and 2 soils is also concentrated. Modest production comes from other regions of the state shown in Table 2. The DOGAMI data also show that, statewide,

Figure 3. Basalt quarry in the southern Willamette Valley. The hill is underlain by basalt that is mined and crushed on site. Soils overlying such uplands within and along the Willamette Valley are largely poor for farming, Class 5 and higher, with some areas of Classes 3 and 4. Basalt deposits such as the one pictured here are typically much more than 100 ft thick, providing a large amount of rock from a small area of disturbed land.

A quarry such as the 139-million-ton Springfield quarry can supply an amount of aggregate equivalent to that mined from 2000 acres of prime farmland.

56% of production is basalt and 44% is sand and gravel. A similar split applies to the Willamette Valley, with 53% basalt and 47% sand and gravel.

Comparison to other states

Oregon can readily meet the aggregate demand from crushed basalt quarry rock and existing gravel sites. Other states have already made the shift so as to preserve their river bottom lands. For example, North Carolina gets 85% of its aggregate from crushed quarry stone and 14% from sand and gravel[1]. Similarly, in the mid-Atlantic region 83% of aggregate came from quarry rock in 1995, up from 68% in 1975[2].

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[1]North Carolina Geologic Survey (http://www.geology.enr.state.nc.us/Default.htm): "Crushed stone makes up 85 percent of [N.C.] aggregate production; construction sand and gravel, about 15 percent. North Carolina is the eighth largest crushed stone producing state in the U.S. Aggregate is produced from about 135 crushed stone quarries and about 500 sand and gravel sites throughout the state."

[2] Gilpin R. Robinson, Jr., and William M. Brown, *U.S. Geological Survey Open-File Report 02-350,* p. 13: "Changes in the aggregate industry profile for the Mid-Atlantic region from 1975 to 1995 illustrate some recent industry trends. In 1975, 116 natural aggregate companies were active in the Baltimore-Washington region (Valentin

Aggregate Production by Region (year 2004-2005)				
Region	Production (tons)	% of state	% sand & gravel	% basalt
Willamette Valley (10 counties)	27,254,779	66	47	53
Coast (5 counties)	2,131,152	5	26	74
Southern Oregon (5 counties)	4,212,655	10	48	52
Central & Eastern Oregon (18 counties)	7,895,372	19	36	64
Oregon Total	41,493,958	100	44	56

Table 2. Summary of total production by region and the percentage of commercial sand gravel mined versus crushed basalt mined for 2004-2005 in Oregon's four regions. Data show that 56% the Oregon's aggregate comes from crushed stone (rock from hard rock quarries) and 44% comes from sand and gravel sites (data from DOGAMI (Marshall), 2006, 2007) and Dugdale, 2007).

Valley Counties: Benton, Clackamas, Columbia, Lane, Linn, Marion, Multnomah, Polk, Yamhill and Washington. Coast Counties: Clatsop, Tillamook, Lincoln, Coos and Curry Counties. Southern Counties: Douglas, Josephine and Jackson Counties. Eastern Counties: Hood River, Wasco, Sherman, Gilliam, Morrow, Umatilla, Wallowa, Union, Baker, Grant, Malheur, Harney, Lake, Klamath, Deschutes, Crook, Wheeler, and Jefferson.

Additional research by the Oregon Farm Bureau aggregate workgroup member Bill Austin shows that a third of the states that provided aggregate source data[3] meet more than 70% of their aggregate demand from quarry rock resources (Arkansas, Louisiana, Massachusetts, Oklahoma, Tennessee, Wisconsin). The suggestion from Oregon river gravel producers that crushed quarry rock is not suitable to meet Oregon aggregate demand is highly questionable, especially when we recognize that Oregon's quarry rock, basalt, is one of the best aggregates available[4]. Further, the Portland area has already largely shifted to use of crushed basalt, as pointed out by Jaeger (2006): ". . . few alluvial sand and gravel mines still operate in the Portland metro area: the vast

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Tepordei, written communication, 1999). These companies produced 36 million metric tons (39.7 million tons) of aggregate from 135 sand and gravel pits (32 percent of total aggregate production for the region) and 78 crushed stone quarries (**68 percent** of total aggregate production for the region). In 1995, 53 natural aggregate companies were active in the Baltimore-Washington region and produced 76 million metric tons (84 million tons) of aggregate from 61 sand and gravel pits (17 percent of total aggregate production for the region) and 89 crushed stone quarries (**83 percent** of total aggregate production for the region). . . . These changes also illustrate a regional **shift in the source of aggregate from sand and gravel, which is supplied by many aerially extensive but low volume operations such as shallow open pits in alluvial deposits, to crushed stone,** which is supplied by quarries that produce aggregate in large volume from aerially more restricted deep quarries or underground mines. Tepordei (2001, p. 13) notes that **since 1974, more crushed stone than sand and gravel has been produced in the United States, reflecting a national trend toward greater reliance on rock quarries for aggregate."** (Emphasis added).

[3] Bill Austin surveyed State DOT's in fifty states and received responses from sixteen on the question of how much of their aggregate comes from quarry rock, river rock and recycled rock sources. One more state, Iowa, gets more than 50% of its aggregate from quarry sources.

[4] Numerous studies of aggregate qualities have found that basalt (or "trap rock", as it is commonly called in the East) is makes especially good aggregate because it is dense, non-porous, tightly crystalline (making it tough), hard, and it bonds well to cement.

majority of aggregate consumers in the Portland metro area already rely on crushed rock from quarries that do not generally conflict with high-value farmland."

Distribution of alluvial aggregate resources in the Willamette Valley

Essentially all Willamette Valley production of sand and gravel (Tables 1, 2) comes from the very young alluvial deposits in the 100-year floodplains of the Willamette River and its tributaries, as shown on the map in Figure 4. The green color (or darker gray along rivers) on the map shows the areal extent of the post-Pleistocene alluvium deposited as the rivers meandered across their floodplains during the past 10,000yr (geology of gravel deposits is largely from the USGS geologists O'Connor, et al., 2001). This young gravel is fresh, little weathered, and of good quality for making concrete. Beneath this young alluvium and laterally adjacent to it in beige color (light gray) on the map, lies older alluvium that filled the Valley during the Pleistocene and earlier times. Much of this older rock is poor quality for concrete, but some of it is suitable for base aggregate.

The red (dark gray) dots on the map (Figure 4) show the locations of all currently and formerly permitted alluvial gravel pits in the Valley as tabulated by DOGAMI (2005, 2006). It is quite evident that the gravel pits closely track the distribution of the young alluvium (green or dark gray on map), reflecting the interest in mining the relatively thin layer (20 to 40 ft thick) of concrete-grade gravel along the rivers. The near absence of mining in the older alluvium (beige or light gray) reflects the lack of interest in mining the poor quality deeper rock.

One general point to recognize is that some round rock makes good aggregate and some is poor. Most of the Valley alluvial deposits are poor quality, but the rock along the river floodplains (where the soils are best) is good quality, thus the gravel miners seek it.

Distribution of basalt aggregate resources in the Willamette Valley

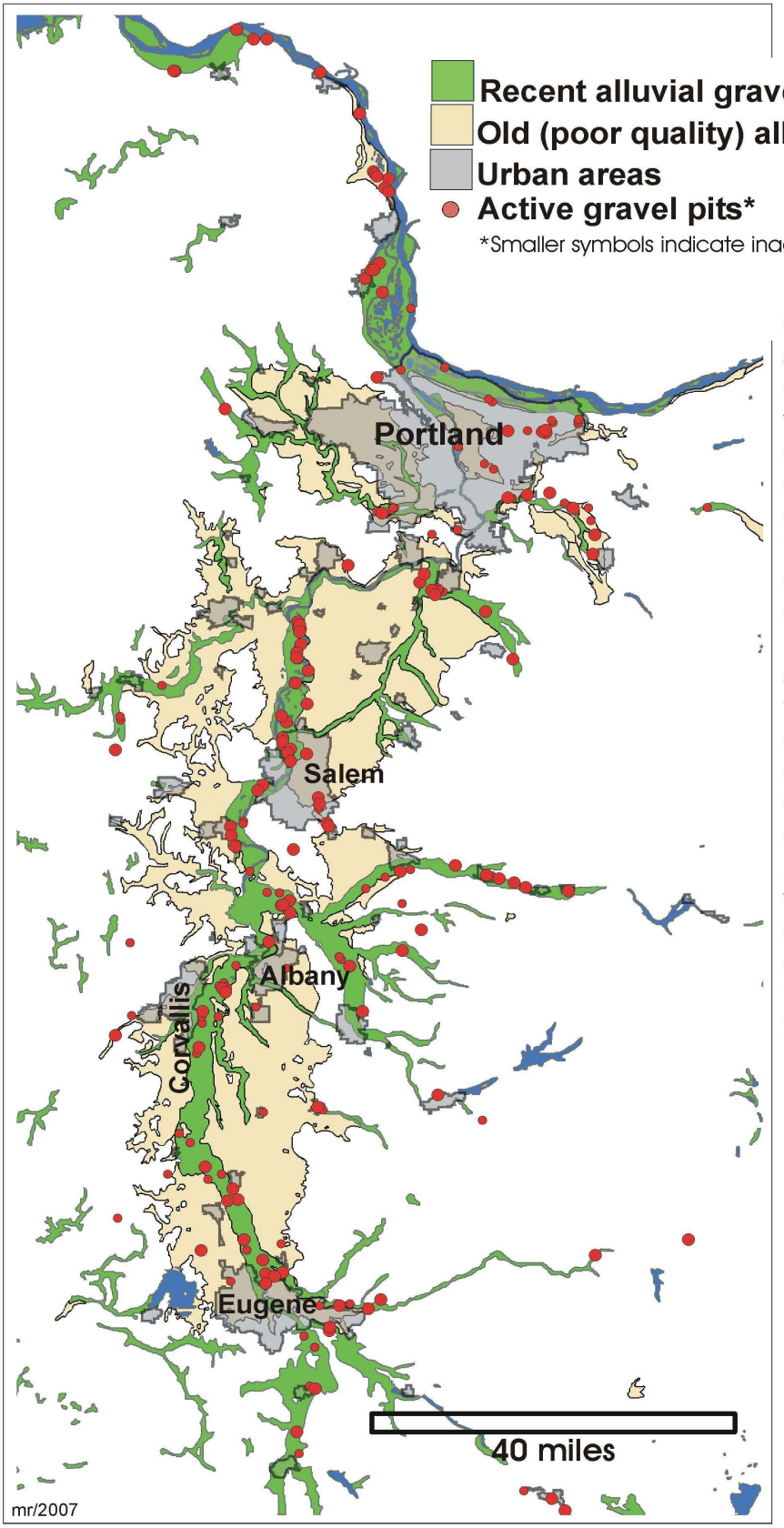
In contrast to sand and gravel, the supply of basaltic rock in the Valley is enormous, as shown by the tan color (medium gray) on map Figure 5. The basalts shown on the map include a variety of types, including the widespread and famous Columbia River basalts that underlie the Salem Hills, Portland Hills, and some of the hills along the Columbia River north of Portland, as well as huge areas of Central and Eastern Oregon and Washington. Other basalts and related rocks (diabase, gabbro) underlie most of the hills and knobs of the Valley floor, parts of the Cascade foothills, parts of the Coast Range, and additional hills in the Portland area (Boring lavas of SE Portland).

The black squares on the map (Figure 5) show the locations of all currently and formerly permitted basalt quarries in the Valley as tabulated by DOGAMI (2005, 2006; Columbia County quarries are located by DOGAMI but permitting is separate). The rock units shown in tan (gray) are shown only if they contain rock quarries, i.e. if a particular formation is not mined for basalt aggregate, that unit is not shown on the map. It is apparent from the map that one reason more than half of Valley aggregate production is basalt is that basalt is plentiful in the Valley.

As for round rock, some basalts make good aggregate and others do not. Just like the basaltic aggregate produced elsewhere in the country (e.g. the "trap rocks" of New England), much of the
Oregon basalt make excellent aggregate, which accounts for its large production in the Valley and in the state as a whole.

Round rock producers argue that round rock makes better concrete because it can be more

Willamette Valley Alluvial Gravel Pits

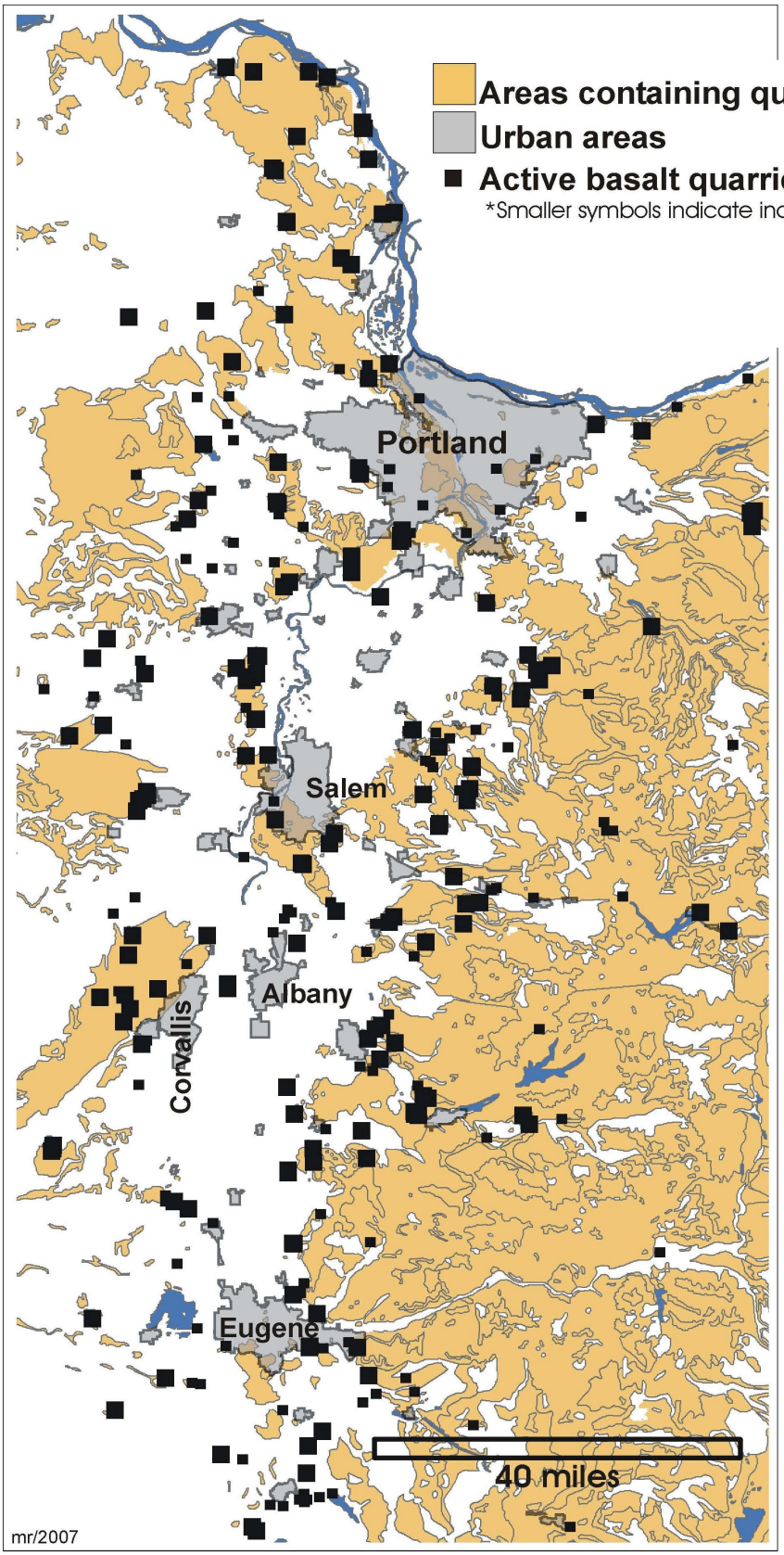


Geologic map showing young river alluvium (green) where nearly all gravel is mined (red circles) and showing older river alluvium (beige) that is generally poor in quality for aggregate.

The best farming soils, used to grow fruits and vegetables, overlie the young alluvium (green). Generally lower quality farming soils, used for rye grass and wheat, overlie the older alluvium. (Mine data from DOGAMI (Marshall), 2006, 2007; Dugdale, 2007)

Figure 4

Willamette Valley Basalt Formations and Quarries



Geologic map showing solid rock areas (tan) from which basalt is mined in numerous quarries (black squares).

Abundant basalt is readily available within the Valley, providing an inexpensive source of aggregate to meet demand without destroying the limited area of prime farmland along the rivers. (Mine data from DOGAMI (Marshall), 2006, 2007; Dugdale, 2007)

Figure 5

easily smoothed. However, smoothing of crushed rock concrete is an art that finishers have mastered just about everywhere but Oregon, apparently, for example in building the tarmacs of Dulles Airport, O'Hare Airport, Indianapolis Airport, to name three where crushed rock aggregate is used, plus curbs, sidewalks and streets all over the eastern US, and elsewhere.

Estimates of farmland destroyed

W. Jaeger (2006) has estimated the demand for aggregate in Oregon based on various economic trends. Using his estimate for demand, the area of land destroyed by mining can be estimated, as shown in Figure 6. The estimate takes into account the Chapin Factor, 62%, an estimate by Bruce Chapin of the typical area actually mined relative to the minimum area necessary to yield a given volume of rock assuming vertical mining to total depth; i.e. the factor accounts for sloped mine walls, setbacks, islands, processing areas, roadways, and the like.

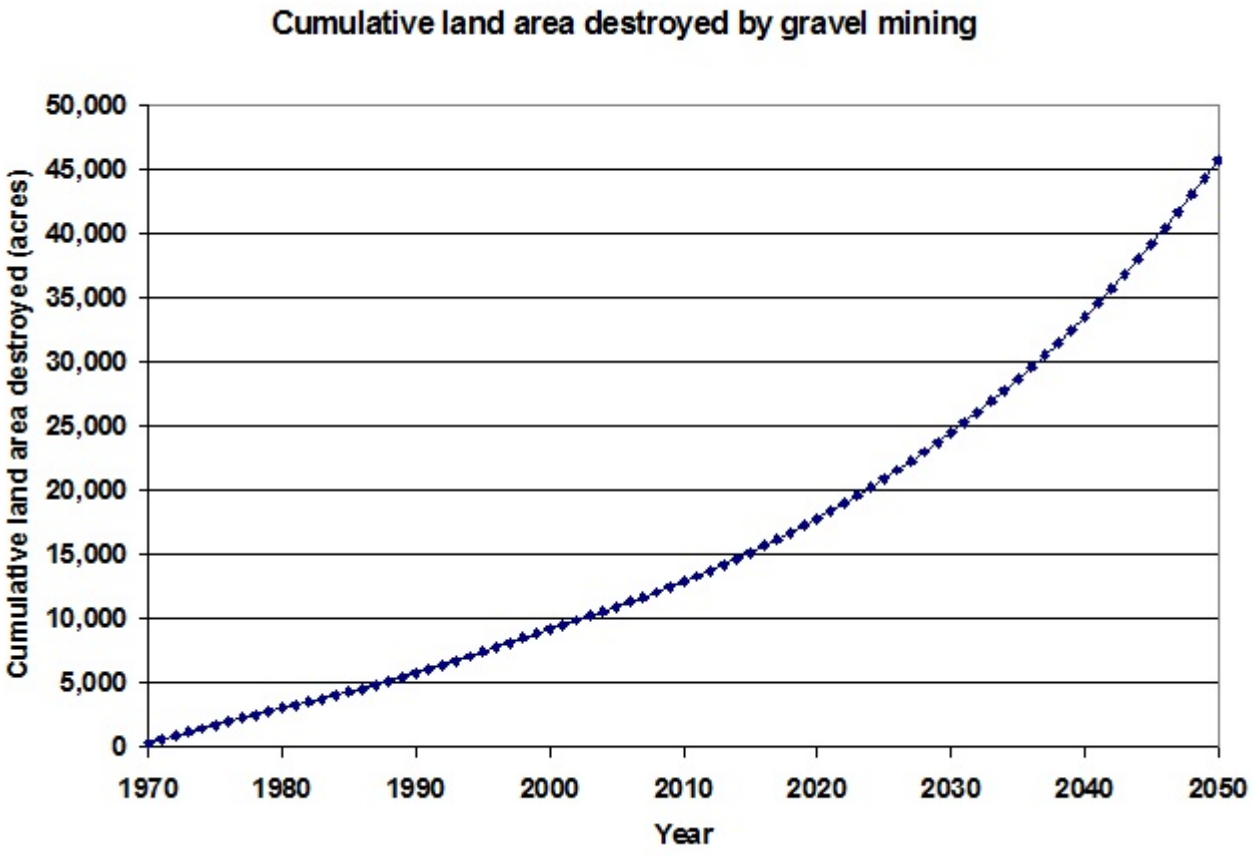


Figure 6 Cumulative land area of Willamette Valley land destroyed since 1970 by gravel mining projected to the year 2050. The graph assumes: a) continued production of 46% of Willamette Valley aggregate from sand and gravel sources, b) an average mined thickness of 20 ft, c) an areal mining efficiency of 62% (Chapin Factor, see text), and d) a mining rate intermediate between the extremes estimated by W. Jaeger (2006). Historic production is smoothed.

Conclusion

Willamette Valley aggregate can be fully supplied by production from basalt quarried in the Valley and along the Columbia River, as is already the case in Portland and much of the rest of the country. Oregon's best farmland, which lies in the floodplains along the rivers of the Willamette basin, is irreplaceable and essential to production of food–all the more so as transportation energy costs continue to rise into the future. Protection of the remaining farmland for current and future agricultural production would be most prudent.

References

DOGAMI, 2006, Data tables of aggregate production from Dawn Marshall of DOGAMI MLRR, Albany.

DOGAMI, 2005, Data tables of aggregate production from Dawn Marshall of DOGAMI MLRR, Albany.

Jaeger, W.K, 2006, The hidden costs of relocating sand and gravel mines, Resources Policy 31 p.146–164

O'Connor, J., Wojcicki, A., Wozniak, K., Polette, D., and Fleck, R., 2001, Origin, Extent, and Thickness of the Quaternary Geologic Units in the Willamette Valley, Oregon. USGS Professional Paper 1620, 40p, + maps & appendices.

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August 7, 2001

TO: **Lane County Board of Commissioners**
FROM: **Ed Whitelaw**
SUBJECT: **PA 99-5996**

1. Introduction

a. Professional Background

I'm president of ECONorthwest, an economic, financial, land-use and transportation consulting firm with 30 professionals in offices in Eugene, Portland, and Seattle. I'm also a professor of economics at the University of Oregon, where I've taught since 1967. My current teaching includes undergraduate and graduate courses in environmental and resource economics, urban economics, and the economics of the Pacific Northwest. I specialize in applied microeconomics, the economic consequences of policy decisions, urban and regional economics, and resource and environmental economics. My current and past positions include: the Oregon Progress Board (1989- ; chaired by the governor, with responsibility for charting long-run state policy); the Oregon Economic Development Commission under Governor Goldschmidt; the Oregon Council of Economic Advisors under Governor Atiyeh; EPA's National Advisory Council for Environmental Policy and Technology (1995-98); FEMA's National Flood Insurance Program Evaluation Steering Committee (2001-), and the *Register-Guard*'s Board of Economists (ongoing). I attach my resume for your reference.

b. Guide to This Memo and My Conclusions

In this memo I summarize the findings of my analysis of the relevant economic issues arising from the ESG application. I also address many of the related economic issues raised in the comments and debate surrounding the deliberations. Please find my two submissions to the Lane County Planning Commission in July and August 2000 attached.

From my analysis, I reached several conclusions:

1. The proposal, if implemented, would significantly increase the cost of accepted farm practices on surrounding lands devoted to farm use.

2. The applicant's claims that rejection of the proposal would harm the economy, the community, the construction industry or the aggregate market do not withstand scrutiny. In fact, approving the proposal would harm the economy and

(Pages 2-6 omitted here (2015); page 7 contains the employment argument referenced by Reed)

i. **Claim:** Dust issues are "best addressed by agronomists and other scientists" (Conerly, p.1)
Response: It is clearly the economist's role to address the economic consequences of bio-physical impacts. In economics we refer to the unintended consequences of business practices—such as dust, noise, chemical emissions and disruption of groundwater—as "externalities." Dust, for example, is a negative externality of gravel mining. Resource and environmental economists, of which I am one, deal with externalities regularly in textbooks, articles and classrooms.[2]

ii. **Claim:** "On the basis of this research, I conclude that the project would be beneficial to the economy of Lane County." (Conerly, p. 1)
Response: Dr. Conerly grossly overestimates the benefits of the proposed gravel mine and asphalt operation, and underestimates–even ignores—the considerable costs to Lane County's economy and to Lane County, e.g., through the increased costs of transportation infrastructure. Also, the only way approving and implementing the application would cause a net increase in jobs is if ES&G were less efficient—less output per laborer—than its competitors. I doubt the Commissioners would find that a persuasive argument for supporting the application.

When I step back from the details of my analysis and view them in the entirety, I have no doubt that approving the proposal would *harm* the local economy and the community. Furthermore, rejecting the proposal would *not* harm the aggregate market.

iii. **Claim:** "If there is a layoff at a company ... there is still a net loss of jobs." (Conerly, p.2)
Response: Dr. Conerly, as Mr. Alltucker before him (Alltucker, 2000), has committed an error that many students of economics commit. Dr. Conerly, however, should know better. He has confused the supply side of the issue with the demand side. In so doing, Dr. Conerly, again as Mr. Alltucker before him, has confused what's good or bad for ES&G with what's good or bad for Lane County. Whether ES&G mines gravel at the proposed site (a supply-side effect), demand for aggregate in Lane County will remain unchanged. There still will be demand for roads, streets, commercial developments and all the other sources of demand for rock materials. And if, on the supply side, ES&G closes down, then the other gravel suppliers, e.g., Delta, Egge, Wildish, Morse Bros., would satisfy the demand by employing ES&G's employees or some other employees.

Dr. Conerly's quoting the testimony I gave in Olympia, Washington, concerning the Tidewater Barge matter reflects, at best, his carelessness. He

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[2] See footnote 1.

From Thistledown response

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July 17, 2000

TO: Lane County Planning Commission
c/o Thom Lanfear
Land Management Division
125 E 8th Ave.
Eugene, Oregon 97401

FROM: Ed Whitelaw
SUBJECT: Lane County File #PA 99-5996 (Eugene Sand & Gravel)

In this memo, I address what I view as the economic issues raised during the public process over the Eugene Sand & Gravel Company's proposal to amend the "Significant Mineral and Aggregate Resources Inventory" of the Lane County Rural Comprehensive Plan to add the subject property as significant aggregate and to amend the subject property's zoning from "E30/Exclusive Farm Use Zone" to "Sand, Gravel & Rocks Product Zone" for these 575 acres.

Based on my reading of the submissions to the Lane County Planning Commission, I identify two main economic arguments offered in support of the Eugene Sand & Gravel Company's proposal, one about jobs and payroll and the other about the relative supply of aggregate. I address each of these arguments in turn.

I end the memo with a comment on the economic arguments offered in opposition to the proposal.

Proponents' Economic Argument re Jobs and Payroll: Employment argument

Here's my understanding of the proponents' jobs-and-payroll argument supporting the Company's proposal.

> Eugene Sand & Gravel Company employs up to 250 workers with a payroll up to $10 million. Rejecting the Company's proposal would cause the Eugene-Springfield economy to lose the Company's workers and their payroll.

The logic underlying this argument is offered frequently and in many other settings, but it's wrong. The proponents have confused a job at Eugene Sand & Gravel with the worker holding the job. While a job may disappear, the person holding that job doesn't, and seldom remains unemployed for long.

By focusing on the job, not the worker, the proponents missed the point and badly. Consider these findings from a recent study by the U.S. Department of Labor. Of all U.S. workers who lost jobs in 1995-1996, half found a replacement job in less than 8 weeks and 83 percent found work by February, 1998. More than half of the workers displaced from full-time jobs who subsequently obtained full-time employment were earning as much or more than they did prior to displacement.

We can expect these findings for the entire U.S. during 1995-1998 to overestimate the impact on the Company's workers here in Eugene for several reasons. First, U.S. unemployment rates have consistently exceeded those in Oregon and the Eugene-Springfield area. Second, unemployment rates are lower today than they were when the study took place. Third, no forecast to my knowledge predicts anything but growth in employment for Oregon, the southern Willamette Valley, and the Eugene-Springfield area.

With their jobs-and-payroll argument, the proponents have implicitly assumed (a) that if the proposed gravel pit isn't mined, the demand for the gravel will evaporate, (b) that other suppliers of aggregate (e.g., Wildish, Egge, Delta) won't pick up where Eugene Sand & Gravel leaves off, or (c) both. None of these assumptions holds.

As one can see, the proponents' jobs-and-payroll argument doesn't withstand scrutiny.

Proponents' Economic Argument re Aggregate:

Here's my understanding of the proponents' scarce-aggregate argument supporting the Company's proposal.

> The subject gravel pit is a necessary condition for the Eugene-Springfield area's economic viability.

With their scarce-aggregate argument, the proponents have implicitly assumed (a) that the aggregate supplies available to the Eugene-Springfield area can't substitute for the gravel in the proposed pit, (b) that as-yet-undeveloped supplies couldn't substitute, (c) that without the gravel in the proposed pit the real (inflation-adjusted) price of gravel would increase enough to curtail development in the Eugene-Springfield area, or (d) all of the above. Again, all the evidence at hand indicates that none of these assumptions holds.

To prepare my comments, I interviewed informed individuals at Lane County, the City of Eugene, the City of Springfield, Lane Council of Governments, the Oregon Department of Geology and Mineral Industries, and the Oregon Department of Transportation as well as participants in the industry plus others who study the industry professionally.

Here are the key findings from my research:

1. the aggregate supplies available to the Eugene-Springfield area—the reserves of today's gravel mining companies—are indistinguishable from the gravel in the proposed pit;

2. the Eugene-Springfield area's as-yet-undeveloped supplies will prove indistinguishable from the gravel in the proposed pit, and this statement ignores the use of quarry rock as a substitute, which, of course, is unrealistic;

3. the reserves of today's gravel mining companies will last 35-40 years;

4. within 10-20 years, improvements in shipping modes, e.g., rail and truck, will increase markedly the relevant geographic market in aggregate for Eugene-Springfield;

5. given the relatively large reserves and developable supplies of aggregate in the Eugene-Springfield area, we're more likely to be net exporters than net importers of aggregate

6. the inflation-adjusted price of aggregate in the Eugene-Springfield area has demonstrated no symptoms of long-run increases in the recent past, and no one predicts such increases in the future

As with the proponents' jobs-and-payroll argument, the proponents' scarce-aggregate argument doesn't withstand scrutiny.

Economic Benefits from Rejecting the Proposal:

The opponents to the proposed gravel pit have provided extensive and compelling evidence of the adverse impacts to existing farming practices. While the farmland that the farming activities thereon have economic value to the area, the benefits of not approving the proposal extend beyond agriculture. The nearby stretch of the Willamette River itself is a significant economic asset. To the extent that development of the proposed pit would diminish the value of that economic asset, then that much larger is the economic benefit from not approving the Eugene Sand & Gravel Company's proposal.