SUPPLEMENTAL MATERIAL

SUPPLEMENTAL MEMO

DATE OF MEMO:

July 10, 2006

TO:

**Board of County Commissioners** 

FROM:

Jerry Kendall/Land Management Division

RE:

ORDINANCE NO. PA 1231 -- IN THE MATTER OF AMENDING THE RURAL COMPREHENSIVE PLAN TO REDESIGNATE LAND FROM "AGRICULTURAL" TO "MARGINAL LAND" AND REZONING OF THAT LAND FROM "E-40/EXCLUSIVE FARM USE" TO "ML/SR" ("MARGINAL LAND WITH SITE REVIEW"), AND ADOPTING SAVINGS AND SEVERABILITY CLAUSES (file PA 04-6092, Dahlen)

Scheduled board date for fourth reading/deliberation is July 12, 2006.

#### Background:

The Board conducted the 2<sup>nd</sup> reading and public hearing on April 19. The record was left open for Applicant's final written rebuttal. However, the rebuttal contained new evidence, so at the 3<sup>rd</sup> reading, the Board reopened the record to accept that evidence, and to allow any party to comment on the same and for Applicant's final rebuttal, thus precluding procedural problems.

Jim Just of the Goal One Coalition subsequently submitted materials on June 14 (Attachment #1). The Applicant had until June 21 to provide final rebuttal, but chose not to do so. The record is now closed, and the Board is to deliberate and vote on the proposal.

Staff has reviewed the Goal One submittal of June 14, and found that the issues raised therein have already been adequately addressed in the Applicant's findings submitted on May 10 (Attachment #2, and previously provided to the Board via supplemental memo dated May 22).

#### Comment on findings:

The Board may recall that staff took issue with the Applicant's original findings regarding the interpretation of ORS 197.247(1)(a) and an aspect of the Board's 1997 guideline for Marginal Lands. Compare items #3 and #4 on page 15 of staff's recommended findings (Attachment #3) with the same numbered items on page 16-17 of the Applicant's proposed findings (Attachment #2). Other than these changes, staff's version is essentially identical with the Applicant's.

The staff dispute with the Applicant's findings in regards to the above items was previously discussed in the Agenda Cover Memo dated March 20, 2006, and at the 2<sup>nd</sup> reading, and so is not repeated herein. Please refer to page 5-7 of that memo, for that discussion.

Since the Applicant's subsequent and revised findings of May 10 retained their original position in regard to the two above items, staff accordingly edited those items, reverting to the same wording offered by staff in the prior staff version.

#### **Conclusion:**

Staff recommends approval of the proposal, using the staff generated findings (Attachment #3).

Please contact me at x4057 if you have any questions or comments.

#### Attachments:

- Jim Just submittal of 6-14-06—30pp.
   Applicant's findings of 5-10-06—28pp.
   Staff's recommended findings—27pp.



#### Goal One is Citizen Involvement

Lane County Board of Commissioners 125 East 8<sup>th</sup> Avenue Eugene, Oregon 97401 JUN 1 4 2006

June 14, 2006

RE: PA 04-6092, Dahlen marginal lands application: response to new evidence submitted

Dear Commissioners:

The Goal One Coalition (Goal One) is a nonprofit organization whose mission is to provide assistance and support to Oregonians in matters affecting their communities. Goal One is appearing in these proceedings at the request of and on behalf of its membership residing in Lane County. This testimony is presented on behalf of LandWatch Lane County and its membership in Lane County; the Goal One Coalition; and Lu Walker, 85861 S. Willamette, Eugene, OR 97405 and Jim Just as individuals.

#### I. Response to issues raised in Setchko letter of May 4, 2006.

#### A. Stocking levels

Mr Setchko argues that establishing fully stocked stands of timber on the subject property would be "difficult" due to conditions existing on the subject property. Mr. Setchko fails to explain what "fully stocked" means.

Stocking levels differ depending on the potential productivity of the soils present: stocking standards are higher for more productive soils, and lower for less productive soils. ODF's

OAR 629-610-0020 establishes reforestation stocking standards that vary depending on the potential productivity of the soils present, as follows:

<sup>&</sup>lt;sup>1</sup> "Reforestation," Forest Practice Notes Number 2 (Revised), Forest Practices Program, Oregon Department of Forestry, December 1994, p. 3. See Exhibit 5.

<sup>&</sup>quot;(4) For Cubic Foot Site Class I, II and III forestlands (capable of producing at least 120 cubic feet per acre per year at culmination of mean annual increment), the minimum tree stocking standards are:

<sup>&</sup>quot;(a) 200 free to grow seedlings per acre; or

<sup>&</sup>quot;(b) 120 free to grow saplings and poles per acre; or

<sup>&</sup>quot;(c) 80 square feet of basal area per acre of free to grow trees 11-inches DBH and larger; or

<sup>&</sup>quot;(d) An equivalent combination of seedlings, saplings and poles, and larger trees as calculated in section (7) of this rule.

Mr. Setchko states that Goal One's calculations "inflate" the income potential of the forest operation "by anywhere from 40-60%." Goal One has used the grading assumptions for Douglas-fir and ponderosa pine suggested by Mr. Setchko himself, for both Douglas-fir and ponderosa pine; Mr. Setchko now attacks his own assumptions and calculations. Mr. Setcko points out the difficulties with available tables and data, but does not offer any of his own. He complains that the tables used to determine yield in board feet are "east side" tables that assume 16' log lengths, yet then contradictorily argues that west side mills that won't accept ponderosa pine require 32'logs.

It is the applicant's burden to establish that the criteria are met. An applicant cannot rely on the absence or inadequacy of information to support findings of compliance. If the applicant's expert believes the data and evidence provided by Goal One is inadequate, it is not sufficient for the applicant to attempt to discredit that data and evidence. The applicant must provide substantial evidence concerning yield and income potential for ponderosa pine.

Even if Mr. Setchko's objections were to be substantiated, his conclusions do not refute Goal One's conclusions that the property is capable of exceeding the \$10,000 income threshold for marginal land. Mr. Setchko argues that Goal One has overstated potential income by "anywhere from 40-60%." Even if Mr. Setchko's most extreme estimate were substantiated and found to be accurate and the property was capable of producing only 40% of the income shown in Goal One's analysis, the forest operation would exceed the \$10,000 threshold even assuming a 50-year growth cycle: \$26,576 (Goal One's figure) x .40 = \$10,304. A 60-year cycle would yield \$32,147 x .40 = \$12,859. A 100-year cycle would yield \$40,878 x .40 = \$16,351.

The income calculations provided by Mr. Setchko do not consider ponderosa pine. ORS 197.247 requires that "merchantable timber" be considered. Ponderosa pine is considered to be merchantable timber in Oregon and specifically in the Willamette Valley. Any inquiry into the income potential of a forest operation must consider potential income from managing for ponderosa pine on appropriate soils.

Mr. Setchko has argued that the grading assumptions used by Goal One are too optimistic, and that a more realistic "camprun" price for ponderosa pine (assuming 10% 4S, 70% 5S and 20% 6S) "for the time period" would be \$190/mbf. Mr. Setchko does not explain what he means by "for the time period." In the previous paragraph he concedes: "In a 100-year rotation it is possible to have a high percentage of 4S, in a 50 or 60 year rotation the percentage of 4S would be extremely small, most likely less than 20% is for lower." Mr. Setchko has not included any information in the record to support his assertions regarding grades that could be expected to be realized.

<sup>&</sup>lt;sup>2</sup> See Exhibit 1, email from Kevin Birch, ODF Senior Policy Analyst, Forest Resources Planning, to Jim Just, Executive Director, Goal One Coalition; and Exhibit 2, "Efforts well underway to reestablish ponderosa pine in the Willamette Valley," Forest Log, Newsletter of the Oregon Department of Forestry, Spring 2006, pp. 10-11. As the Forest Log article points out, ponderosa pine, once abundant in the Willamette Valley, has declined, in part due to extensive harvesting following settlement in the 1850s. The article recognizes that, as there is little current supply, logs must be shipped to the eastside or to southern Oregon. However, commercial plantings now account for more than one million trees per year. The article recognizes that as these trees mature a local market will develop: "As the millions of currently planted trees come on line in 30-40 years, this new raw material should stimulate a better market."

The productivity information available on the NRCS website is based on a 50-year site index. This is not the same thing as a 50-year rotation. A 50-year site index is the expected average height of a tree of the subject species at 50 years of age. A 100-year site index is the expected average height of a tree of the subject species at 100 years of age. Volume in cf/ac/yr is measured at culmination of mean annual increment, not at an arbitrary 50 or 100 years of age.<sup>3</sup>

The 50-year site index tables on the NRCS website assume CMAI for cf/ac/yr productivity for Douglas-fir is generally reached at 90 years of age, not 50.<sup>4</sup> The 100-year tables show a CMAI somewhat dependent on forestland productivity – CMAI is reached at a slightly older age in less productive soils than for soils with a site index of 90 or above.

Importantly, CMAI as pertains to cf/ac/yr productivity is not the same as CMAI for maximizing yield. CMAI age for scribner board feet/ac/yr varies more as a function of soil productivity than CMAI for cf/ac/yr productivity, from 160 years for the least productive soils to as little as 90 years for the most productive soils.

The same patterns are seen for ponderosa pine: CMAI for cf/ac/yr productivity is age 60 for the least productive soils, decreasing to age 40 for the most productive soils. CMAI for bf/ac/yr productivity is age 200 for the least productive soils, decreasing to age 90 for the most productive soils.

In all cases, CMAI for bf/ac/yr is much greater than for cf/ac/yr productivity. This intuitively makes sense, because there is better yield for lumber, and less waste, from larger logs.

To maximize income rather than cf/ac/yr productivity over the growth cycle, a forest operator would harvest at CMAI for bf/ac/yr. There may be many reasons a forest operator might choose to harvest at a different point in the growth cycle – cash flow needs, price spikes or dips, need to keep employees busy or a mill operating, financing of land transactions, etc. However, the inquiry required by ORS 197.247(1)(a) requires that the operation's *capability* to produce income be determined. That an operator might choose not to maximize average annual gross income over the growth cycle is not relevant.

#### D. Dixonville-Hazelair-Philomath complex

Mr. Setchko states that the Dixonville-Hazelair-Philomath unit is "a complex because it is too difficult to separate." Mr. Setchko erroneously refers to this unit as a "soil type" rather than a "map unit."

The NRCS Soil Survey of Lane County Area, Oregon (Soil Survey) at p. 21 states:

"Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes.

"A complex consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The

<sup>&</sup>lt;sup>3</sup> See Exhibit 3, "Culmination of Mean Annual Increment for Commercial Forest Trees of Oregon," *Technical Notes*, U.S. Department of Agriculture Soil Conservation Service, June 1986,

<sup>&</sup>lt;sup>4</sup> See Exhibit 3-2 – 3-5, CMAI tables for Douglas fir, and 3-6 – 3-9 for ponderosa pine. See also Exhibit 4, an excerpt from the NRCS Soil Survey of Douglas County Area, Oregon, published in 2004, which also uses CMAI 90 for 50-year site index tables and CMAI 60 for 100-year site index tables.

It is the applicant's burden to establish through substantial evidence in the record that the income and productivity tests are met. The applicant has failed to do so. Therefore the application must be denied.

Goal One and other parties whose addresses appear in the first paragraph of this letter request notice and a copy of any decision and findings regarding this matter.

Respectfully submitted,

/s/ Jim Just

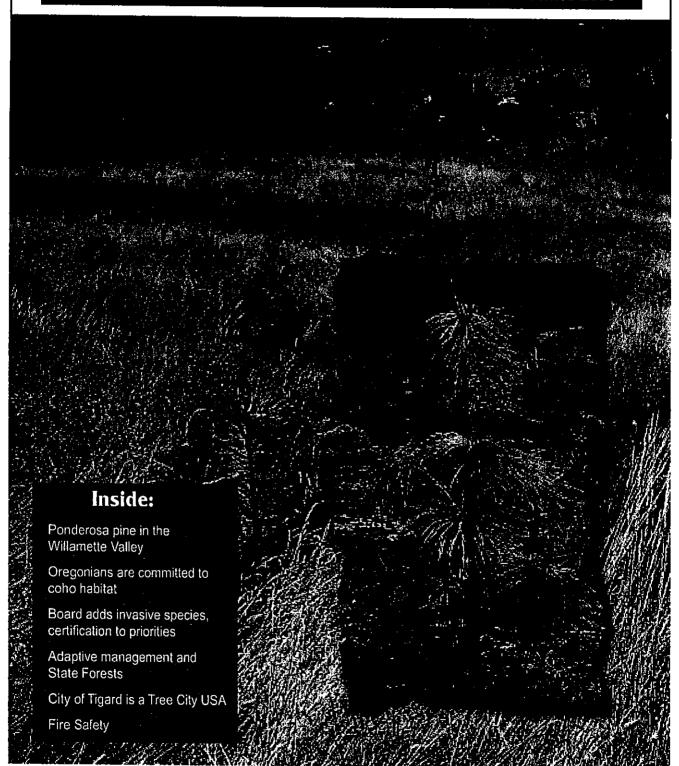
Jim Just

**Executive Director** 

EXHIBIT 2

# FOREST · LOG

NEWSLETTER OF THE OREGON DEPARTMENT OF FORESTRY • SPRING 2006



# Efforts well underway to reestablish ponderosa pine in the Willamette Valley

Cynthia Orlando, ODF Public Affairs Specialist

Since 1850, the presence of Willamette Valley ponderosa pine has declined due to harvesting, land conversation for urban and agricultural uses, and forest succession. It is also thought that the exclusion of fire from the valley has allowed other species to thrive, and has prevented the regeneration of ponderosa pine.

In 1996, concern about the dwindling supply of native Willamette Valley ponderosa pine and the realization that the local source could not be replaced with eastside sources led to the formation of the Willamette Valley



Foreground —
Valley ponderosa
plne saplings
established on a
Yamhill County
farm as part of a
thirty-six acre FRT
project. The project
also included
establishment of
Douglas-fir on a
field and restoration of an Oregon
white oak site.

Ponderosa Pine Conservation Association (WVPPCA). This group seeks to reestablish the native strain of Willamette Valley ponderosa pine for genetic conservation and future timber, wildlife, and urban uses.

One of the first projects WVPPCA members undertook was the mapping of ponderosa pine stands found throughout the Willamette Valley. The association has mapped more than 900 stands between Beaverton and Cottage Grove. Williamette Valley ponderosa pine seems to reach its maximum growth potential on the deep, well-drained farm sites near the Willamette Valley floor, and generally, native pine are found only at elevations below 1,000 feet. Ponderosa pine is commonly associated with oaks on drier sites and is

common along rivers and sloughs on some fairly wet sites. Valley ponderosa pine is currently being planted on very dry sites, as well as on wet sites where Douglas-fir does not do well. Like other conifers, it responds well to weeding and fertilization, but is not tolerant of certain common herbicides, so care needs to be taken in applying chemicals around new plantings.

The potential to grow ponderosa pine on soils that are considered marginal for other tree species is significant. Thousands of potential planting sites exist across the Willamette Valley, and in many areas, pine plantations can coexist quite well with livestock grazing or other rural land uses. By planting pine, farmers and small family forestland owners are hoping to reap substantial economic and ecological benefits in future years.

One thing is certain: the genetics of ponderosa found west of the Cascades is different from that of its counterpart in Eastern Oregon. "If you plant ponderosa west of the Cascades, make sure you're not using an eastern seed source because your trees will start to die out in 20 - 25 years," says Bob McNitt, executive director of the Willamette Valley Ponderosa Pine Conservation Association. Indeed, a study done near Corvallis indicates that while trees grown from eastern seed sources may survive 15 to 20 years, they aren't likely to reach mature size and may become carriers for all sorts of pine pests.

#### **Planting**

Make sure your site is free of weeds and grass for the first few years. Competing vegetation puts moisture stress on newly planted trees and is a primary cause of plantation failure. Whether you use herbicides, mulch mats, or hoeing, you must control vegetation to ensure the seedlings' survival and growth. An adequate weed-free space around each tree generally is thought to be a radius of about two to three feet for the first three years. Common spacing for newly

EXHIBIT 3

FOREST RESOURCE STUDY LIBRARY

34-C-OR U.S. DEPARTMENT OF AGRICULTURE

Portland, Oregon

SOIL CONSERVATION SERVICE

FORESTRY NO. 2 Revised

June 1986

### CULMINATION OF MEAN ANNUAL INCREMENT FOR COMMERCIAL FOREST TREES OF OREGON

The productivity of a particular soil is of considerable importance to land managers. The most common expression of productivity on forestland is site index (total height of trees in the dominant crown canopy at a base age, usually 50 or 100 years). Service employees recognize the significance of site index in relative terms, that is, land with a site index of 160 is more productive than site index 140, but less productive than site index 180. However, most technical materials refer to site index without explaining what it represents in terms of cubic feet or board feet volumes.

The attached tables, express site index in such a way it can be related to volumes. It is necessary, for comparative purposes, to use a method that expresses one value for each site index. The method chosen is culmination of mean annual increment (CMAI).

This age or point may be thought of as the most efficient time to harvest as far as tree growth is concerned. Other factors, such as stumpage values, taxes, interest rates, and management objectives affect the "art" of choosing when to harvest.

In the following tables, the culmination of mean annual increment (CMAI) and the age when it occurs is shown for the corresponding site indices. For example, using a site index of 156 for Douglas-fir, the following volumes can be expressed:

- A 60 year old stand will produce 165 cubic feet volume per acre per year at CMAI, or 9,900 (60X165) total cubic feet volume.
- A 100 year old stand will produce 780 board feet (Scribner) volume per acre per year at CMAI or 78,000 (100x780) total board feet volume.

Technical Note No. 2 Forestry

USDA, Soil Conservation Service June 1986

100 WENT TABLE 100 WE	100 VR. TABLE	10 VAN TABLE 10 VAN VAN TABLE 10 VAN	7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	E E NER '								!	
Total lagicalistics		1. TOTAL IBENETINE   INTER. 1/67   TOTAL ICLU.FT.   COLUMN. TOTAL ICLU.	7.8. 48. 10. 10. 10. 10. 10. 10. 10. 10. 10. 10	NER		***	WEST 75	SIDE 50 (PSME) 75-KING	χ. Έ	EAST	SIDE 50 (PSMEG) 765-COCHR	8	
4,9         60         199 160         573 110         1116         B.1         90         104         7.3           5.0         60         2206 160         537 110         1118         B.2         90         107         7.5           5.2         60         2206 160         537 110         1122         B.5         90         107         7.5           5.3         60         2225 160         401         110         1228         8.6         90         117         8.6         90         117         8.6         90         117         7.8         90         117         8.6         90         117         8.6         90         117         8.6         90         117         8.6         90         117         8.6         90         117         8.6         90         117         8.6         90         117         8.6         90         117         8.6         90         117         8.6         90         117         90         117         90         117         90         117         90         117         90         117         90         117         90         117         90         117         90         117         90	4,9         60         199 160         373 110   1116   1118         B.1         90   104         7.3           5.0         60         204 160         372 110   1118         B.1         90   107         7.5           5.1         60         222 160         401 110   1123         B.4         90   117         B.2           5.2         60         223 160         401 110   123         B.4         90   117         B.2           5.5         60         238 160         420 110   123         B.4         90   117         B.2           5.5         60         238 160         429 110   123         9.2         90   117         B.2           5.7         60         231 150   447         100   128         9.4         90   117         B.2           5.7         60         225 150   447         100   132         9.4         90   117         B.2           5.7         60         226 150   447         100   132         9.4         90   113         B.2           5.7         60         228 150   447         100   132         9.4         90   132         B.2           5.7         60         228 150   120   132         147 10.3         90   132         B.2	4,9         60         1999         160         373         110         1116         110         90         100           5,0         60         2212         160         401         110         112         8.5         90         101           5,2         60         2212         160         401         110         112         8.5         90         101           5,2         60         223         160         401         110         112         8.5         90         101           5,5         60         224         160         420         110         112         90         111           5,5         60         224         160         420         110         112         90         111           5,7         60         224         160         440         110         112         90         111           5,7         60         224         10         110         112         90         111           5,7         60         224         10         110         112         90         111           5,7         60         224         110         110         112	4 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	./ TOTAL!! R. AGE 14	INTER.1/8" BD.FT.J AC./YR.	OTAL!	CU.FT./	CUSH./ HA:/YR.	TDTAL AGE		СШ. Н. / НА. /YR.	TOTAL	
5.7         6.0         2.12         4.0         110         12.0         8.7         7.8           5.7         6.0         2.12         4.0         4.0         110         12.2         8.7         9.0         111         7.8           5.7         6.0         2.22         16.0         4.0         110         1.22         8.2         9.0         111         7.8           5.7         6.0         2.24         150         4.7         110         1.22         8.2         9.0         111         8.2           5.7         6.0         2.24         150         4.7         110         1.23         9.1         190         112         8.2           5.7         6.0         2.24         150         4.7         110         1.25         9.2         9.0         112         8.2           5.7         6.0         2.24         150         4.7         110         1.32         9.0         1.17         8.2           5.7         6.0         2.25         150         4.7         100         1.1         9.2         9.0         1.17         8.2           5.7         6.0         2.24         150         1.0<	5.1         6.0         2.2         1.6         39.1         110         1.2         7.8           5.3         6.0         2.2         1.6         4.0         110         1.2         8.5         9.0         111         7.8           5.3         6.0         2.2         1.6         4.0         110         1.2         8.5         9.0         111         7.8           5.3         6.0         2.2         1.6         4.0         110         1.2         8.5         9.0         111         7.8           5.7         6.0         2.2         1.6         4.7         110         1.2         9.0         111         7.8           5.7         6.0         2.2         1.6         4.7         110         1.2         9.0         111         7.8           5.7         6.0         2.6         1.0         1.0         1.2         9.0         111         1.7         8.7           5.7         6.0         2.6         1.0         1.0         1.1         1.2         9.0         1.1         1.1         1.2         8.7         9.0         1.0         1.1         1.2         8.7         9.0         1.0 <td< td=""><td>5.7         6.0         2.22         16.0         379. 110         11.2         8.7         10.0         11.2         <t< td=""><td></td><td>160</td><td>373</td><td></td><td>116</td><td></td><td></td><td><u> </u></td><td>  ,</td><td>6.8</td><td></td></t<></td></td<>	5.7         6.0         2.22         16.0         379. 110         11.2         8.7         10.0         11.2 <t< td=""><td></td><td>160</td><td>373</td><td></td><td>116</td><td></td><td></td><td><u> </u></td><td>  ,</td><td>6.8</td><td></td></t<>		160	373		116			<u> </u>	,	6.8	
5.2         60         219         160         401         110         1122         8.5         90         111         7.8           5.3         60         223         160         420         110         1128         8.6         90         111         8.2           5.3         60         223         160         420         110         128         90         111         8.2           5.7         60         224         150         448         110         11         128         90         111         8.2           5.7         60         224         150         448         110         11         128         90         111         8.2         90         111         8.2         90         111         8.2         90         111         8.2         90         111         8.2         90         111         8.2         90         111         8.2         8.2         90         111         8.2         8.2         90         111         8.2         8.2         8.2         8.2         8.2         90         111         8.2         8.2         90         111         8.2         8.2         90         11	5.2         60         219         160         401         110         1122         8.5         90         111         7.8           5.3         60         2232         160         420         110         1123         8.6         90         111         8.2           5.3         60         2232         160         420         110         1228         8.6         90         111         8.2           5.7         60         2231         150         448         110         1128         90         117         8.7           5.7         60         2231         150         448         110         1128         90         117         8.7           5.7         60         2231         150         448         110         1132         90         117         8.7           5.9         60         224         150         470         100         1133         90         117         8.7           5.9         60         227         150         470         100         1132         90         117         8.7           6.0         228         150         470         100         114         90 <td>5.2         6.0         1219         16.0         401         110         11.22         88.5         90         111           5.3         6.0         1222         16.0         420         110         11.28         8.6         90         111           5.3         6.0         1222         16.0         420         110         11.28         8.6         90         111           5.3         6.0         1228         16.0         428         110         11.28         9.1         90         111           5.7         6.0         1228         15.0         447         110         11.28         9.2         90         112           5.7         6.0         128         15.0         447         110         11.28         9.2         90         112           5.7         6.0         128         15.0         447         100         11.32         9.1         100         11.28         9.2         90         11.2           5.9         40         122         110         11.28         9.2         90         11.2         122         11.2         11.2         90         11.2         11.2         11.2         11.2</td> <td>นทุกบุญทุน พูนุลุลุลุลุ นทุลุมพุ<i>น</i> ช่องช่องช่อง ช่องช่องช่อง </td> <td></td> <td></td> <td>110</td> <td>120</td> <td></td> <td><b>₽</b> &amp;</td> <td>100</td> <td>, ,</td> <td>89</td> <td></td>	5.2         6.0         1219         16.0         401         110         11.22         88.5         90         111           5.3         6.0         1222         16.0         420         110         11.28         8.6         90         111           5.3         6.0         1222         16.0         420         110         11.28         8.6         90         111           5.3         6.0         1228         16.0         428         110         11.28         9.1         90         111           5.7         6.0         1228         15.0         447         110         11.28         9.2         90         112           5.7         6.0         128         15.0         447         110         11.28         9.2         90         112           5.7         6.0         128         15.0         447         100         11.32         9.1         100         11.28         9.2         90         11.2           5.9         40         122         110         11.28         9.2         90         11.2         122         11.2         11.2         90         11.2         11.2         11.2         11.2	นทุกบุญทุน พูนุลุลุลุลุ นทุลุมพุ <i>น</i> ช่องช่องช่อง ช่องช่องช่อง 			110	120		<b>₽</b> &	100	, ,	89	
5.3         60   222   160   420   110   1123   9.0   1114   9.0   1117   9.0   1175   9.1   9.0   1117   9.0   1175   9.1   9.0   1117   9.0   1125   9.1   9.0   1117   9.0   1125   9.1   9.0   1117   9.0   1125   9.1   9.0   1125	5.3         6.0         2.22         16.0         470         110         1125         8.8         9.0         117         8.2           5.3         6.0         2.22         16.0         470         110         1128         9.0         117         8.2           5.7         6.0         2.24         15.0         448         110         11.28         9.0         117         8.2           5.7         6.0         2.24         15.0         448         110         11.28         9.0         117         8.2           5.7         6.0         2.26         15.0         457         110         11.28         9.0         11.7         8.2           5.7         6.0         2.26         15.0         477         110         11.29         9.0         11.7         8.2           5.7         6.0         2.26         15.0         470         110         11.29         9.0         11.7         8.2           5.7         6.0         2.26         15.0         147         10.0         11.24         9.0         11.17         8.2           6.2         4.0         15.0         15.0         147         10.0         147 </td <td>5.7 60 1 223 160 1 440 110 11 123 9.0 90 1 117</td> <td>unununu nunggaga nannr ppoussa 3333333 333333 333333 333333 33333 3333</td> <td></td> <td></td> <td>110</td> <td>122</td> <td></td> <td>8</td> <td>112</td> <td></td> <td>87</td> <td></td>	5.7 60 1 223 160 1 440 110 11 123 9.0 90 1 117	unununu nunggaga nannr ppoussa 3333333 333333 333333 333333 33333 3333			110	122		8	112		87	
5         60         238         160         429         110         1128         9.0         90         1120         8.4           7         60         234         130         448         110         1130         9.1         90         1122         8.3           7         60         234         130         448         110         1130         9.1         122         8.2           9         20         226         130         446         100         1130         9.0         1132         8.3           9         27         130         470         100         1141         9.9         90         1137         9.7           2         60         274         130         100         1141         9.9         90         1137         9.7           2         60         274         130         1141         9.9         90         1137         9.0           3         140         274         100         1142         100         1142         100         1142         10.3         10.1         11.2         10.1         11.2         10.1         11.2         10.1         11.2         10.1         11	3         60         238         160         427         110         1128         9.0         90         1120         8.3           7         60         231         150         448         110         1130         9.1         90         11         122         8.3           9         251         150         448         110         1150         9.1         122         8.3           9         258         150         457         100         1150         1130         9.1         122         8.3           9         278         150         470         100         1150         1	258         140         429         110         1128         9.0         99         110         1128         9.1         99         112         122         90	3333 3333333 34333333333333333333333333			011	125		Š 6	717	D (0	5 4	
1.5         6.0         224         150         438         110         11         130         9.1         90         11         122         8.3           7         60         251         150         457         110         11         134         9.4         90         11         122         8.3           9         60         253         150         467         100         11         134         9.4         90         11         127         8.7           9         60         273         150         478         100         11         134         9.4         90         11         127         8.7           2         60         273         150         470         100         11         143         10.1         135         9.3         <	7         60         244         130         448         110         1130         9.1         9.0         1122         8.2           7         60         224         130         448         110         1131         9.1         122         8.2           9         60         226         130         446         110         1132         9.4         90         11         127         8.7           9         60         226         130         446         110         1134         9.4         90         11         127         8.7           9         60         226         130         446         100         11         132         90         11         127         8.7           10         20         226         130         100         11         143         10.0         143         10.0         144         90         11         127         90         11         127         90         11         127         90         11         127         90         11         127         90         11         127         90         11         127         90         11         127         90         11	7         60         224         130         448         110         11         130         9.1         90         11         122           7         60         224         130         448         110         11         133         9.4         90         11         122           9         60         225         130         467         100         11         138         9.6         90         11         127           9         60         226         130         467         100         11         138         9.6         90         11         127           10         228         130         140         100         11         134         9.6         90         11         137           20         228         150         100         11         147         10.0         10         147         10.0         10         11         147         10.0         10         148         10.0         11         147         10.0         10         11         125         10         11         148         120         10         11         11         142         10         148         10         11	200 3333333 200 3333333			110	128		06	120	1100.1		
7         60         258         150         457         110         1134         9.4         90         11         27         80         1.25         9.4         9.4         90         11         120         9.1         120         9.1         120         9.1         120         9.1         120         9.1         120         9.1         120         9.1         120         9.1         120         9.1         120         9.1         120         9.1         120         9.1         120         9.1         120         9.1         120         9.2	7         60         258         150         457         110         1134         9.4         90         11         27         90         11         12         90         11         12         90         11         12         90         11         12         90         11         12         12         12         12         12         12         12         12         12         12         <	7         60         261         261         262         477         110         134         9.4         90         113           9         60         262         150         140         100         11         134         9.4         90         113           9         60         273         150         479         100         11         141         9.4         90         113           2         60         276         150         100         11         141         9.4         90         113           2         60         276         150         100         11         141         9.4         90         11           2         60         276         150         100         11         147         10.0         148           3         20         150         100         11         147         10.0         100         148         10.0         148         10.0         148         10.0         148         10.0         148         10.0         148         10.0         148         10.0         148         10.0         148         10.0         148         10.0         149         10.0         <	у ффоици4			01:	9 5		0 6		oo a	8 0 7	= =
9         60   265   150   447   100   1   135   9.5   9.5   90   1   133   9.1             9         60   273   150   447   100   1   138   9.5   9.5   90   1   135   9.7             2         60   273   150   478   100   1   144   9.9   90   1   135   9.7             2         60   296   150   150   100   1   144   10.0   90   1   145   10.1             3         60   200   150   150   100   1   144   10.0   90   1   145   10.1             4         60   372   150   150   100   1   147   10.4   90   1   151   10.0             6         5         577   140   150   100   1   150	9         15         265         155         150         17         135         9.5         90         1133         9.1         130         9.1         130         9.1         130         9.1         135         9.2         9.1         135         9.2         9.1         135         9.2	9         60   265   150   467   100   11   138   9.5   9.5   90   11   135	66668888			110	T T		2.0	12	. è	8	=
9         10         12         10         11         13         9.5         9.6         13         9.5	4         6         6         7	7         60         273         150         478         100         11         138         9.6         9.6         115           6         0         273         150         150         100         11         140         9.8         90         11         135           2         60         278         150         150         100         11         143         10.0         11         145         10.1         90         11         145         10.1         90         11         145         10.1         145         10.1         145         10.1         145         10.1         145         10.1         145         10.1         145         10.1         145         10.1         145         10.1         145         10.2         145         150         11         147         10.2         90         11         148         90         11         147         10.2         90         11         148         90         11         148         150         11         148         150         11         148         150         11         150         11         144         10.2         90         11         148         10.2         10.2 <td>6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6</td> <td></td> <td></td> <td>9</td> <td><b>72.</b> 33.</td> <td></td> <td></td> <td></td> <td></td> <td>200</td> <td>_</td>	6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6			9	<b>72.</b> 33.					200	_
0         60   280   150   490   100   1         140   9,8   90   1         135   9,7   9,7   1           2         60   288   150   150   100   1         141   9,9   90   1         133   9,7   9,0   1         142   9,9   1,0   1         142   9,9   1,0   1         142   9,9   1,0   1         142   9,9   1,0   1         142   9,9   1,0   1         142   10,1   90   1         142   10,1   90   1         142   10,1   90   1         142   10,1   90   1         143   10,1   90   1         143   10,1   90   1         143   10,1   90   1         143   10,1   90   1         143   10,1   90   1         143   10,1   90   1         143   10,1   90   1         143   10,1   90   1         143   10,1   90   1         143   10,1   90   1         143   10,1   90   1         143   10,1   90   1         143   10,1   90   1         143   10,1   90   1         143   10,1   90   1         143   10,1   90   1         143   10,1   90   1         143   10,1   90   1         143   10,1   90   1         144   90   1 <t< td=""><td>.0         60   2280   150   150   100   1         140   9.8   90   1         135   9.7   9.7   1           .2         60   228   150   150   100   1         141   9.9   90   1         143   9.9   90   1         143   9.9   90   1         143   9.9   90   1         143   9.9   90   1         148   10.3   9.9   90   1         148   10.3   9.9   1         148   10.3   9.9   1         148   10.3   9.9   1         148   10.3   9.9   1         148   10.3   9.9   1         148   10.3   9.9   1         148   10.3   9.9   1         148   10.3   9.9   1         148   10.3   9.9   1         148   10.3   1         148   10.3   1         148   10.3   1         148   10.3   1         148   10.3   1         148   10.3   1         148   10.3   1         148   10.3   1         148   10.3   1         149   1         149   1         149   1         149   1         140   1</td><td>.0         60   280   150   490   100   11   140   9.8   90   11   139   120   100   11   141   10.0  </td><td>04444 33333</td><td></td><td>478</td><td>200</td><td>138</td><td></td><td>2</td><td></td><td>٠</td><td>8,</td><td>-</td></t<>	.0         60   2280   150   150   100   1         140   9.8   90   1         135   9.7   9.7   1           .2         60   228   150   150   100   1         141   9.9   90   1         143   9.9   90   1         143   9.9   90   1         143   9.9   90   1         143   9.9   90   1         148   10.3   9.9   90   1         148   10.3   9.9   1         148   10.3   9.9   1         148   10.3   9.9   1         148   10.3   9.9   1         148   10.3   9.9   1         148   10.3   9.9   1         148   10.3   9.9   1         148   10.3   9.9   1         148   10.3   9.9   1         148   10.3   1         148   10.3   1         148   10.3   1         148   10.3   1         148   10.3   1         148   10.3   1         148   10.3   1         148   10.3   1         148   10.3   1         149   1         149   1         149   1         149   1         140   1	.0         60   280   150   490   100   11   140   9.8   90   11   139   120   100   11   141   10.0	04444 33333		478	200	138		2		٠	8,	-
2         601         28B         1301         1001         1141         9.9         901         1359         9.7           2         601         294         1301         524         1001         143         10.0         901         142         9.9           3         601         372         130         525         1001         147         10.3         901         1442         9.9           4         601         372         130         527         1001         147         10.3         901         1442         10.1           5         601         372         140         538         1001         152         10.4         901         1548         10.1           6         501         372         140         534         1001         152         10.4         901         152         10.1           6         502         140         534         1001         154         901         157         11.0         11.1         10.3         901         11.2           6         501         352         140         534         1001         11.2         901         11.2           6         502	2         60   2288   130   130   100   11   144   9.9   90   11   139   9.7   10.1   9.9   90   11   139   9.7   10.1   9.9   90   11   142   10.1   90   11   142   10.1   90   11   142   10.1   90   11   142   10.1   90   11   142   10.1   90   11   142   10.1   90   11   142   10.1   90   11   142   10.1   90   11   142   10.1   90   11   142   10.1   90   11   142   10.1   90   11   142   10.1   90   11   142   10.1   90   11   142   10.1   90   11   142   10.1   90   11   154   10.1   90   11   90   11   90   11   90   11   90   11   90   11   90   11   90   11   90   11   90   11   90	2 60   28B 150   501   100   141   9.9 90   1   142   10.1 90   1   142   10.1 90   1   142   10.1 90   1   142   10.1 90   1   142   10.1 90   1   142   10.1 90   1   142   10.1 90   1   142   10.1 90   1   142   10.1 90   1   142   10.1 90   1   142   10.1 90   1   142   10.1 90   1   142   10.1 90   1   142   10.1 90   1   144   10.1 90   1	2224 3333 		440	100	140		6	136		B/	=
2 60 1 296 150 1 512 100 11 145 10.0 1 145 10.1 30 1 145 1	2 60   294   150   150   1   145   10.0   1   145   10.0   1   145   10.0   1   145   10.0   1   145   10.0   1   145   10.0   1   145   10.0   1   145   10.0   1   145   10.0   1   145   10.0   1   145   10.0   1   145   10.0   1   145   10.0   1   145   10.0   1   145   10.0   1   145   10.0   1   150   10.0   1   150   10.0   1   150   1   1   1   1   1   1   1   1   1	2 60   2746   150   1512   100   11   145   101   101	2 2 4 2 3 3 		100 100 100	001	141		2	139		7	= :
4         60         312         130         324         100         11         175         105         148         105           6         0         322         130         324         100         11         149         104         90         11         148         105           6         0         327         140         358         100         11         149         104         151         106           9         0         327         140         358         100         11         152         10.4         90         11         150         11         106         11         150         10.8         90         11         150         11         10.8         10.6         11.0         11         150         11         150         11         150         11         150         11         150         11         150         11         11         11         10.8         11         10.8         11         10.9         11         150         11         12         10.9         11         11.2         10.9         11         11         11         11         11         11         11         11         11	4         60         304         130         324         100         11         147         10.3         90         11         148         10.3         90         11         148         10.3         90         11         148         10.3         90         11         148         10.3         90         11         148         10.3         90         11         148         10.3         90         11         148         10.3         10	25	60 -		512	001	9440		9 8	142		1,6	= :
6         6         7         7         100         11         147         10.4         90         11         15.0         16.6         16.7         <	6         0         320         140         547         100         11         147         10.4         90         11         15.4         10.6           6         0         327         140         554         100         11         150         10.6         10.6         10.6         10.6         10.6         10.6         10.6         10.6         10.6         11.0         11         150         11.0         11         150         11.0         11         150         11.0         11         150         11.0         11         150         11.0         11         150         11.0         11         150         11.0         90         11         150         11.0         90         11         150         11.0         90         11         150         11.0         90         11         150         11.0         90         11         150         11         150         11.0         90         11         150         11         150         11         150         11         150         11         11.2         90         11         150         11         150         11         150         11         150         11         150         11 </td <td>6 6 7 726         140         547         100         11         149         10.4         90         11         151           6 6 7 727         140         554         100         11         152         10.6         90         11         154           7 6 0         327         140         554         100         11         155         10.6         90         11         154         10.6         155         10.6         11         157         10.6         90         11         157         10.6         11         157         10.6         10.6         90         11         157         10.6         1</td> <td>- 20</td> <td></td> <td>#70 #</td> <td>3 5</td> <td>147</td> <td></td> <td>5 6</td> <td></td> <td></td> <td>í k</td> <td></td>	6 6 7 726         140         547         100         11         149         10.4         90         11         151           6 6 7 727         140         554         100         11         152         10.6         90         11         154           7 6 0         327         140         554         100         11         155         10.6         90         11         154         10.6         155         10.6         11         157         10.6         90         11         157         10.6         11         157         10.6         10.6         90         11         157         10.6         1	- 20		#70 #	3 5	147		5 6			í k	
6         60         329         140         358         100         11         150         10.5         90         11         154         10.8           9         1         337         140         356         100         11         152         10.6         90         11         150           9         1         337         140         364         100         11         154         10.8         90         11         157         11.0         11.2         90         11         157         11.0         11.2         90         11         157         11.0         11.2         90         11         15.0         11.2         90         11         15.2         11.0         11.2         90         11         15.2         11.0         11.2         11.2         90         11         15.2         11.2         90         11         15.2         11.2         90         11         15.2         11.2         90         11         11.2         11.2         90         11         15.2         11.2         90         11         11.2         90         11         15.2         10.9         11         15.2         10.9         11         11	6         60         329         140         358         100         11         150         10.5         90         11         154         10.8         90         11         150         11         152         10.6         90         11         157         11.0           0         555         140         564         100         11         154         10.8         90         11         150         11         156         10.9         90         11         150         11         156         11.2         90         11         157         11.0         90         11         157         11.0         90         11         157         11.2         90         11         157         11.2         90         11         157         11.2         90         11         157         11.2         90         11         157         11.2         90         11         157         11.2         90         11         157         11.2         90         11         157         11.2         90         11         157         11.2         90         11         150         11         152         10.9         10.9         11         11.2         10.9	60   329   140   358   100   11   150   10.5         90   11   157   10.6         90   11   10.6 <td< td=""><td>. 60 3</td><td></td><td>347</td><td>80</td><td>149</td><td></td><td>8</td><td>151</td><td></td><td>7</td><td></td></td<>	. 60 3		347	80	149		8	151		7	
9         10         11         152         10.6         90         11.0         11.0           9         60         357         140         369         100         11         156         10.6         90         11         150         11.2         90         11         150         11.2         90         11         150         11.2         90         11         150         11         156         10.9         90         11         150         11.2         90         11         150         11         156         11.2         90         11         150         11         150         11.2         90         11         150         11         150         11.2         90         11         150         11.2         90         11         150         11.2         90         11         150         11.2         90         11         150         11.2         90         11         150         11.2         90         11         150         11.2         90         11         150         11.2         90         11         150         11.2         10         11         150         11.2         10         11         150         11.2	9         60   357   140   359   100   1   152   10.6   90   1   157   11.0           9         60   345   140   358   100   1   154   10.8   90   1   160   11.2           1         60   354   140   358   100   1   156   10.9   90   1   150   11.2           1         50   355   140   606   100   1   156   11.2   90   1   150   11.2           2         60   372   130   644   90   1   163   11.4   90   1   150   1   1.5   90   1   1.5   11.2           3         60   399   130   645   90   1   167   11.7   90   1   1.5   90   1   1.5   1.5   90   1   1.5   90   1   1.5   1.5   90   1   1.5   1.5   90   1   1.5   1.5   90   1   1.5   90   1   1.5   1.5   90   1   1.5   90   1   1.5   1.5   90   1   1.5   1.5   90   1   1.5	9         60   357   140   369   100   11   152   10.6   90   11   150   10.6   90   11   150   10.6   90   11   150   10.6   90   11   150   10.6   90   11   150   10.6   90   11   150   10.6   10.6   90   11   150   11.2   90   11   150   11.2   90   11   150   11.2   90   11   150   11.2   90   11   150   11.2   90   11   90   11   90   90	9 9		558	100	130		9	20°		73	**
9         60           345           140           381           100           154           10.8           90           11.2           11.2           90           11.	9         60   345   140   358   140   11   154   100   11   156   10.9         90   11   140   11.2         90   11   140   11.2         90   11   140   11.2         90   11   140   11.2         90   11   140   11.2         90   11   140   11.2         90   11   140   11.2         90   11   140   11.2         90   11   140   11.2         90   11   140   11.2         90   11	9         60   345   140   581   100   11   154   10.8   90   11   156   10.9   90   11   156   10.9   90   11   156   10.9   90   11   156   10.9   90   11   156   10.9   90   11   156   11.0   90   11   156   11.0   90   11   156   11.0   90   11   156   11.0   90   11   156   11.0   90   11   156   11.0   90   11   156   11.0   90   11   156   11.0   90   11   156   11.0   90   11   156   11.0   90   11   156   11.0   90   11   156   11.0   90   11   156   11.0   90   11   156   11.0   90   11   156   11.0   90   11   156   11.0   90   11   156   11.0   90   11   156   12.0   90   90   11   156   12.0   90   90   90   90   90   90   90	1 09 8		692	2001	152		6	151		K.	
60         354         140         594         100         11         156         10.9           2         60         352         140         606         100         11         158         11.0           2         60         372         140         606         100         11         162         11.2           3         60         381         130         644         90         11         162         11.3           4         60         399         130         649         90         11         167         11.7           5         60         408         130         649         90         11         167         11.3           6         40         40         130         649         90         11         11.9           9         60         427         130         710         90         11         173         12.1           1         60         446         120         725         90         176         12.3           1         60         446         120         749         90         11         176         12.3           1         60         14	0         60         1         554         100         11         156         10.9           1         40         1         554         140         1         156         10.9           2         60         1         355         140         606         100         11         158         11.0           3         60         1         372         130         644         90         11         162         11.3           4         60         1         399         130         659         90         11         167         11.7           5         60         40         40         1         167         11.3           6         40         130         659         90         11         167         11.3           7         60         427         130         694         90         11         173         12.1           9         60         446         120         725         90         11         176         12.3           1         60         446         120         725         90         11         178         12.3           2         60	0       60   354   140   594   100   11   156   10.9         1       40   355   140   606   100   11   158   11.0         2       40   372   130   614   90   11   162   11.2         3       40   370   130   654   90   11   167   11.7         4       60   399   130   659   90   11   167   11.7         5       60   408   130   659   90   11   167   11.7         6       6   408   130   659   90   11   157   11.9         9       60   427   130   694   90   11   173   12.1         1       60   457   120   725   90   11   178   12.3         2       60   455   120   725   90   11   180   12.5         3       60   465   120   724   90   11   184   12.3         5       60   475   120   749   90   11   184   12.5         7       60   475   120   749   90   11   184   12.5         9       60   504   120   720   720   720   188   13.1         10   504   120   720   720   720   188   12.7         10   501   120   720   720   720   188	1 09 6	-	281	100	154	10.B	06	140	21	72	
2 60 372 130 619 100 11 160 11.2 3 60 1 372 130 619 100 11 162 11.3 4 60 1 379 130 1 656 70 11 163 11.4 5 60 1 379 130 1 657 70 11 167 11.7 7 60 1 418 130 1 654 70 11 173 11.9 6 0 1 427 130 1 694 70 11 173 12.1 1 60 1 475 120 1 725 70 11 176 12.3 3 60 1 475 120 1 775 70 11 180 12.5 5 60 1 475 120 1 775 70 11 180 12.5 5 60 1 475 120 1 789 70 11 184 12.0 7 60 1 504 120 1 789 70 11 188 13.1 9 60 1 513 120 1 789 70 11 188 13.1	2 60 372 130 619 100 11 160 11.2 3 60 1 372 130 619 100 11 162 11.3 4 60 1 379 130 1 656 70 11 163 11.4 5 60 1 379 130 1 656 70 11 167 11.7 7 60 1 408 130 1 657 90 11 167 11.9 6 0 1 427 130 1 694 90 11 173 12.1 1 60 1 456 120 1 725 90 11 176 12.3 3 60 1 456 120 1 725 90 11 178 12.5 5 60 1 475 120 1 749 90 11 180 12.6 5 60 1 475 120 1 789 90 11 184 12.5 7 60 1 504 120 1 789 90 11 188 13.0 7 60 1 513 120 1 789 90 11 188 13.0 9 60 1 513 120 1 789 90 11 188 13.0	2 60 1 372 130 619 100 11 160 11.2  3 60 1 372 130 619 100 11 162 11.3  4 60 1 379 130 1 656 70 11 167 11.7  5 60 1 408 130 1 657 90 11 167 11.9  6 0 1 427 130 1 694 90 11 173 12.1  6 0 1 457 120 1 710 90 11 175 12.2  1 60 1 456 120 1 725 90 11 176 12.5  2 60 1 465 120 1 779 90 11 180 12.5  5 60 1 475 120 1 789 90 11 184 12.7  6 0 1 524 120 1 789 90 11 188 13.1  6 0 1 525 120 1 789 90 11 188 13.1  7 60 1 504 120 1 789 90 11 188 13.1  9 60 1 513 120 1 789 90 11 188 13.1  9 60 1 525 120 1 789 90 11 188 13.1	99	- +	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	99		10.4	9 6		3 3		
3         60         381         130         631         100         11         162         11.3           4         60         399         130         644         90         11         163         11.4           5         60         408         130         656         90         11         167         11.7           7         60         418         130         659         90         11         167         11.7           9         60         427         130         694         90         11         173         12.1           1         60         427         130         70         11         175         12.2           1         60         437         120         725         90         11         175         12.2           1         60         446         120         749         90         11         176         12.3           3         60         465         120         749         90         11         184         12.3           5         60         475         120         789         90         11         184         13.0           5 </td <td>3         60         381         130         631         100         11         162         11.3           4         60         379         130         644         90         11         163         11.4           5         60         408         130         659         90         11         167         11.7           9         60         418         130         659         90         11         167         11.8           9         60         427         130         694         90         11         173         12.1           1         60         427         130         710         90         11         175         12.2           1         60         437         120         723         90         11         175         12.3           1         60         446         120         723         90         11         176         12.3           3         60         465         120         749         90         11         186         12.3           5         60         465         120         776         90         11         184         12.3</td> <td>5.3       60       11.3       11.3       15.1       651       100       11       162       11.3         5.4       60       1       150       1       163       11.4       11.4       11.4       11.4       11.4       11.7</td> <td>209</td> <td>•</td> <td>619</td> <td>8</td> <td>160</td> <td>11.2</td> <td>200</td> <td></td> <td></td> <td>•</td> <td></td>	3         60         381         130         631         100         11         162         11.3           4         60         379         130         644         90         11         163         11.4           5         60         408         130         659         90         11         167         11.7           9         60         418         130         659         90         11         167         11.8           9         60         427         130         694         90         11         173         12.1           1         60         427         130         710         90         11         175         12.2           1         60         437         120         723         90         11         175         12.3           1         60         446         120         723         90         11         176         12.3           3         60         465         120         749         90         11         186         12.3           5         60         465         120         776         90         11         184         12.3	5.3       60       11.3       11.3       15.1       651       100       11       162       11.3         5.4       60       1       150       1       163       11.4       11.4       11.4       11.4       11.4       11.7	209	•	619	8	160	11.2	200			•	
4         60           390           130           644           90           11           163           11.4           6         60           408           130           656           90           11           167           11.7           7         60           418           130           659           90           11           171           11.9           9         60           427           130           694           90           11           173           12.1           9         60           427           120           725           90           11           175           12.2           1         60           446           120           725           90           11           175           12.3           1         60           446           120           749           90           11           12.5         12.5           3         60           465           120           749           90           11           184           12.5           5         60           494           120           789           90           11           184           12.9           7         60           60   <th< td=""><td>4         60           390           130           644           90           11           163           11.4           6         60           408           130           656           90           11           167           11.7           7         60           418           130           659           90           11           171           11.9           9         60           427           130           694           90           11           173           11.9           0         60           427           130           725           90           11           173           12.2           1         60           446           120           725           90           11           175           12.3           3         60           446           120           749           90           11           12.5           3         60           465           120           749           90           11           12.5           5         60           475           120           749           90           11           12.9           5         60           494           120           789           90           <t< td=""><td>-4       60 1       390 130 1       644 90 11       163 11.4         -6       60 1       399 130 1       656 90 11       167 11.7         -7       60 1       408 130 1       659 90 11       167 11.7         -9       60 1       427 130 1       694 90 11       171 11.9         -0       60 1       427 130 1       710 90 11       173 12.2         1       60 1       456 120 1       725 90 11       175 12.3         1       60 1       456 120 1       749 90 11       180 12.5         3       60 1       475 120 1       749 90 11       180 12.5         5       60 1       475 120 1       749 90 11       184 12.7         7       60 1       474 120 1       789 90 11       184 12.9         7       60 1       504 120 1       789 90 11       188 13.1         7       60 1       504 120 1       789 90 11       188 13.1         9       60 1       523 120 1       828 90 11       190 13.2         9       60 1       523 120 1       828 90 11       191 13.4</td><td>29</td><td></td><td>631</td><td>100</td><td>162</td><td>11.3</td><td>8</td><td></td><td></td><td>•</td><td></td></t<></td></th<>	4         60           390           130           644           90           11           163           11.4           6         60           408           130           656           90           11           167           11.7           7         60           418           130           659           90           11           171           11.9           9         60           427           130           694           90           11           173           11.9           0         60           427           130           725           90           11           173           12.2           1         60           446           120           725           90           11           175           12.3           3         60           446           120           749           90           11           12.5           3         60           465           120           749           90           11           12.5           5         60           475           120           749           90           11           12.9           5         60           494           120           789           90   <t< td=""><td>-4       60 1       390 130 1       644 90 11       163 11.4         -6       60 1       399 130 1       656 90 11       167 11.7         -7       60 1       408 130 1       659 90 11       167 11.7         -9       60 1       427 130 1       694 90 11       171 11.9         -0       60 1       427 130 1       710 90 11       173 12.2         1       60 1       456 120 1       725 90 11       175 12.3         1       60 1       456 120 1       749 90 11       180 12.5         3       60 1       475 120 1       749 90 11       180 12.5         5       60 1       475 120 1       749 90 11       184 12.7         7       60 1       474 120 1       789 90 11       184 12.9         7       60 1       504 120 1       789 90 11       188 13.1         7       60 1       504 120 1       789 90 11       188 13.1         9       60 1       523 120 1       828 90 11       190 13.2         9       60 1       523 120 1       828 90 11       191 13.4</td><td>29</td><td></td><td>631</td><td>100</td><td>162</td><td>11.3</td><td>8</td><td></td><td></td><td>•</td><td></td></t<>	-4       60 1       390 130 1       644 90 11       163 11.4         -6       60 1       399 130 1       656 90 11       167 11.7         -7       60 1       408 130 1       659 90 11       167 11.7         -9       60 1       427 130 1       694 90 11       171 11.9         -0       60 1       427 130 1       710 90 11       173 12.2         1       60 1       456 120 1       725 90 11       175 12.3         1       60 1       456 120 1       749 90 11       180 12.5         3       60 1       475 120 1       749 90 11       180 12.5         5       60 1       475 120 1       749 90 11       184 12.7         7       60 1       474 120 1       789 90 11       184 12.9         7       60 1       504 120 1       789 90 11       188 13.1         7       60 1       504 120 1       789 90 11       188 13.1         9       60 1       523 120 1       828 90 11       190 13.2         9       60 1       523 120 1       828 90 11       191 13.4	29		631	100	162	11.3	8			•	
6         60         799         130         656         90         11         167         11.7           7         60         408         130         669         90         11         169         11.8           9         60         418         130         694         90         11         171         11.9           9         60         427         130         694         90         11         175         12.1           1         60         475         120         725         90         11         175         12.2           1         60         476         120         725         90         11         175         12.3           3         60         465         120         769         90         11         180         12.5           3         60         465         120         769         90         11         184         12.9           5         60         494         120         789         90         11         184         13.0           7         60         504         120         789         90         11         184         13.0	6         60         799         130         656         90         11         167         11.7           7         60         408         130         669         90         11         169         11.8           9         60         427         130         694         90         11         171         11.9           9         60         427         130         710         90         11         173         12.1           1         60         475         120         725         90         11         175         12.2           1         60         476         120         725         90         11         176         12.3           3         60         465         120         749         90         11         180         12.5           3         60         475         120         749         90         11         184         12.5           5         60         494         120         789         90         11         184         12.9           7         60         504         120         789         90         11         184         12.9	6 60 1 399 130 1 656 90 11 167 111.7  7 60 1 408 130 1 669 90 11 169 11.8  8 60 1 427 130 1 694 90 11 173 12.1  9 60 1 457 120 1 710 90 11 175 12.2  1 60 1 456 120 1 725 90 11 176 12.3  3 60 1 465 120 1 749 90 11 180 12.6  5 60 1 475 120 1 789 90 11 184 12.7  5 60 1 494 120 1 789 90 11 188 13.1  7 60 1 504 120 1 789 90 11 188 13.1  9 60 1 513 120 1 789 90 11 188 13.1  9 60 1 523 120 1 802 90 11 188 13.1  10 60 1 523 120 1 13.4	.4 60 1	_	644	- 06	163	11.4	6				
7         60         408         130         669         90         11         169         11.6           9         60         418         130         694         90         11         171         11.9           9         60         427         130         710         90         11         175         12.1           1         60         446         120         725         90         11         176         12.2           1         60         446         120         725         90         11         176         12.3           3         60         1         476         120         749         90         11         180         12.5           5         60         1         475         120         749         90         11         184         12.7           5         60         1         200         11         184         13.0         7           7         60         1         200         11         188         13.1         9           9         60         1         100         11         188         13.1         1           8 <t< td=""><td>7         60         408         130         669         90         11         169         11.6           9         60         427         130         694         90         11         173         11.9           0         60         427         130         710         90         11         175         12.2           1         60         446         120         725         90         11         176         12.3           3         60         456         120         736         90         11         176         12.3           3         60         465         120         749         90         11         180         12.5           5         60         475         120         749         90         11         184         12.5           5         60         475         120         789         90         11         184         12.9           7         60         504         120         776         90         11         184         12.9           7         60         504         120         805         90         11         184         12.9</td><td>7 60   408   130   669 90     169   11.6 9 60   427   130   694 90     173   12.1 1 60   437   120   710 90     175   12.2 1 60   456   120   725 90     176   12.3 3 60   465   120   749 90     180   12.5 5 60   475   120   749 90     182   12.5 5 60   475   120   776 90     184   12.9 7 60   504   120   789 90     184   12.9 9 60   513   120   789 90     188   13.1 9 60   513   120   802 90     188   13.1 9 60   523   120   815 90     191   13.4</td><td>1 09 9</td><td>→ '</td><td><b>636</b></td><td>- 06</td><td>167</td><td>11.7</td><td>0</td><td></td><td></td><td></td><td></td></t<>	7         60         408         130         669         90         11         169         11.6           9         60         427         130         694         90         11         173         11.9           0         60         427         130         710         90         11         175         12.2           1         60         446         120         725         90         11         176         12.3           3         60         456         120         736         90         11         176         12.3           3         60         465         120         749         90         11         180         12.5           5         60         475         120         749         90         11         184         12.5           5         60         475         120         789         90         11         184         12.9           7         60         504         120         776         90         11         184         12.9           7         60         504         120         805         90         11         184         12.9	7 60   408   130   669 90     169   11.6 9 60   427   130   694 90     173   12.1 1 60   437   120   710 90     175   12.2 1 60   456   120   725 90     176   12.3 3 60   465   120   749 90     180   12.5 5 60   475   120   749 90     182   12.5 5 60   475   120   776 90     184   12.9 7 60   504   120   789 90     184   12.9 9 60   513   120   789 90     188   13.1 9 60   513   120   802 90     188   13.1 9 60   523   120   815 90     191   13.4	1 09 9	→ '	<b>636</b>	- 06	167	11.7	0				
0         60 1         427 130 1         694 90 11         173 12.1           0         60 1         437 120 1         710 90 11         175 12.2           1         60 1         446 120 1         725 90 11         176 12.3           3         60 1         456 120 1         736 90 11         178 12.5           3         60 1         465 120 1         749 90 11         180 12.6           5         60 1         475 120 1         749 90 11         184 12.5           7         60 1         494 120 1         789 90 11         184 12.7           7         60 1         504 120 1         789 90 11         188 13.1           7         60 1         504 120 1         805 90 11         188 13.1           9         60 1         513 120 1         815 90 11         198 13.1	0         60 1         427 130 1         694 90 11         173 12.1           0         60 1         437 120 1         710 90 11         175 12.2           1         60 1         446 120 1         725 90 11         176 12.3           3         60 1         456 120 1         736 90 11         178 12.5           3         60 1         465 120 1         749 90 11         180 12.6           5         60 1         475 120 1         749 90 11         182 12.7           5         60 1         475 120 1         769 90 11         184 12.7           7         60 1         504 120 1         789 90 11         188 13.0           7         60 1         504 120 1         802 90 11         188 13.1           9         60 1         513 120 1         815 90 11         190 13.2           9         60 1         523 120 1         828 90 11         191 13.4	60 1 427 130 1 694 90 11 173 12.1  0 60 1 437 120 1 710 90 11 175 12.2  1 60 1 446 120 1 725 90 11 176 12.3  3 60 1 465 120 1 749 90 11 180 12.6  5 60 1 475 120 1 762 90 11 180 12.6  5 60 1 475 120 1 789 90 11 184 12.9  7 60 1 504 120 1 789 90 11 188 13.1  9 60 1 513 120 1 789 90 11 188 13.1  0 60 1 523 120 1 815 90 11 191 13.4	09 4	٦,	499	2 6	1 0	0.0	2 6	M			
.0 60   437   120   710 90     175   12.2 .1 60   446   120   723 90     176   12.3 .3 60   465   120   736 90     180   12.5 .5 60   445   120   749 90     180   12.6 .5 60   485   120   776 90     184   12.7 .7 60   504   120   789 90     188   13.1 .9 60   513   120   815 90     190   13.2	.0 60   457   120   710 90     175   12.2 .1 60   446   120   723 90     176   12.3 .3 60   465   120   734 90     180   12.5 .5 60   445   120   749 90     184   12.5 .5 60   495   120   776 90     184   12.7 .7 60   504   120   789 90     186   13.1 .7 60   513   120   815 90     190   13.1 .8 60   523   120   828 90     191   13.4	.0 60   437   120   710 90     175   12.2 .1 60   446   120   723 90     176   12.3 .3 60   445   120   736 90     180   12.5 .5 60   445   120   749 90     182   12.7 .5 60   485   120   776 90     184   12.7 .7 60   504   120   789 90     188   12.7 .9 60   513   120   815 90     190   13.2 .0 60   523   120   828 90     191   13.4			694	90	Ę	12.1	8	· <del></del>			
1 60   446   120   725   90     176   12.3 3 60   445   120   735   90     178   12.5 3 60   445   120   742   90     182   12.5 5 60   475   120   776   90     184   12.9 7 60   504   120   789   90     184   12.9 7 60   504   120   802   90     188   13.0 9 60   513   120   815   90     190   13.2	1         60   446   120   723   90   1   176   12.3           3         60   446   120   725   90   1   178   12.5           5         60   445   120   749   90   1   180   12.6           5         60   475   120   776   90   1   184   12.9           7         60   495   120   776   90   1   184   12.9           7         60   504   120   789   90   1   188   13.0           9         60   513   120   802   90   1   188   13.1           9         60   523   120   828   90   1   191   13.4	1 60   446   120   725 90   1 176   12.3 3 60   446   120   736 90   1 178   12.5 3 60   465   120   749 90   1 180   12.6 5 60   485   120   776 90   1 184   12.9 7 60   50   120   789 90   1 186   12.9 7 60   50   120   802 90   1 188   13.1 9 60   513   120   815 90   1 190   13.2 0 60   523   120   828 90   1 191   13.4			ì		74	ċ	Ç	-	-	•	
3         60   456   120   736   90   11   178   12.5           3         60   465   120   749   90   1   180   12.5           5         60   475   120   762   90   1   182   12.7           5         60   485   120   776   90   1   184   12.9           7         60   494   120   789   90   1   186   13.0           7         60   504   120   802   90   1   188   13.1           9         60   513   120   815   90   1   190   13.2	3         60         456         120         736         90         11         178         12.5           3         60         1         465         120         749         90         11         180         12.5           5         60         1         475         120         776         90         11         182         12.7           7         60         1         494         120         789         90         11         184         12.9           7         60         1         504         120         789         90         11         188         13.0           7         60         1         504         120         802         90         11         188         13.0           9         60         1         523         120         815         90         11         190         13.2           9         60         523         120         828         90         11         13,4	3 60   456   120   736 90     178   12.5 3 60   465   120   749 90     180   12.6 5 60   475   120   762 90     182   12.7 5 60   494   120   776 90     184   12.9 7 60   504   120   802 90     188   13.1 9 60   513   120   815 90     190   13.2 0 60   523   120   828 90     191   13.4	2 4		22.6	2 6	72.	7 . C	2 6			•	
3     60 1     465 120 1     749 90 11 180 12.6       5     60 1     475 120 1     762 90 11 182 12.7       5     60 1     494 120 1     776 90 11 184 12.9       7     60 1     504 120 1     802 90 11 188 13.0       7     60 1     504 120 1     802 90 11 188 13.1       9     60 1     513 120 1     815 90 11 190 13.2	3         60   465   120   749   90   11   180   12.6           5         60   475   120   762   90   1   182   12.7           5         60   485   120   776   90   1   184   12.9           7         60   494   120   789   90   1   186   13.0           7         60   504   120   802   90   1   188   13.1           9         60   513   120   815   90   1   190   13.2           9         60   523   120   828   90   1   191   13.4	3 60 1 465 120 1 749 90 11 180 12.6 5 60 1 475 120 1 762 90 11 182 12.7 5 60 1 494 120 1 789 90 11 186 12.9 7 60 1 504 120 1 802 90 11 188 13.1 9 60 1 513 120 1 815 90 11 190 13.2 0 60 1 523 120 1 828 90 11 191 13.4	9		736	06	178	12.5	06				
.5 60   475   120   762   90     182   12.7 .5 60   485   120   776   90     184   12.9 .7 60   504   120   789   90     186   13.0 .7 60   504   120   802   90     188   13.1 .9 60   513   120   815   90     190   13.2	5         60           475           120           762           90           182           12.7           .5         60           485           120           776           90           184           12.9           .7         60           494           120           789           90           186           13.9           .7         60           504           120           802           90           18           13.1           .9         60           513           120           815           90           190           13.2           .0         60           523           120           828           90           191           13.4	.5 60   475   120   762   90     182   12.7 .5 60   485   120   776   90     184   12.9 .7 60   494   120   789   90     186   13.0 .7 60   504   120   802   90     188   13.1 .9 60   513   120   815   90     190   13.2 .0 60   523   120   828   90     191   13.4	- 09 N	_	749	200	180	12.6	2			•	
.5 60   485   120   776 90    184   12.9 .7 60   504   120   802 90    188   13.0 .9 60   513   120   815 90    190    13.2	.5 60   485   120   776 90   1 184   12.9 .7 60   504   120   802 90   1 188   13.0 .9 60   513   120   815 90   1 190   13.2 .0 60   523   120   828 90   1 191   13.4	.5 60   485   120   776   90   11   184   12.9 .7 60   494   120   789   90   1   186   13.0 .7 60   504   120   802   90   1   188   13.1 .9 60   513   120   815   90   1   190   13.2 .0 60   523   120   828   90   1   191   13.4	09		762	11 06	182	12.7	06	·			
7 60 1 504 120 1 789 90 11 186 13.0 7 60 1 504 120 1 802 90 11 188 13.1 9 60 1 513 120 1 815 90 11 190 13.2	7 60 1 504 120 1 789 90 11 186 13.0 7 60 1 504 120 1 802 90 11 18B 13.1 9 60 1 513 120 1 815 90 11 190 13.2 0 60 1 523 120 1 828 90 11 191 13.4	7 60 1, 494 120 1 789 90 11 186 13.0 7 60 1 504 120 1 802 90 11 188 13.1 9 60 1 513 120 1 815 90 11 190 13.2 0 60 1 523 120 1 828 90 11 191 13.4	9		776	9	184	12.9	96				
.7 60 1 504 120 1 802 90 11 18B 13.1 9 60 1 513 120 1 815 90 11 190 13.2	.7 60 1 504 120 1 802 90 11 18B 13.1 9 60 1 513 120 1 815 90 11 190 13.2 0 60 1 523 120 1 828 90 11 191 13.4	.7 60   504   120   802 90     18B   13.1 .9 60   513   120   815 90     190   13.2 .0 60   523   120   828 90     191   13.4	7. 60 1.		789	- 90	186	13.0	 8				
.9 60 i 513 120 i 815 90 ti 190 13.2	.9 60 i 513 120 ; 815 90 ii 190 13.2 .0 60 i 523 120 i 828 90 ii 191 13.4	.9 60 i 513 120 i 815 90 ii 190 13.2	.1 09 2		802	1.06	188	13.1	06				
	.0 60   523 120   828 90    191 13.4	.0 60   523 120   828 90    191 13.4	1 09 6		815	30	190	13.2	06	_			
										•			
					•				٠				
					•					•			

									70 °	3. 3. 3. 3.		9 - 9 - 9 - 1	· :				C 4		; ;: ;	1	4.00		٠										
.; ·	: <del>1</del>		TOTAL!	00.00	88		. II		# 08	. I	:: :::		88	= : 80 (8)		86	= . On :	- : 6	E 0	20	000	: :: 2 8		200		200	1 6		: = 3 &		 08 6	200	80 1:
•	, a , a , a , a , a , a , a , a , a , a	第四	INTER. 1/8" 180. FT. / IAC. /YR.	1285	11303	1315	1346 1346	1366	1376	1386	1393	1404 1413	1422	1931	1440	1458	1467	1476	1484	1501		1526	4001	1551	1559	1567	1575	1565	1399	1607	1615	1631	1639
· .			TOTAL	86	88	88	38	0.6	0	0	06	2 6	0	26	20	26	06	90	0.6	0	0 0	8	6 6	26		- 06	96	 06 6	 ? &	1 06	2 G	2 6	- 06
	~	YR. TABLE PSME) -MCARDLE	SCRIBNER		921	9 4 6 C	4 % 5 N	964	982	ું 991	1000	1018	1027	1036	1001	1062	1071	1080	1098	1105	1114	1131	1139	1156	1164	111	1181	1169	1206	1214	1223	1239	1248
	AS FIR	100 YF (P! 790-1	TOTAL	ا ه ا	8 9	9 9	9 9	9	9	: 3	9	99	,0	9	2 9	9	0	-09	9.9	9	9.4	3 9	99	3		9	9	0 0	209	9	9 9	 29	. 09
· .	FOR DOUGLAS		CU.M./ HA./YR.	, 4	17	22.5	7 n	nn	מו	13,4	n					N.		14.0	14-1	14.	4 4 6 1	14.0	4.4	14.6	14.6	14.6		14.8	• •	•	ก่ เ		ท่
• .	CMAI F		CU.FT./ AC./YR.	181	183	# 85 g	187	188	190	161	192	193	194	0.6 0.6	24	198	<b>3</b>	, 6 7 7 7	5 8 8 8 8	202	202	20 20 20 20 20 20 20 20 20 20 20 20 20 2	206	208 208	20B	204	210	211			214		-
			SITE	170	122	174	176 11	177 11	179	180 11	= : B:	182	184	183	187	2 68	-	190	192	193	194 0 1	196	197 11	199	200	201	202	205	202	206	207	204 204	210 11

「All the Countries Land Countries Countries

CLITICAL SECRETOR STATES AND STAT	CULIAL TOTALIBDETA INTERTIGATION INTERTION INT	11 265-50 11 265-50 11 11 11 11 11 11 11 11 11 11 11 11 11	TABLE
Court, A   Total   1907   19	CULM./ TOTAL BD. FT./	II II IICU.FT	1.
Name	Table 1877         Table 1	I ICU.FT./	
3.28         50         172         160         252         130         157         4.1         90         101         77.2         4.1         90         103         77.2         4.1         90         103         77.2         4.1         90         103         77.2         4.1         90         103         77.2         4.1         90         103         77.2         4.1         90         103         77.2         4.2         90         103         77.2         4.2         90         103         77.2         4.2         90         103         77.2         4.2         90         103         77.2         90         103         77.2         90         103         77.2         90         103         77.2         90         103         77.2         90         103         77.2         90         103         77.2         90         103         77.2         90         103         77.2         90         103         77.2         90         103         77.2         90         103         77.2         90         103         77.2         90         103         90         103         77.2         90         103         90         103         90	3.28         30         172         160         240         130         60         44.2           4.1         30         188         160         240         130         65         44.2           4.2         30         188         160         276         130         65         44.2           4.2         30         198         160         276         130         65         44.2           4.2         30         203         160         276         130         65         44.2           4.2         30         203         160         276         130         65         44.2           4.2         30         224         160         278         130         65         44.2           5.0         40         222         130         130         65         44.3         45	I IAC. /YR.	
7.7 30 187 140 247 130 1 60 4.3 90 1 103 7.15 8 4.1 30 1 188 140 247 130 1 6.2 4.3 90 1 103 7.15 8 4.1 30 1 188 140 247 130 1 6.2 4.3 90 1 103 7.15 8 4.2 30 203 140 1 2.2 30 1 188 140 247 130 1 6.2 4.4 30 1 188 140 247 140 1 188 140 1 1	4.1         30         177         160         240         130         16         4.2         150         16         4.2         150         16         4.2         30         160         247         130         16         4.2         4.2         30         168         160         278         130         16         4.3	101	
4.1 50 1186 100 225 130 11 6.5 4.5 70 11 105 7.5 8 4.5 8 70 11 105 7.5 8 4.5 8 70 11 105 7.5 8 75 8 75 8 75 8 75 8 75 8 75 8 75	4.1 50 1182 160 223 130 164 4.3  4.2 50 1193 160 223 130 164 4.3  4.4 5 50 203 160 223 130 164 4.3  4.5 50 203 160 223 130 164 4.3  4.6 50 203 160 223 130 164 4.3  5.0 40 223 130 160 233 110 11 69 4.8  5.1 40 223 130 233 110 11 69 4.8  5.2 40 223 130 233 110 11 69 4.8  5.3 40 223 130 233 110 11 77 5.0  5.4 40 271 130 233 110 11 77 5.0  5.4 40 271 130 233 110 11 77 5.0  5.4 40 271 130 233 110 11 77 5.0  5.4 40 271 130 233 110 11 77 5.0  5.4 40 271 130 233 110 11 77 5.0  5.5 40 271 130 233 110 11 77 5.0  5.7 40 271 130 233 100 11 89 5.5  5.8 40 271 130 232 130 130 130 130 11 10 11 77  5.8 40 271 130 232 130 130 165 130 11 10 11 77  5.8 40 271 130 232 130 130 11 10 11 77  5.8 40 271 130 232 130 130 11 10 11 77  5.8 40 271 130 232 130 110 11 78 5.5  5.8 40 271 130 232 130 110 11 78 5.5  5.8 40 271 130 232 130 110 11 78 5.5  5.8 40 271 130 232 130 11 10 11 78 5.5  5.8 40 271 120 120 120 120 120 120 120 120 120 12	11 103	
7. 1	4.2 30 193 160 225 130 164 4.5 4.4 4.5 30 120 120 140 120 130 11 65 4.5 4.4 4.5 30 120 120 140 120 278 130 11 65 4.5 4.5 4.5 30 120 140 120 120 130 11 65 4.5 4.5 4.5 30 120 120 120 120 120 120 120 120 120 12	100	
4.3         50         100         100         270         100         110	7. 1 40   372   120   130   140   277   350   140   4.5   4.5   50   214   160   278   130   150	101	
4.4. 30         203 140         278 130   4.5         4.4. 90   115	4.5 30 200 160 278 130 11 65 4.5 4.5 4.5 30 120 120 120 120 130 11 65 4.5 4.5 30 120 120 120 130 11 65 4.5 4.5 30 120 120 120 130 11 65 4.5 4.5 30 120 120 120 130 11 65 4.5 4.5 4.5 5.0 120 120 120 130 11 65 4.5 4.5 4.5 5.0 120 120 130 11 65 4.5 4.5 5.0 120 120 130 11 65 4.5 4.5 5.0 120 120 130 14 65 110 11 77 5.0 5.0 120 120 120 120 120 120 120 120 120 12		
4.5         50         224         160         275         130         64         476         90         1116         813           4.7         50         224         160         270         130         16         47         90         1116         813           4.7         50         229         150         230         130         16         90         1116         82         4.7         90         1116         82         4.7         90         1116         82         4.7         90         1116         82         4.7         90         1116         82         4.7         90         1116         82         4.7         90         1116         82         4.7         90         1116         82         82         110         17         5.1         90         1116         17         5.1         90         1116         17         5.1         90         1116         17         5.1         90         11         116         82         82         110         17         5.1         90         11         116         82         82         10         11         116         17         82         10         11         116<	4.5 50 214 160 293 130 166 4.6 4.6 4.6 4.6 4.6 4.6 4.6 4.6 4.6 4	11	
4.8 40 225 130 333 110 11 67 4.8 70 11 118 8.3   5.2 40 225 130 353 110 11 67 4.8 90 11 120 8.4   5.2 40 225 130 353 110 11 67 4.8 90 11 120 8.4   5.2 40 275 130 353 110 11 77 8.4 90 11 120 8.4   5.4 40 275 130 353 110 11 77 8.4 90 11 120 8.4   5.8 40 278 130 355 110 1 77 8.4 90 11 120 8.5   6.3 40 277 1150 355 110 1 76 8.5 90 11 120 8.4 90 11 120 8.	4.7 50 1219 160 300 130 16 67 4.8 4.7 50 125 130 140 150 150 150 150 150 150 150 150 150 15	11 116	
48 % 1223 1350 1353 110 11 69 4.8 % 110 1120 8.4 % 15 % 15 % 15 % 15 % 15 % 15 % 15 % 1	4.8 40   225   150   313   110   69 4.8 5.2 40   228   150   339   140   77   77   78   78   78   78   78   7	118	
4.8         \$\text{5}\$         \$\text{5}\$ <td>4.8 40 1 225 130 1 313 110 11 69 4.8 5.2 40 1 225 130 1 339 140 11 70 12 72 5.0 130 1 359 140 11 70 17 72 5.0 5.0 130 1 355 110 11 72 5.0 5.0 130 1 375 110 11 72 5.0 5.0 130 1 375 110 11 72 5.0 5.0 130 1 375 110 11 72 5.0 5.0 130 1 375 110 11 72 5.0 5.0 130 1 375 110 11 72 5.0 5.0 130 1 30 1 30 1 30 1 30 1 30 1 30 1 3</td> <td>120</td> <td></td>	4.8 40 1 225 130 1 313 110 11 69 4.8 5.2 40 1 225 130 1 339 140 11 70 12 72 5.0 130 1 359 140 11 70 17 72 5.0 5.0 130 1 355 110 11 72 5.0 5.0 130 1 375 110 11 72 5.0 5.0 130 1 375 110 11 72 5.0 5.0 130 1 375 110 11 72 5.0 5.0 130 1 375 110 11 72 5.0 5.0 130 1 375 110 11 72 5.0 5.0 130 1 30 1 30 1 30 1 30 1 30 1 30 1 3	120	
4.9         4.9 <td>5.0 40 1232 130 1350 110 11 70 8.5 5 10 15 11 70 11 70 8.5 5 10 11 70 11 70 8.5 5 10 11 70</td> <td>,</td> <td></td>	5.0 40 1232 130 1350 110 11 70 8.5 5 10 15 11 70 11 70 8.5 5 10 11 70 11 70 8.5 5 10 11 70	,	
5.0         40         235         130         359         110         77         5.0         90           5.2         40         245         130         357         140         1         72         5.0         90           5.4         40         245         130         357         110         1         72         5.1         90           5.5         40         271         130         375         110         1         75         5.1         90           5.6         40         271         130         375         110         1         77         5.1         90           5.6         40         272         130         40         1         77         5.1         90           5.7         40         282         130         413         100         1         78         5.5         90           6.7         40         282         130         443         100         1         90         1           6.7         40         324         130         443         100         1         81         5.0         1           6.7         40         320         130	5.2 40 1 238 150   339 140   1 72 5.0 5.0 5.2 40   245 150   339 140   1 72 5.0 5.0 5.2 40   245 150   347 110   1 73 5.1 5.0 5.6 5.2 40   271 150   347 110   1 73 5.2 5.0 5.0 5.6 40   271 150   345 110   1 75 5.2 5.0 5.0 5.0 6.2 40   272 130   373 110   1 75 5.2 5.0 5.0 6.2 40   272 130   473 100   1 76 5.2 5.0 6.2 40   376 130   473 100   1 82 5.5 6.6 6.0 6.2 40   372 130   473 100   1 82 5.7 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0		
5.2         40         245         130         339         140         172         5.0         90           5.4         40         225         130         336         110         175         5.1         90           5.5         40         226         130         335         110         175         5.3         90           5.6         40         272         130         335         10         17         5.3         90           5.8         40         272         130         352         100         1         76         5.3         90           6.2         40         272         130         403         100         1         76         5.3         90           6.2         40         272         130         403         100         1         77         5.5         90           6.2         40         30         130         433         100         1         80         5.5         90           6.2         40         30         130         433         100         1         80         1.0         10         10         10         10         10         10         10	5.2 40 245 130 3547 140 11 72 5.0 5.1 5.5 40 255 130 3547 140 11 72 5.1 5.2 5.5 130 255 130 110 11 72 5.2 5.1 5.5 5.5 130 255 130 110 11 72 5.2 5.1 5.5 5.5 130 120 11 77 5.2 5.1 5.2 5.1 5.2 40 272 130 272 140 11 77 5.4 40 272 130 272 100 11 20 272 100 11 20 272 100 11 20 272 100 11 20 272 100 11 20 20 20 20 20 20 20 20 20 20 20 20 20		
5.2. 40         225         130         347         110         1         73         5.1         90         1           5.4 40         225         130         355         110         1         74         5.2         90         1           5.5 40         271         130         355         110         1         74         5.2         90         1           5.6 40         272         130         372         110         1         76         5.3         90         1           6.1 40         272         130         403         100         1         77         5.5         90         1           6.2 40         300         130         403         100         1         79         5.5         90         1           6.4 40         300         130         403         100         1         79         5.5         90         1           6.5 40         334         130         443         100         1         82         5.9         1         90         1         90         1         90         1         90         1         90         1         90         1         90 <td< td=""><td>5.2 40 252 150 354 140 11 73 5.1 5.2 5.5 5.5 5.5 5.5 5.5 5.6 5.6 5.6 5.6 5.6</td><td></td><td></td></td<>	5.2 40 252 150 354 140 11 73 5.1 5.2 5.5 5.5 5.5 5.5 5.5 5.6 5.6 5.6 5.6 5.6		
5.5 40 258 150 356 110 11 75 5.2 90 11	5.4 40 258 150 356 110 11 74 5.2  5.6 40 271 150 355 110 11 75 5.3  5.6 40 271 150 382 110 11 76 5.3  5.7 40 272 150 382 110 11 76 5.3  6.2 40 272 150 403 100 11 78 5.5  6.4 40 308 130 443 100 11 82 5.7  6.5 40 352 130 443 100 11 82 5.9  6.6 40 352 130 443 100 11 82 5.9  6.7 40 354 130 443 100 11 88 6.2  7.1 40 354 130 443 100 11 88 6.2  7.2 40 356 130 463 100 11 88 6.0  7.1 40 372 120 1 80 11 88 6.2  7.2 40 372 120 1 80 11 88 6.2  7.3 40 372 120 1 80 11 88 6.2  7.4 40 372 120 1 80 11 88 6.2  7.5 40 379 120 1 852 90 11 97 6.3  7.6 40 1 370 120 1 854 90 11 97 6.3  8.0 40 437 120 1 856 90 11 97 6.5  8.1 40 435 120 1 856 90 11 97 6.5  8.1 40 435 120 1 878 90 11 97 6.5  8.1 40 435 120 1 878 90 11 97 6.5  8.1 40 435 120 1 878 90 11 97 6.5  8.1 40 435 120 1 878 90 11 97 6.5		
5.5 40 271 150 355 110 11 75 5.3 90 11 5.6 1.0 1 76 5.3 90 11 76 271 150 373 110 11 76 5.3 90 11	5.6 40 265 150 365 110 11 75 5.2 5.8 40 271 150 373 110 11 77 5.4 5.8 40 284 150 391 110 11 78 5.5 6.1 40 282 130 403 100 11 78 5.5 6.2 40 308 130 423 100 11 82 5.6 6.4 40 332 130 453 100 11 82 5.9 6.7 40 332 130 453 100 11 82 5.9 6.9 40 352 130 453 100 11 82 5.9 7.1 40 352 130 453 100 11 88 6.0 7.1 40 352 120 350 463 100 11 88 6.0 7.1 40 372 120 350 493 100 11 88 6.2 7.4 40 372 120 350 493 100 11 88 6.2 7.5 40 379 120 350 493 100 11 89 6.2 7.6 40 379 120 350 90 11 90 6.3 7.7 40 408 120 350 90 11 97 90 10 97 80 10 98 80 80 80 80 80 80 80 80 80 80 80 80 80	=	•
5.7 40 271 130 373 110 11 76 5.3 90 11 5.8 90	5.7 40 271 150 373 110 11 76 5.3 5.8 40 272 130 403 100 11 78 5.5 6.1 40 308 130 423 100 11 80 5.5 6.2 40 308 130 423 100 11 82 5.7 6.4 40 324 130 443 100 11 82 5.7 6.5 40 336 130 443 100 11 82 5.9 6.7 40 336 130 443 100 11 82 5.9 6.9 40 336 130 443 100 11 82 5.9 7.1 40 372 120 120 130 1493 100 11 88 6.2 7.1 40 372 120 120 130 1493 100 11 86 6.2 7.1 40 372 120 120 130 1493 100 11 86 6.3 7.1 40 372 120 120 130 1493 100 11 86 6.3 7.1 40 372 120 130 443 100 11 88 6.2 7.1 40 372 120 130 443 100 11 89 6.2 7.1 40 372 120 130 443 100 11 89 6.2 8.0 40 426 120 356 90 11 94 6.6 8.0 40 426 120 356 90 11 97 6.8 8.1 40 426 120 356 90 11 97 6.8 8.1 40 426 120 356 90 11 97 6.8		
5.8 40   284 130   391 110    77   5.4 90    6.1 40   284 130   391 110    78   5.5 90    6.2 40   202    130    413    100    10    5.5 90    6.3 40   308    130    443    100    10    10    5.7 90    6.4 40   308    130    443    100    10    10    6.5 40   308    130    443    100    10    10    6.5 40    332    30    443    100    10    6.6 4 00    340    350    443    100    10    6.9 40    340    350    443    100    10    7.1 40    372    120    350    493    100    10    7.2 40    372    120    350    90    90    7.3 40    372    120    354    90    90    7.4 40    372    120    354    90    90    7.5 40    408    120    354    90    8.1 40    435    120    354    90    8.1 40    435    120    354    90    8.2 40    435    120    354    90    8.3 40    435    120    350    8.4 40    435    120    350    8.5 40    435    120    350    8.7 40    435    120    350    8.8 40    444    120    400    8.9 6 6 6 7 7 6 8 8 90    8.7 40    435    120    445    8.8 40    445    450    450    8.9 6 6 6 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	5.9 40 292 130 403 100 11 78 5.5 5 6.5 6.5 8 6.5 8 6.5 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7		<u>-</u> 7
6.7 40 252 130 403 100 11 79 5.5 90 11 6.2 40 308 130 423 100 11 80 5.6 90 11 6.2 40 308 130 423 100 11 82 5.7 90 11 6.5 40 332 130 423 100 11 82 5.7 90 11 6.5 40 332 130 453 100 11 85 5.9 90 11 6.5 40 332 130 453 100 11 85 5.9 90 11 6.5 40 336 130 453 100 11 86 6.0 90 11 6.5 40 354 130 453 100 11 88 6.2 90 11 6.5 40 354 130 130 14 6.3 100 11 88 6.2 90 11 6.3 40 130 120 130 14 6.3 90 11 6.4 90 11 6.4 90 11 6.4 90 11 6.4 90 11 6.4 90 11 6.4 90 11 6.4 90 11 6.4 90 11 6.4 90 11 6.5 90	5.9 40   292   130   403   100     79   5.5    6.1 40   308   130   423   100     80   5.5    6.2 40   308   130   423   100     82   5.7    6.4 40   324   130   443   100     84   5.9    6.7 40   336   130   443   100     84   5.9    6.9 40   338   130   443   100     84   5.9    6.9 40   372   130   463   100     87   6.1    7.1 40   372   120   307   90     90    7.2 40   399   120   354   90     94   6.3    7.4 40   399   120   354   90     94   6.3    7.7 40   408   120   354   90     94   6.5    8.0 40   435   120   356   90     94   6.5    8.1 40   435   120   356   90     94   6.5    8.1 40   435   120   356   90     94   6.5    8.1 40   435   120   356   90     94   6.5    8.2 40   444   120   356   90     94   6.5    8.3 40   444   120   350   90     97   6.8    8.4 40   444   120   350   90     97   6.8    8.5 40   444   120   350   90     97   6.8	=	
5.9         40         292         130         403         100         11         79         5.5         90         11           6.3         40         300         130         423         100         11         80         5.6         90         11           6.3         40         306         130         423         100         11         82         5.6         90         11           6.4         40         324         130         443         100         11         83         5.9         90         11           6.7         40         352         130         443         100         11         84         5.9         90         11           6.8         40         350         130         473         100         11         84         5.9         90         11           6.9         40         350         130         483         100         11         84         5.9         90         11           7.1         40         354         130         483         100         11         86         6.0         90         11           7.3         40         354         1	5.9 40   292 130   403 100    79 5.5 5 6.2 40   308 130   413 100    80 5.5 5 6.2 40   308 130   423 100    81 5.7 5.5 5 6.4 40   352 130    443 100    84 5.9 5.9 5.9 6.7 40   354 130    443 100    84 5.9 5.9 6.7 40    354 130    443 100    84 5.9 5.9 6.2 7.1 40    352 130    463 100    86 5.2 7.1 40    372 120    350    493 100    88 5.2 7.1 40    372 120    350 90    90    90 6.3 7.1 40    372 120    350 90    90    90 6.3 7.1 40    372 120    350 90    90    90 90    90 90    90 90    90 90    90 90    90 90    90 90 90    90 90 90 90 90 90 90 90 90 90 90 90 90	<u>.</u>	٠
6.1 40 300 130 413 100 11 80 5.6 90 11 6.7 40 308 130 423 100 11 81 5.7 90 11 6.4 40 316 130 433 100 11 82 3.7 90 11 6.7 40 332 130 433 100 11 82 3.8 90 11 6.7 40 348 130 443 100 11 82 5.9 90 11 6.9 40 348 130 443 100 11 86 6.0 90 11 7.1 40 354 130 493 100 11 88 6.2 90 11 7.1 40 354 130 1 493 100 11 88 6.2 90 11 7.1 40 381 120 1 50 7 90 11 88 6.2 90 11 7.1 40 381 120 1 50 7 90 11 91 6.4 90 11 7.1 40 1 399 120 1 550 90 11 91 6.4 90 11 7.1 40 40 120 1 550 90 11 93 6.5 90 11 81 6.4 90 11 81 81 40 1 426 120 1 550 90 11 97 6.6 90 11 97 6.1 97 6.1 97 6.1 97 6.1 97 6.1 97 6.1 97 6.1 97 6.1 97 6.1 97 90 11	6.1 40   300   130   413   100   1   80   5.6   6.2 40   308   130   423   100   1   81   5.7   6.4 40   324   130   443   100   1   82   3.7   6.7 40   332   130   443   100   1   84   5.9   6.8 40   348   130   443   100   1   84   5.9   6.9 40   356   130   443   100   1   86   6.0   7.1 40   352   120   307   90   1   80   6.2   7.3 40   372   120   319   90   1   90   7.4 40   372   120   350   90   1   90   7.5 40   372   120   350   90   1   90   7.6 40   372   120   350   90   1   90   7.7 40   408   120   350   90   1   93   8.0 40   435   120   378   90   1   95   8.0 40   435   120   370   90   1   97   8.1 40   435   120   370   90   1   97   8.2 40   444   120   370   97   97   8.3 40   444   120   370   97   97   8.3 40   444   120   370   97   97   8.4 6.7	•	٠.
6.3 40   316   130   423   100   1   81   5.7   90   1   6.4 40   324   130   443   100   1   82   5.7   90   1   6.6 40   332   130   443   100   1   82   5.9   90   1   6.8 40   332   130   443   100   1   84   5.9   90   1   6.9 40   336   130   473   100   1   86   6.1   90   1   7.1 40   354   130   463   100   1   88   6.2   90   1   7.3 40   372   120   307   90   1   91   6.4   90   1   7.4 40   399   120   354   90   1   91   6.4   90   1   7.5 40   435   120   354   90   1   93   6.5   90   1   8.0 40   435   120   356   90   1   94   6.5   90   1   8.1 40   435   120   359   90   1   94   6.5   90   1   8.4 40   455   120   444   120   455   120   444   90   1   91   94   8.4 40   455   120   444   90   1   91   98   40   1   8.4 40   455   120   414   90   1   91   91   8.4 40   455   120   414   90   1   91   91   8.5 40   455   120   414   90   1   91   91   8.6 40   455   120   414   90   1   91   91   8.7 40   455   120   414   90   1   91   91   8.7 40   455   120   414   90   1   91   91   8.7 40   455   450   450   450   450   450   450   450   450   8.7 40   455   450	6.3 40 316 130 433 100 11 82 3.7 6.4 40 322 130 433 100 11 82 3.7 6.8 40 332 130 443 100 11 83 5.9 6.7 40 336 130 443 100 11 88 5.9 7.1 40 356 130 463 100 11 88 6.2 7.1 40 352 120 359 100 11 88 6.2 7.3 40 399 120 359 90 11 90 6.3 7.4 40 399 120 350 90 11 93 6.4 8.0 40 435 120 356 90 11 93 6.4 8.0 40 435 120 378 90 11 93 6.6 8.1 40 435 120 378 90 11 95 6.6 8.3 40 444 120 390 11 97 6.8	:==	
6.4 40 324 130 443 100 11 83 5.7 90 11 6.7 40 324 130 443 100 11 85 5.9 90 11 6.7 40 332 130 443 100 11 85 5.9 90 11 6.7 40 348 130 443 100 11 86 6.0 90 11	6.4 40 324 30 443 100 11 82 5.7 5.6 5.6 6.8 6.7 40 332 130 443 100 11 85 5.9 5.9 6.7 40 340 130 443 100 11 85 5.9 5.9 6.7 40 340 130 1473 100 11 88 5.9 5.9 6.9 6.9 6.2 7.1 40 354 130 1473 100 11 88 6.2 7.1 40 354 130 130 130 1493 100 11 88 6.2 7.3 40 359 120 130 130 1493 100 11 95 6.3 7.5 40 130 120 130 130 11 90 11 95 6.3 7.7 40 1417 120 1416 141 90 11 93 6.6 8 8.0 40 1435 120 1444 120 1402 90 11 97 6.8 8.1 40 1444 120 1402 90 11 97 6.8		
6.5 40 532 130 453 100 11 84 5.9 90 11 6.9 90	6.6 40 532 130 453 100 1 84 5.9 6.7 40 340 130 4453 100 1 85 5.9 6.8 40 348 130 473 100 1 86 6.0 7.1 40 356 130 473 100 1 88 6.2 7.1 40 372 120 379 90 1 89 6.2 7.4 40 399 120 550 90 1 92 7.5 40 1 399 120 1 556 90 1 93 7.6 40 1 417 120 1 556 90 1 93 8.0 40 1 435 120 1 579 90 1 95 6.6 8.0 40 1 435 120 1 579 90 1 95 6.6 8.1 40 1 435 120 1 570 90 1 94 6.6 8.3 40 1 444 120 1 570 90 1 97 6.8		
6.7 40 340 130 463 100 1 85 5.9 90 1 6.9 40 1 356 130 1 473 100 1 85 5.9 90 1 7.1 40 356 130 1 473 100 1 89 6.2 90 1 90 1 7.1 40 372 120 307 90 1 90 6.3 90 1 7.3 40 390 120 359 120 359 90 1 90 6.3 90 1 7.4 40 399 120 359 90 1 92 6.4 90 1 7.8 40 399 120 359 90 1 92 6.4 90 1 92 8.1 40 1 417 120 1 556 90 1 94 6.6 90 1 94 6.5 90 1 85 8.1 40 1 435 120 1 550 90 1 95 6.6 90 1 95 8.1 40 1 455 120 1 602 90 1 98 6.7 90 1 88.3 40 1 455 120 1 602 90 1 98 6.9 90 1 98 6.9	6.7 40 340 130 4453 100 18 85 5.9 6.8 40 348 130 473 100 18 85 5.9 7.1 40 354 130 483 100 1 88 6.2 7.1 40 354 130 80 10 11 88 6.2 7.3 40 381 120 319 90 1 90 6.3 7.4 40 399 120 550 90 1 92 7.7 40 408 120 556 90 1 93 6.4 8.0 40 435 120 556 90 1 95 6.6 8.1 40 435 120 570 90 1 95 6.6 8.1 40 435 120 570 90 1 95 6.6 8.3 40 444 120 602 90 1 97 6.8		
6.8 40   348   130   473   100   1   86 6.0 90   1   7.1 40   356   130   483   100   1   87 6.1 90   1   7.1 40   354   130   483   100   1   88 6.2 90   1   7.3 40   372   120   350 90   1   90 6.3 90   1   7.4 40   399   120   350 90   1   91 6.4 90   1   7.5 40   408   120   354 90   1   92 6.4 90   1   7.8 40   417   120   354 90   1   95 6.6 90   1   95 6.6 90   1   95 6.5	6.8 40   348   130   473   100   1   86 6.0 6.7 7.1 40   356   130   483   100   1   87 6.1 7.1 40   354   35   493   100   1   88 6.2 7.3 40   381   120   539   90   1   90 6.3 7.4 40   399   120   539   90   1   92 6.4 7.7 7 40   408   120   556 90   1   92 6.4 7.7 7 40   417   120   556 90   1   94 6.4 7.8 40   426   120   556 90   1   94 6.4 6.7 8.3 120   570   1   94 6.7 8.3 120   570   1   97 6.8 8.7 8.7 8 40   444   120   570   1   97 6.8 8.7		•-
7.1 40   356   130   483   100   1   87   6.1   90   1   7.1   40   354   130   493   100   1   88   6.2   90   1   7.3   40   381   120   519   90   1   90	7.1 40   356   130   483   100   1   87   6.1   7.1 40   354   130   493   100   1   88   6.2   7.3 40   372   120   519 90   1   90   6.3   7.4 40   399   120   530 90   1   92   6.3   7.5 40   399   120   554 90   1   93   6.5   7.7 40   417   120   556 90   1   93   6.5   8.0 40   435   120   570   90   1   94   6.5   8.1 40   435   120   570   90   1   94   6.7   8.3 40   444   120   562 90   1   97   6.8		••
7.1 40   372   120   507 90     89 6.2 90     7.3 40   381   120   519 90     90 6.3 90     7.4 40   381   120   519 90     91 6.4 90     92 6.4 90     92 6.4 90     92 6.4 90     92 6.4 90     92 6.4 90     93 6.5 90     94 6.5 90     94 6.5 90     94 6.5 90     94 6.5 90     95 6	7.1 40   372   120   307 90    88 6.2 7.3 40   372   120   319 90    90 6.3 7.4 40   399   120   539 90    91 6.4 7.5 40   399   120   534 90    92 6.4 7.7 40   417   120   554 90    94 6.5 8.0 40   435   120   570    94 6.5 8.1 40   435   120   570    94 6.7 8.3 40   444   120   502 90    97 6.8		•
7.1 40   372   120   507 90   1   89   6.2   90   1   7.4   40   390   120   519 90   1   90   6.3   90   1   7.4   40   399   120   530 90   1   92   6.4   90   1   7.7   40   408   120   554   90   1   93   6.5   90   1   94   6.6   90   1   94   6.6   90   1   94   6.6   90   1   94   6.6   90   1   94   6.6   90   1   94   6.6   90   1   95   6.6   90   1   95   6.6   90   1   95   90   90   90   90   90   90   90	7.1 40   372   120   519 90    89 6.2 7.4 40   381   120   519 90    90 6.3 7.4 40   399   120   530 90    91 6.4 7.5 40   399   120   534 90    92 6.4 7.7 40   417   120   556 90    94 6.4 8.0 40   426   120   578 90    94 6.6 8.1 40   435   120   570 90    95 6.6 8.3 40   444   120   602 90    97 6.8		
7.3 40   381 120   319 90   90 6.3 90   17.4 40   399 120   350 90   17.6 40   399 120   353 90   17.6 40   399 120   353 90   17.7 40   417 120   354 90   90   94 6.6 90   18.1 40   435 120   376 90   975 6.8 90	7.3 40 381 120 519 90 11 90 6.3 7.4 40 399 120 530 90 11 91 6.4 7.5 40 399 120 1 552 90 11 92 6.4 7.7 40 408 120 1 554 90 11 93 6.4 7.8 40 1 417 120 1 556 90 11 94 6.5 8.0 40 1 426 120 1 578 90 11 95 6.6 8.1 40 1 435 120 1 560 90 11 96 6.7	-	
7.4 40   390   120   530 90   1 91 6.4 90   1 7.5 40   399   120   554 90   1 92 6.4 90   1 7.7 40   417   120   554 90   1 94 6.5 90   1 94 6.5 90   1 94 6.5 90   1 95 6	7.4 40   390   120   550 90   1 91 6.4 7.5 40   397   120   552 90   1 92 6.4 7.7 40   120   554 90   1 95 6.4 7.8 40   417   120   556 90   94 6.6 8.0 40   426   120   578 90   95 6.6 8.1 40   435   120   550 90   97 6.8 8.3 40   444   120   602 90   97 6.8	- t	
7.6 40   399 120   554 90    92 6.4 90    7.7 40   417 120   554 90    94 6.6 90    8.1 40   425 120   578 90    94 6.6 90    8.1 40   435 120   578 90    94 6.6 90    8.3 40   444 120   602 90    97 6.8 90    8.4 40   455 120   614 90    98 6.5 90	7.6 40 399 120 552 90 11 92 6.4 7.7 40 408 120 554 90 11 93 6.5 7.8 40 417 120 556, 90 11 94 6.6 8.0 40 426 120 578 90 11 95 6.6 8.1 40 435 120 590 90 11 96 6.7 8.3 40 444 120 602 90 11 97 6.8		
7.8 40   417 120   254 90   93 7.6,5 90   18.0 40   417 120   256, 90   94 6.6 90   18.1 40   435 120   250 90   95 6.7 90   9	7.8 40   417   120   534 90   1 93 7.6,5 7.8 8.0 40   417   120   578 90   1 95 6.6 8.1 40   435   120   579 90   1 96 6.7 8.2 8.3 40   444   120   602 90   1 97 6.8		•
8.0 40 1 425 120 1 378 90 11 94 6.6 90 11 8.1 40 1 435 120 1 578 90 11 97 6.7 90 11 8.3 40 1 444 120 1 602 90 11 97 6.8 90 11 8.4 40 1 453 120 1 614 90 11 98 5 16.9 90 11	8.0 40 1 425 120 1 578 90 11 95 6.6 8.1 40 1 435 120 1 570 90 11 95 6.6 8.3 40 1 444 120 1 602 90 11 97 6.8		
8.1 40 1 435 120 1 570 70 11 70 6.6 90 11 8.3 40 1 444 120 1 602 90 11 97 6.8 90 11 8.4 40 1 453 120 1 614 90 11 98 5 16.9 90 11	8.1 40 1 435 120 1 570 90 11 94 6.7 8.3 40 1 444 120 1 602 90 11 97 6.8	**************************************	
B.7 40 1 444 120 1 602 90 11 97 6.8 90 11 8.4 40 1 453 120 1 614 90 11 98 0 16.9 90 11	B.3 40 1 444 120 1 602 90 11 97 6.8		
8.4 40 t 453 120 t 614 90 ft 98 g 6.9 g 90 ft			
	8-4 40 1 453 120 1 614 90 11 986.9	-	
			Š

•

•

I.Chai For Ponderosa Pine   I.Chai For   I			·		
PONDERGS PINE   100 YR. TABLE   (PIPO)   600-MEYER   1INTER.1   14.7   40   1022   90   13   15.7   40   1032   90   13   15.7   40   1052   90   13   15.7   40   1053   90   13   15.7   40   1053   90   13   15.7   40   1053   90   13   15.7   40   1053   90   13   15.7   40   1053   90   13   15.7   40   1053   90   13   15.7   40   1053   90   13   15.7   40   1053   90   14   16.0   40   1129   90   14   16.0   40   1134   90   14   16.0   40   1134   90   14   16.0   40   1134   90   14   16.0   90   14   16.0   90   90   90   90   90   90   90	** ** ** ** **	TOTAL: 1	222222222		<del>.</del> ".
IOO YR. TABLE  (PIPO)  600-MEYER  1SCRIBNER  14.7 40   991 90  14.7 40   1006 90  15.4 40   1032 90  15.7 40   1058 90  15.7 40   1058 90  15.7 40   1114 90  16.2 40   1129 90  16.2 40   1134 90			1289 1307 1325 1361 1361 1377 1416 1416 1436		
IN PONDERGSA PINE  100 YR, TABLE (PIPO) 600-MEYER 600-MEYER 14,8 40 1002 15,4 40 1008 15,7 40 1008 15,7 40 1008 15,7 40 1008 15,7 40 1008 15,7 40 1114 16,2 40 11129 16,4 40 11134		JTAL SGE		<del>-</del>	
A 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	NE 1. TABLE PO) MEYER	SCRIBNER BD. FT. / AC. /YR.	1000 1000 1002 1003 1005 1006 1006 1114		
R PGN HAP 1 1 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	100 YF 100 YF 600-	TOTAL! AGE !	444444444	•	*
<b>2</b>	PONDE	СU. И. / НА. /YR.	7,440,000,000,000,000,000,000,000,000,00	<b>4</b>	
150 150 150 150 150 150 150 150 150 150	,		222 222 223 223 223 223 223 223 223		
7 (3)		SITE !!	92222222	#- 0 0	70

Table 8. -- Forestland Productivity -- Continued

				Pot	Potential productivity	otivity*			
Soil name and map symbol	Common trees	Site   index  (50-year)	Annual		Site    index   (100-year)	Total yield (Scribner)	CMAI   age	Annual growth	CMAI   age
			Ft3/acre	<del> </del>		Bd ft/acre	¥ -	Ft3/acre	#
7F: Acker	  Douglas fir*	92***	120	8	124***	57,000	1 120	121	90
Norling	  Douglas fir <sup>**</sup>	_ ***06 I	116	- 06	121***	53,500	1 120 1	116	09
8E	Douglas fir*   Grand fir	66	134	8   8	133	59,600	110	131	09
8E, 8GAtring	Douglas fir*   Grand fir	66	134	8	131	59, 600	9	131	9
9GAtring	Douglas fir**	86 **	109	8	116***	51,900	130	108	9.
10E, 10F, 10G: Atring	  Douglas fir*   Grand fir	6	134	8	131	29,620 	110	131	9
Larmi,ne	  Douglas fir**	85	102	8	112***	50,800	140	101	9
11F, 11G: Atring	Douglas fir*   Grand fir	66	13.44 4.11	8	131	59,600	1 12	131	8
Гаттіпе	Douglas fir*	82***	102	8	112***	50,800	140	101	09
Rock outcrop. 12F, 12G:				===					
Atring	Douglas fir**   Grand fir	6	134	8	131	59,600	01	131	8
Vermi sa	Douglas fir	8	113	8		49,600	140	100	09
13G: Atring	Douglas fir **    Pacific madrone	8	122	8	123	55,800	120	119	09
Vermi sa	Douglas fir*   Pacific madrone	8	100	8 ;	107	44,800	140	4	9

See footnotes at end of table.

was below those levels before the operation. This means landowners often must reforest following salvage harvests and conversions of underproducing stands. The rules also specify some new procedures for operations involving forest incentive programs, and developing forestlands to non-forest uses.

#### Landowner Responsibility

The reforestation rules hold landowners, not operators, responsible for reforesting their lands after forest operations. Landowners will be expected to understand and apply the rules. This technical note is designed to help landowners in that task. Local FPFs will be able to offer limited assistance, such as sharing of rule information and some technical information, but landowners needing further help should contact qualified consulting foresters or other professional foresters for advice. Landowners should be aware that planning for reforestation before harvesting operations begin will be necessary to comply with the rules. In addition, landowners need to know that if the department identifies a reforestation rule violation, the landowner will be ordered to comply with the rules, and may be assessed a civil penalty of up to \$5,000.

#### "Free to Grow" Trees

The concept of a "free to grow" tree or stand of trees is important for understanding the reforestation rules. "Free to grow" means a tree or a stand of well-distributed trees that are of acceptable species, are of good form, and have a high probability of remaining vigorous, healthy and dominant over undesired, competing vegetation.



#### In general, an FPF will consider a tree "Free to Grow" if:

- (a) It is not severely damaged by insects, disease, fire, wildlife, weather or logging;
- (b) It exhibits the potential for continued height growth, consistent with the normal growth for the species on similar sites;
- (c) It has at least one-third of the tree height in full, live crown; and
- (d) It is taller than, and out-competing any grass, shrubs, or undesired trees growing within a tenfoot radius from the tree.

### What Lands are Subject to the Reforestation Rules?

Any land which is rated as Cubic Foot Site Class I, II, III, IV, V or VI forest land is subject to the requirements of the reforestation rules. These are forest lands that are capable of growing at least 20 cubic feet of wood fiber on an acre in a year. In eastern Oregon, very high elevation timber stands or stands dominated by juniper trees probably do not meet this standard. In western Oregon, 94 percent of the privately owned forest lands are capable of growing at least 20 cubic feet per acre per year. Less productive westside forest lands are located primarily in interior southwest Oregon and are often intermingled with more productive lands.



Landowners should become familiar with the productivity of their forest lands. Site productivity may be determined directly by tree growth and stocking measurements throughout the operation area or determined indirectly using applicable USDA Soil Conservation Service soil survey information, USDA Forest Service plant association guides, Oregon Department of Revenue western Oregon site class maps, or other information of comparable quality. Consult a professional forester if you are unsure how to determine the productivity of your land.

#### **Example Using Stocking Equivalents:**

A partial cut harvest unit on Site IV forest land contains the following tree stand after the operation:

Average number of seedlings per acre	= 35
Average number of saplings and poles per acre	= 8
Average square feet of basal area	
per acre of trees 11-inches DBH and larger	= 15

1 seedling = 0.6 saplings and poles = 0.4 square feet of basal area of 11-inch DBH and larger trees; therefore:

8 saplings and poles per acre / 0.6 = 13 seedling equivalents 15 sq. ft. of basal area per acre / 0.4 = 38 seedling equivalents

35 + 13 + 38 = 86 seedling equivalents already present

One hundred and twenty-five (125) seedlings or equivalent larger trees is the minimum stocking standard for Site IV land; therefore, establishment of an additional 39 free to grow seedlings per acre is required on this site [39=125 - (35+13+38)].

#### (Example assumes all trees are healthy, undamaged, and well distributed)

Live conifer trees 11 inches DBH and larger left standing in harvested areas to meet the Forest Practices Act's green tree and snag retention requirements may also be counted towards meeting the tree stocking standards if the trees are free to grow.

Table 2 provides approximate conversions between trees per acre and tree spacing when evaluating trees less than 11-inches DBH. For trees 11-inches DBH and larger, Table 3 (opposite) provides approximate conversions between trees per acre, tree spacing, and basal area per acre.

Landowners should be aware that if planting is planned, the number of planted seedlings will usually need to be higher than the applicable seedling levels listed in these rules because some seedlings may die between planting and the free to grow deadline.

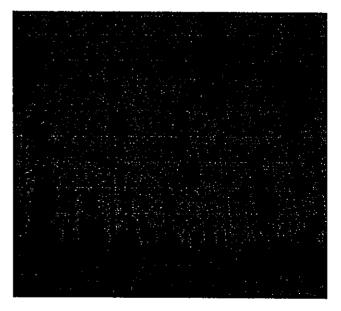
The reforestation rules provide flexibility for forest practices foresters and landowners to tailor reforestation requirements to site-specific situations. Landowners may submit plans for alternate practices that do not conform to the reforestation stocking levels established under these rules. Such plans may be approved if the FPF determines that there is a high probability that the purpose of the reforestation rules will be achieved.

#### **Using Natural Reforestation Methods**

Natural reforestation methods may be the best means to meet a variety of resource management objectives on some forestlands. Successful natural reforestation requires careful, flexible, site-specific pre-harvest planning and post-harvest monitoring. On Cubic Site Class VI forestlands and in wetlands, the use of silvicultural systems that promote natural reforestation and the

TABLE 2: Relationship Between Trees Per Acre and Average Tree Spacing

Trees per acre	Average spacing between tree centers (in feet)
200	15
125	19
120	19
100	21
75	24
60	27



ever comes first. "Completion of the operation" means harvest activities have been completed to the extent that an operation area will not be further disturbed. FPFs may require reforestation on a logical portion of a harvest unit even if activities on other portions of the operation are continuing.

Once the compliance period begins, the landowner must begin reforestation, including any necessary site preparation, within 12 months. If artificial reforestation is planned, the landowner must complete planting or seeding within 24 months. By the end of the sixth full calendar year, the landowner must have established an adequately stocked, free to grow stand of trees.

When natural reforestation methods are planned, the time limits for evidence of successful germination and for establishing a free to grow stand of trees, which

for the site, will be established in the approved written plan.

If reforestation cannot be accomplished within the specified time due to circumstances determined by the forest practices forester to be beyond the landowner's control, the time to accomplish reforestation may be extended. Examples of such circumstances include:

- (a) Nursery failure:
- (b) Inadequate seedling availability following salvage harvesting;
- (c) Extreme drought;
- (d) Insect infestation:
- (e) State smoke management restrictions on the burning of slash;
- (f) Wildfire or disease damage; or
- (g) Severe wildlife damage that could not be reasonably anticipated or controlled by the landowner.

The following situations are examples of where extensions will *not* be granted:

- (a) Failure of artificial reforestation efforts is due to landowner's failure to secure appropriate seed or seedlings following the harvest of free to grow trees. Exceptions may be granted for salvage harvests that the landowner could not anticipate.
- (b) Natural reforestation failures are due to inadequate seed sources or poor seed crops in the years immediately after an operation.
- (c) Failures on harsh reforestation sites resulting from harvest area design or competing vegetation.
- (d) Wildlife damage that could have reasonably been anticipated and controlled, such as from mountain beavers.

#### Tree Species Suitable for Reforestation

Tree species are acceptable for artificial reforestation, natural reforestation, and as residual tree stocking based on all of the following criteria:

- (a) The species must be ecologically suited to the planting site;
- (b) The species must be capable of producing logs, fiber, or other wood products suitable in size and quality for the production of lumber, sheeting, pulp or other commercial forest products; and
- (c) The species must be marketable in the foreseeable future.



Native species will generally be considered "ecologically suited" and the preferred reforestation species.

Up to 20 percent of required tree stocking may be met by using free to grow hardwood trees remaining after harvest. Prior approval by the FPF is required before more than 20 percent of the required stocking may be met with residual, post-operation hardwood trees.

Landowners are encouraged to reforest with a mixture of acceptable tree species where appropriate to reduce the risk of insect and disease losses and to promote stand diversity.

Seedlings or seeds used for artificial reforestation should be from seed sources that are genetically adapted to the growing site. If local seed sources are not available, landowners should not use off-site seeds or seedlings that may result in poor survival. A delay while waiting for appropriate seedlings is preferable to planting off-site stock.

When a landowner intends to plant or seed a tree species not native to the operation area, the landowner must obtain prior approval of a written plan which describes the tree species and how it will be used to meet the reforestation requirements. Information in the plan must include:

- (a) The tree species that will be used:
- (b) Evidence that the species is ecologically suited to the planting site;
- (c) Evidence that the species is capable of producing commercial forest products that will be marketable in the foreseeable future; and

# **ATTACHMENT**

# **DIVIDE**

#### FINDINGS OF FACT AND CONCLUSIONS OF LAW

for

# MINOR AMENDMENT OF THE LANE COUNTY RURAL COMPREHENSIVE PLAN

and

ZONE CHANGE FROM EXCLUSIVE FARM USE

to

**MARGINAL LAND** 

PA 04-6092

KAREN A. DAHLEN TRUST

P.O. BOX 5687 Eugene, OR 97405-0687

Submitted by: P. STEVEN CORNACCHIA HERSHNER HUNTER, LLP

#### 1. EVIDENCE.

- 1.1 Application materials dated September 15, 2004, with exhibits;
- 1.2 Lane County Planning Commission Staff Report with attachments;
- 1.3 Marc Setchko Report, dated February 15, 2005.
- 1.4 Correspondence from Steve Cornacchia, dated April 19, 2005, with exhibits, including March 27, 2005, Setchko report;
  - 1.5 Correspondence from Steve Cornacchia, dated May 24, 2005;
- 1.6 Correspondence from Steve Cornacchia, with exhibits, dated July 18, 2005;
- 1.7 Correspondence from Steve Cornacchia, dated July 25, 2005, with attachments, including a copy of LUBA Decision No. 2005-029, James Just v. Lane County (Carver) and affidavits of Art Moshofsky and Mark Minty;
  - 1.8 Agronomic Analytics Dahlen Property Soil Investigation Report;
- 1.9 Correspondence, with exhibits, from Steve Cornacchia, dated September 29, 2005;
- 1.10 Correspondence, with exhibits, from Steve Cornacchia, dated May 9,2006.

#### 2. INTRODUCTION.

The property that is the subject of this application consists of a 316-acre parcel located immediately south of, but not adjacent to, the Eugene city limits and the Eugene-Springfield Metropolitan Plan Urban Growth Boundary, west off of Willamette Street. This application is for approval of a Minor Plan Amendment to the Lane County Rural Comprehensive Plan (RCP) diagram to designate the subject property from Agriculture to Marginal Lands, and a concurrent Lane County zoning map amendment from Exclusive Farm Use (EFU 30) to Marginal Lands (MLRCP).

#### 3. BACKGROUND INFORMATION

- (ii-ii) necessary to fulfill an identified public or community need for the intended result of the component or amendment; or
- (iii-iii) necessary to comply with the mandate of local, state or federal policy or law; or
- (iv-iv) necessary to provide for the implementation of adopted Plan policy or elements, or
- (v-v) otherwise deemed by the Board, for reasons briefly set forth in its decisions, to be desirable, appropriate or proper.
- (cc) For Minor Amendments as defined in LC 16.400(8)(a), the Plan amendment or component does not conflict with adopted Policies of the Rural Comprehensive Plan and if possible, achieves policy support.
- 4.2 Lane Code 16.400(6)(i) provides that a change of zoning to implement a proposed Plan amendment may be considered concurrently with such amendment. In such case, the Board shall also make the final zone change decision, and the Hearings Official's consideration need not occur.
  - 4.3 Lane Code 16.400(6)(h)(iii)(aa).

For Major and Minor Amendments as defined in LC 16 400(8)(a) below, the Plan component or amendment meets all applicable requirements of local and state law, including Statewide Planning Goals and Oregon Administrative Rules.

#### (1) Goal 1 - Citizen Involvement.

To ensure the opportunity for citizen involvement in all phases of the planning process.

Lane County has provided written notice of the proposed amendments and public hearings before its planning commission and board of commissioners in conformance with ORS 197.763. The information included in the notices conforms with ORS 197.763 (2) and (3) and enabled citizens to identify and comprehend the issues and to participate in a public process prior to final action by the county. Referral notices were also mailed to all federal, state, and private organizations as required by state law and Lane Code. The proposed amendments have been processed in a manner that assures full compliance with Goal 1.

#### (2) Goal 2 - Land Use Planning

To establish a land use planning process and policy framework as a basis for all decisions and actions related to the use of land and to assure an adequate factual base for such decisions and actions.

preserved and/or protected. The proposed amendments will not conflict with any Goal 5 resources.

#### (6) Goal 6 - Air, Water and Land Resources Quality.

To maintain and improve the quality of the air, water and land resources of the state.

Goal 6 requires that air, land and water resources of the state be maintained and improved by assuring that future development, in conjunction with existing development, does not violate applicable state and federal environmental quality standards, and does not exceed the carrying capacity of local air sheds, degrade land resources or threaten the availability of such resources. Lane County has sufficient regulatory measures in place so as to ensure that existing land use activities, as well as any future development on the site, will not produce any unanticipated impacts resulting from the proposed amendments.

The subject property lies within an area identified as a "broad areas of very limited groundwater" area in Lane Manual 13.010 and the availability of water commensurate with the proposed development of the subject property is demonstrated by the analysis and conclusions of EGR and Associates, Inc. (EGR). The results of the aquifer analysis by EGR, dated July 27, 2004, are provided as evidence by the attachment of the analysis to the original application as Exhibit E.

In that aquifer analysis EGR concludes that there is sufficient water available for domestic use from the aquifer for all of the proposed parcels without adverse effects to neighboring wells. The record contains no other evidence from professional consultants that the analysis and conclusion of EGR is inaccurate or in error. The EGR report is sufficient and substantial evidence of the availability of water on the subject property and within its vicinity and demonstrates that application approval would be consistent with Goal 6.

The proposed amendments will not produce results that will be in conflict or inconsistent with the purpose and intent of Goal 6. The proposed amendments change the use designation on the subject property and any additional uses or change of use will require compliance with Lane County's existing regulatory system and measures.

#### (7) Goal 7 - Areas subject to Natural Disasters and Hazards.

To protect life and property from natural disasters and hazards.

No areas containing or prone to natural disasters or natural hazards have been identified on the subject property.

(8) Goal 8 - Recreational Needs.

To satisfy the recreational needs of the citizens of the state.

The intent of Goal 12 is implemented through the provisions of the State Transportation Planning Rule (TPR) (OAR 660, Division 12), which was adopted by LCDC in 1991.

OAR 660-012-0060(1) requires that amendments to functional plans, acknowledged comprehensive plans, and land use regulations which significantly affect a transportation facility shall assure that allowed land uses are consistent with the identified function, capacity, and level of service of the facility.

To determine whether the proposed amendments will significantly affect a transportation facility, the TPR lists specific criteria against which the proposed amendments are to be evaluated. The TPR provides that a plan or land use regulation amendment significantly affects a transportation facility if it:

- (a) Changes the functional classification of an existing or planned transportation facility;
- (b) Changes standards implementing a functional classification system;
- (c) Allows types or levels of land uses which would result in levels of travel or access which are inconsistent with the functional classification of a transportation facility; or,
- (d) Would reduce the level of service of the facility below the minimum acceptable level identified in the TSP (Transportation System Plan).

The Board finds that the approval of the proposal cannot result in any of the four situations provided by the TPR criteria listed above. Development of 11 parcels with dwellings will produce typically 10 trips per day for each parcel, resulting in a total trip per day count of approximately 110. Willamette Street, a major collector, will not experience a change in its functional classification as a result of an additional 110 trips per day and the total trips per day are not inconsistent for a major collector and will not reduce the level of service below the minimum acceptable level identified in the TSP (Transportation System Plan).

The engineering firm Branch Engineering has analyzed the traffic impact resulting from approval of the application and has concluded that it would not have a significant impact on transportation facilities.

Application approval is consistent with Goal 12.

(13) Goal 13 - Energy Conservation..

#### To conserve energy.

Goal 13 requires that land uses maximize conservation of all forms of energy based on sound economic principles. It is implemented by local plans and regulations that control location, orientation and density of development to minimize net energy consumption. Any development on the subject property will be subject to those rules.

The subject property contains no estuarine resources. Goal 16 is not applicable to this request.

(17) Goal 17 - Coastal Shorelines To conserve, protect, where appropriate, develop and where appropriate restore the resources and benefits of all coastal shorelines, recognizing their value for protection and maintenance of water quality, fish and wildlife habitat, water-dependent uses, economic resources and recreation and aesthetics.

The subject property contains no coastal shorelines. Goal 17 is not applicable to this request.

#### (18) Goal 18 - Beaches and Dunes

To conserve, protect, where appropriate develop, and where appropriate restore the resources and benefits of coastal beach and dune areas.

The subject property contains no beaches or dunes. Goal 18 is not applicable to this request.

#### (19) Goal 19 - Ocean Resources

To conserve the long-term values, benefits, and natural resources of the nearshore ocean and the continental shelf.

The subject property contains no ocean resources. Goal 19 is not applicable to this request.

#### 4.4 Lane Code 16.400(6)(h)(iii)(bb).

For Major and Minor Amendments as defined in LC 16.400(8) (a) below, the Plan amendment or component is:

#### (i-i) necessary to correct an identified error in the Plan; or

The subject property was designated Agriculture and zoned EFU 30 as part of the Lane County Rural Comprehensive Plan (RCP) adoption process in 1984. Nonetheless, it was so designated and zoned pursuant to County policy which determined that lands that might qualify as marginal lands should be addressed subsequently on a case-by-case basis pursuant to policies in the RCP and the statutory criteria in ORS 197.247.

(ii-ii) necessary to fulfill an identified public or community need for the intended result of the component or amendment; or

Not applicable.

(iii-iii necessary to comply with the mandate of local, state or federal policy or law; or

Not applicable.

It is found that the applicant has demonstrated that the subject property was not managed, during three of the five calendar years preceding January 1, 1983, as part of a farm operation that produced \$20,000 or more in annual gross income. Art Moshofsky and members of his family owned the subject property during and throughout the period between 1978 and 1983. Mr. Moshofsky has provided several affidavits, that demonstrate that the subject property was not managed, during three of the five calendar years preceding January 1, 1983, as part of a farm operation that produced \$20,000 or more in annual gross income. In his affidavits, Mr. Moshofsky has provided evidence that the only farm use made of the subject property during the applicable period was the intermittent and limited grazing of cattle, usually less than 25 head at any one time, by C&M Livestock Company. The grazing was the product of an informal agreement between Mr. Moshofsky and the company that provided that the company would graze a limited number of cattle on the property in exchange for fence maintenance and the human presence of the company. The company's presence on the property provided some security at the time for Mr. Moshofsky, who was an absentee owner residing in Portland faced with trespass and vandalism problems on the subject property. Mr. Moshofsky testified that at no time did monetary consideration between the parties for the grazing exceeded \$1000 annually. Mark Minty, a partner in C&M Livestock Company during that period, provided testimony in an affidavit in the record that Mr. Moshofsky's description of the activity and the agreement of the parties was accurate and that the company did not own or manage any property adjacent to, contiguous with or in the vicinity of the subject property. Mr. Minty also testified that it is his opinion that the subject property is of marginal value for grazing or other agricultural production and could not be managed as part of a farm operation capable of producing \$20,000 in gross income annually.

Furthermore it is found that the applicant has demonstrated that the subject property was not managed as part of a forest operation that produced an average, over the growth cycle, of \$10,000 in annual gross income.

The applicant's forester, Marc Setchko, provided an analysis to the record of the timber-growing potential of the subject property and concluded that the subject property could not be managed as a forest operation capable of producing an average, over the growth cycle, of \$10,000 in annual gross income. Mr. Setchko, with both professional credentials and 27 years of experience, is highly qualified to render such any analysis and conclusion.

Mr. Setchko's opinion was based on a detailed analysis of the existing soils, their ability to grow timber (primarily Douglas-fir) and conversion of that growth potential into dollars based upon log prices in 1983. Mr. Setchko's methodology is dictated by the Board interpretation (Direction for Issue 4). Mr. Setchko's analysis used a fifty-year growth cycle as directed by the Board interpretation (Direction for Issue 5).

Mr. Setchko, in his report dated March 27, 2005, conducted a forest income analysis of the subject property that included the entire 387.65 acres of common Moshofsky ownership in 1983. In that report Mr. Setchko calculated the average gross annual income of the property through a complete growth and harvest rotation. He calculated what the forest operation on the subject property was capable of, in terms of income, based on actual stocking of the property during the

throughout the growing cycle, demonstrates that the entire property was and is not capable of producing over \$10,000.00 in annual income over the growing cycle from a forest operation.

Goal One Coalition has challenged the applicant's demonstration that the subject property meets the agriculture and forest income tests of the statute. The Board finds that the challenges by Goal One Coalition are without legal foundation and do not include any supporting professional opinion regarding agriculture or forest income of the subject property and, therefore, are without merit.

The specific challenges of Goal One Coalition, which cover both ORS 197.247(1)(a) and (b)(C), are discussed and rejected as without merit as follows:

#### 1. The income test "forest operation" has not been addressed.

Goal One Coalition argues that the applicant has not conducted any analysis of the "income-producing capability" of the proposed marginal lands using "current timber values" to calculate the potential gross income over the growth cycle. Goal One Coalition is correct in asserting that the calculation of the annual gross income for the ORS 197.247(1)(a) income test can be accomplished by the use of timber values. However, it is incorrect in its assertion that the calculation must use "current timber values."

Goal One Coalition references language in *DLCD v. Lane County* (Ericcson)<sup>1</sup> that mentions that "current prices" were used in the calculations of the Ericcson application. In that case, however, the use of a particular year's prices was not at issue and LUBA made no determination regarding such use. What the decision in Ericcson did establish, in addition to affirming Lane County's approval of a Marginal Lands re-zoning application, was that on-site evaluation of forest productivity by a qualified expert is weightier evidence than published data or that provided by individuals not qualified as experts in forest management.

Mr. Setchko used 1983 Douglas-fir log prices and volumes in his calculation of the projected gross forest operation income of the proposed marginal land. In this case Mr. Setchko is the qualified expert with 27 years of forest management experience, including 17 years as a private consultant and a Master's Degree in Forestry. Goal One Coalition has not established that it has any experience or credentials in forest management. Furthermore, it has not provided any testimony from a qualified expert in forest management to support its assumptions and conclusions.

Lane County, in response to and in reliance upon Ericcson, issued its interpretations of the Marginal Lands statutes in the Board of Commissioners' 1997 Supplement to Marginal Lands Information Sheet. A copy of the supplement and the information sheet was provided to the record of this decision. It is a binding policy statement providing guidance and direction to applicants, county planning staff, the public and to the Lane County Planning Commission and

<sup>&</sup>lt;sup>1</sup> 23 Or LUBA 33 (1992)

not capable of meeting the specified \$10,000 threshold averaged over the growth cycle. Both the "farm operation" and "forest operation" prongs of the test are specifically linked to January 1, 1983."

#### 2. Mr. Setchko fails to explain his use of a 50-year growth cycle.

In ISSUE 5 of its 1997 Supplement, Lane County adopted the use of a 50-year growth cycle as the usual standard. Jim Just assigned that policy as an assignment of error in Just v. Lane County and LUBA rejected his arguments in that assignment and affirmed the county's use of the 50-year growth cycle. It is found that the policy remains valid today and that the applicant's use of a 50-year growth cycle in calculating forest income complied with the policy and adequately demonstrated, in part, that the forest income test had been appropriately met.

# 3. All Moshofsky-owned property and milling operations throughout the world during the 1978-83 test period must be included in the calculations for the forest income test

Goal One Coalition raised this issue in its letter to the Lane County Planning Commission, dated February 25, 2005. The letter provides no authority for the proposition that the legislature intended the statute, and particularly the forest income test, to be applied to all land and industrial operations of an individual, wherever located on the planet, in the analysis of what the subject property could contribute to the forestry economy of the state. Lane County's 1997 supplement, ISSUE 3, provides that "the law creates a general presumption that all contiguous land owned during 1978-82 was part of the owner's 'operation' (emphasis added)." The interpretation includes no direction that non-contiguous property or operations of the applicant be considered in the income analysis. Lane County has consistently required Marginal Lands applicants to address the income tests on a contiguous property basis only. That requirement is an objective criteria authorized by ORS 197.247(5).

Not only has Lane County historically not required that all of an applicant's lands or operations in other locations not contiguous, adjacent or nearby the application's subject property be considered in the analysis, but to do so would be unreasonably beyond what the legislature intended to require in the statute. If the legislature had intended such a result, which could place worthless property (from a resource perspective) of a larger, non-contiguous, ownership in a totally unusable condition, it would have stated such an intention in the body of the statute. Goal One's assertion that the income capability analysis of a particular piece of property must include all other lands and operations owned by the property owner, regardless of its location and relationship to the subject property and regardless of whether it was managed as a part of those other lands and operations, defeats the intent of the legislature to capture particular, non-contributing, properties and to allow both residential and resource use of them through application of the Marginal Lands statute. It appears more reasonable that the legislature intended the analysis to be of the subject property, to require that the analysis combine the subject property with other non-contiguous and non-related property defeats the overall intent of the legislation to identify those lands which are unproductive and not contributing to the

The second part of Goal One Coalition's second argument is that "(A)n evaluation of a property's capacity for forest production must consider productivity for all merchantable forest tree species, not just Douglas-fir." Mr. Setchko has provided an analysis of the species that Goal One Coaltion argues are "merchantable" and concludes that a majority of those species are not "merchantable." He further concludes that all other species that may be merchantable grow sufficiently slower than Douglas-fir on the subject soils and that they would not produce at least 85 cu.ft./ac./yr. on the subject property. Mr. Setchko includes that analysis in each of his "Forest Productivity Analysis" that were provided to the record in support of the application. Mr. Setchko's experience and expertise provides the conclusion that many of the species, especially KMX and hybrid poplar, have no established market and are, therefore, not merchantable. His overall conclusion is that if the proposed marginal land is not capable of producing an average of \$10,000 in annual gross income from Douglas-fir, then there are no other merchantable tree species that could produce any more than the calculated figures that he has provided in his analysis for Douglas-fir. Goal One Coalition has not provided any credible or scientific evidence that contradicts or conflicts with the findings and conclusion of the Setchko reports. It is found that the applicant, through the evidence provided by Mr. Setchko's reports, has demonstrated that the subject property is not capable of producing more than 85 cu.ft./ac./yr. of merchantable timber.

The Setchko report concludes that the subject property is not capable of producing eighty-five cubic feet of merchantable timber per acre per year. Mr. Setchko's report also contains an analysis of other tree species. Mr. Setchko's opinion includes an analysis of the species listed by Goal One Coalition in public testimony and concludes that they are either not merchantable, or would not produce an annual volume and income equal to Douglas-fir. Goal One Coalition has provided no substantial evidence to effectively refute or contradict Mr. Setchko's professional opinion regarding the merchantability and productivity of those particular species. Mr. Setchko opines that all other merchantable tree species would either not grow on the soils of the subject property or would not produce a volume in cubic feet that would equal the growth rate of Douglas-fir. Mr. Setchko, in his analysis of the productivity of various tree species, provides a professional and scientific foundation to the reasoning of the SCS/NRCS in using Douglas-fir as the indicator species for productivity on Western Oregon soils.

Mr. Setchko, in response to continuing arguments made by Goal One Coalition in other Marginal Lands plan amendment applications, prepared an analysis of the Goal One Coalition's arguments regarding the productivity of Ponderosa Pine. Mr. Setchko opines that Goal One Coalition has misapplied and misused information from various internet publications to conclude that Ponderosa Pine has a much higher productivity potential on Western Oregon soils than is accurate and than can be scientifically verified. Mr. Setchko, in response to continuing arguments made by Goal One Coalition in other applications, prepared an analysis of the Goal One Coalition's arguments regarding the productivity and merchantability of Ponderosa Pine, Hybrid Poplar and KMX in the Willamette Valley. That analysis, dated September 8, 2004, and May 4, 2006, includes Mr. Setchko's opinion that Goal One Coalition has misapplied and misused information from various internet publications to conclude that Ponderosa Pine, Hybrid Poplar and KMX have a much higher productivity potential on Western Oregon soils than is accurate and than can be scientifically verified. His conclusions in his Ponderosa Pine analyses

University Extension Service, EM 8805, May 2003, which contains caveats that expressly limit its application.

- The opponents' conversion tables are difficult to understand. Lane County is unable to follow the analysis and to validate the numbers in the chart for Ponderosa Pine productivity.
- Mr. Setchko, a credible forestry expert, has addressed the issue in his testimony that, in addition to an analysis based upon his personal experience and training, Ponderosa Pine is worth considerably less money and has the same or slower growth rate as Douglas Fir and that the opponents have not provided any substantial evidence to refute his conclusions regarding the productivity of Ponderosa Pine in Western Oregon or upon the subject property.

Mr. Setchko's analysis and conclusions regarding the productivity of the subject property sufficiently and adequately demonstrates that the subject property is not capable of producing at least 85 cubic feet of merchantable timber per acre per year over the growing cycle.

Goal One Coalition has challenged the applicant's demonstration that the subject property meets the forest productivity test of the statute. The Board finds that the challenges by Goal One Coalition are without legal foundation, do not include any supporting professional opinion regarding forest productivity of the subject property that refutes the conclusions reached by Mr. Setchko, and, therefore, are without merit.

Other opponent challenges are discussed and rejected as without merit as follows:

1. The "forest operation" income test must be calculated by using timber prices for years prior to 1983.

Mr. Setchko used 1983 Douglas-fir log prices and volumes in his calculation of the projected gross forest operation income of the proposed marginal land. In this case Mr. Setchko is the qualified expert with 27 years of forest management experience, including 17 years as a private consultant and a Master's Degree in Forestry. Opponents have not established that they have any experience or credentials in forest management. Furthermore, they have not provided any testimony from a qualified expert in forest management to support their assumptions and conclusions.

Lane County, in response to and in reliance upon Ericcson, issued its interpretations of the Marginal Lands statutes in the Board of Commissioners' 1997 Supplement to Marginal Lands Information Sheet. A copy of the supplement and the information sheet was provided to the record of this decision. It is a binding policy statement providing guidance and direction to applicants, county planning staff, the public and to the Lane County Planning Commission and Board of Commissioners regarding the statute. The Board direction stated in ISSUE 4 of the supplement provides:

2. Mr. Setchko fails to explain his use of a 50-year growth cycle.

In ISSUE 5 of its 1997 Supplement, Lane County adopted the use of a 50-year growth cycle as the usual standard. Jim Just assigned that policy as an assignment of error in *Just v. Lane County* and LUBA rejected his arguments in that assignment and affirmed the county's use of the 50-year growth cycle.

The Board direction stated in ISSUE 5 of the supplement provides:

ISSUE 5: What "growth cycle" should be used to calculate gross annual income?

#### Board's Direction:

The consensus of the Board was that a 50-year growth cycle should be adopted as the usual standard, with the option that another standard could be used if substantiated by compelling scientific evidence presented by the applicant. The Board's choice was based upon evidence that the USDA Natural Resource Conservation Service has adopted the 50-year cycle for rating soil productivity, plus the administrative ease of having a standardized figure.

It is found that the policy remains valid today and that the applicant's use of a 50-year growth cycle in calculating forest income complied with the policy and adequately demonstrated, in part, that the forest income test had been appropriately met.

3. The applicant has not established that the subject parcel is not capable of producing 85 cu.ft./ac./yr. of merchantable timber.

Goal One Coalition argues two points within this argument. First it argues that the applicant's consulting forester, Mr. Setchko, has not applied a sanctioned methodology for determining forest productivity.

Mr. Setchko used information generated by Lane County and the Oregon State Forester's office consistent with LCDC regulations for providing such ratings. Mr. Setchko calculated the forest productivity capability of the subject property using the same sources of ratings that were used in the Carver application (the subject of *Just v. Lane County* referred to hereinabove). Those sources of ratings and the use of the ratings were affirmed by LUBA in that decision. Mr. Setchko applied a rating to each of the soils of the proposed marginal land and concluded that the proposed marginal land produces less than 85 cu.ft./ac./yr. of merchantable timber.

The second part of Goal One Coalition's second argument is that "(A)n evaluation of a property's capacity for forest production must consider productivity for all merchantable forest tree species, not just Douglas-fir." Mr. Setchko has provided an analysis of the species that Goal One Coaltion argues are "merchantable" and concludes that a majority of those species are not "merchantable." He further concludes that all other species that may be merchantable grow sufficiently slower than Douglas-fir on the subject soils and that they would not produce at least

(d) it is not capable of producing 85 cubic feet of merchantable timber per acre per year.

It is found that substantial evidence in the record, primarily, but not limited to, the Setchko reports, exists to support each of the above conclusions. No documentation, expert testimony or other substantial evidence has been submitted to the record that refutes or contradicts that evidence with regard to the resource capabilities of the subject property as measured by the statutory standards and criteria in ORS 197.247.

For the reasons set forth above, the Board finds that the policies in the RCP, specifically RCP Goal 3, Policy 14 and RCP Goal 4, Policy 3, authorize and allow certain qualified resource lands to be designated and zoned marginal lands. Approval of this application implements those policies which have been acknowledged by the Land Conservation and Development Commission to be in conformity with Statewide Planning Goals and ORS 197.247 (1991 ed.).

### (v-v) otherwise deemed by the Board, for reasons briefly set forth in its decisions, to be desirable, appropriate or proper.

The totality of this application's response to and treatment of applicable criteria, coupled with the benefits accruing to both the public and the applicant as demonstrated in this application, provides the Lane County Board of Commissioners with adequate foundation and reason to find that approval of the application is desirable, appropriate and proper and would be a demonstration of good public policy.

#### 4.5 Lane Code 16.400(6)(h)(iii)(cc).

For Minor Amendments as defined in LC 16.400(8)(a), the Plan amendment or component does not conflict with adopted policies of the Rural Comprehensive Plan and if possible, achieves policy support.

There are no policies in the adopted and acknowledged RCP that conflict with this request for plan amendment. As discussed in the previous section, there are policies in the RCP that specifically support and encourage approval of marginal lands applications for qualified property. The subject property addresses and satisfies the marginal lands criteria that are set forth in ORS 197.247 (1991 ed.).

Approval of this plan amendment is also consistent with the Board's interpretation of the Marginal Lands statute (ORS 197.247 (1991 ed.)) and its application to individual requests for plan amendment. The application is supported by detailed and thorough analysis and testimony provided by a qualified and experienced forester. The analysis and testimony was produced and provided in conformance with direction provided by the Board's interpretation.

Other RCP policies that may be relevant to this decision are as follows:

#### (1) GOAL ONE: CITIZEN INVOLVEMENT.

"Marginal land is intended to be a sub-set of resource land, i.e., there are 'prime; resource lands and 'marginal' resource lands. The marginal lands are to be available for occupancy and use as small tracts than are required in the better resource lands. The criteria in the law define which lands may be designated as marginal. Evidence for this position is found in the legislative history and the fact that marginal lands are recognized in both Statewide Goal 3 – Agricultural Lands and Goal 4 – Forest Lands."

Marginal lands are resource lands that are intended for occupancy with limited rural residential development.

Based on the evidence in the record which addresses and satisfies the criterion in ORS 197.247 (1991 ed.) and the above-referenced RCP resource policies, the Board concludes that approval of the subject plan amendment is compatible with the existing structure of the acknowledged RCP and is consistent with the unamended portions and elements of the RCP.

4.7 Zone Change Criteria of Lane Code 16.252Lane Code 16.252(2)(Criteria).

Zonings, rezonings and changes in the requirements of this Chapter shall be enacted to achieve the general purpose of this Chapter and shall not be contrary to the public interest. In addition, zonings and rezonings shall be consistent with the specific purposes of the zone classification proposed, applicable to Rural Comprehensive Plan elements and components, and Statewide Planning Goals for any portion of Lane County which has not been acknowledged by the Land Conservation and Development Commission. Any zonings or rezonings may be effected by Ordinance or Order of the Board of County Commissioners, the Planning Commission or the Hearings Official in accordance with the procedures of this section.

This decision results in a change from Exclusive Farm Use to ML Marginal Lands. The facts relevant to the zone change standards are largely redundant with the facts relevant to plan policies and the Statewide Planning Goals and have been addressed in preceding sections of these findings of fact and are incorporated into these findings by this reference.

This zone change is consistent with the general purposes of LC Chapter 16 as set forth in LC 16.003 in that:

- 1) In conformity with various development rules discussed above, the subject property will be developed commensurate with the character and physical limitations of the land and will thus promote the health, safety and general welfare of the built environment;
- 2) It will provide home construction opportunities that will aid the economy;

# **ATTACHMENT**

# **DIVIDE**

# ORDINANCE NO. PA 1231 – Exhibit C FINDINGS OF FACT AND CONCLUSIONS OF LAW

for

MINOR AMENDMENT OF THE LANE COUNTY

RURAL COMPREHENSIVE PLAN

and

ZONE CHANGE FROM EXCLUSIVE FARM USE

to

**MARGINAL LAND** 

PA 04-6092

KAREN A. DAHLEN TRUST

P.O. BOX 5687 Eugene, OR 97405-0687

#### 1. EVIDENCE.

- 1.1 Application materials dated September 15, 2004, with exhibits;
- 1.2 Lane County Planning Commission Staff Report with attachments;
- 1.3 Marc Setchko Report, dated February 15, 2005.
- 1.4 Correspondence from Steve Cornacchia, dated April 19, 2005, with exhibits, including March 27, 2005, Setchko report;
  - 1.5 Correspondence from Steve Cornacchia, dated May 24, 2005;
- 1.6 Correspondence from Steve Cornacchia, with exhibits, dated July 18, 2005;
- 1.7 Correspondence from Steve Cornacchia, dated July 25, 2005, with attachments, including a copy of LUBA Decision No. 2005-029, James Just v. Lane County (Carver) and affidavits of Art Moshofsky and Mark Minty;
  - 1.8 Agronomic Analytics Dahlen Property Soil Investigation Report;
- 1.9 Correspondence, with exhibits, from Steve Cornacchia, dated September 29, 2005;
- 1.10 Correspondence, with exhibits, from Steve Cornacchia, dated May 9, 2006.

#### 2. INTRODUCTION.

The property that is the subject of this application consists of a 316-acre parcel located immediately south of, but not adjacent to, the Eugene city limits and the Eugene-Springfield Metropolitan Plan Urban Growth Boundary, west off of Willamette Street. This application is for approval of a Minor Plan Amendment to the Lane County Rural Comprehensive Plan (RCP) diagram to designate the subject property from Agriculture to Marginal Lands, and a concurrent Lane County zoning map amendment from Exclusive Farm Use (EFU 30) to Marginal Lands (MLRCP).

#### 3. BACKGROUND INFORMATION

#### 3.1 General Site Description.

The subject property is described as Tax Lot 300 of Lane County Assessor's Map No. 18-04-24. Immediately to the east of the property is located Tax Lot 1300 of Lane County Assessor's Map

- (iv-iv) necessary to provide for the implementation of adopted Plan policy or elements, or
- (v-v) otherwise deemed by the Board, for reasons briefly set forth in its decisions, to be desirable, appropriate or proper.
- (cc) For Minor Amendments as defined in LC 16.400(8)(a), the Plan amendment or component does not conflict with adopted Policies of the Rural Comprehensive Plan and if possible, achieves policy support.
- 4.2 Lane Code 16.400(6)(i) provides that a change of zoning to implement a proposed Plan amendment may be considered concurrently with such amendment. In such case, the Board shall also make the final zone change decision, and the Hearings Official's consideration need not occur.
  - 4.3 Lane Code 16.400(6)(h)(iii)(aa).

For Major and Minor Amendments as defined in LC 16 400(8)(a) below, the Plan component or amendment meets all applicable requirements of local and state law, including Statewide Planning Goals and Oregon Administrative Rules.

#### (1) Goal 1 - Citizen Involvement.

To ensure the opportunity for citizen involvement in all phases of the planning process.

Lane County has provided written notice of the proposed amendments and public hearings before its planning commission and board of commissioners in conformance with ORS 197.763. The information included in the notices conforms with ORS 197.763 (2) and (3) and enabled citizens to identify and comprehend the issues and to participate in a public process prior to final action by the county. Referral notices were also mailed to all federal, state, and private organizations as required by state law and Lane Code. The proposed amendments have been processed in a manner that assures full compliance with Goal 1.

#### (2) Goal 2 - Land Use Planning

To establish a land use planning process and policy framework as a basis for all decisions and actions related to the use of land and to assure an adequate factual base for such decisions and actions.

Goal 2 establishes a land use planning process and policy framework as a basis for all land use decisions, and requires development of an adequate factual base to support those decisions. A minor change is one that does not have significant effects beyond the immediate area of change, and is based on special studies or information. The justification for the specific change must be established by substantial evidence in support of the conclusion that the applicable criteria have been met.

Goal 6 requires that air, land and water resources of the state be maintained and improved by assuring that future development, in conjunction with existing development, does not violate applicable state and federal environmental quality standards, and does not exceed the carrying capacity of local air sheds, degrade land resources or threaten the availability of such resources. Lane County has sufficient regulatory measures in place so as to ensure that existing land use activities, as well as any future development on the site, will not produce any unanticipated impacts resulting from the proposed amendments.

The subject property lies within an area identified as a "broad areas of very limited groundwater" area in Lane Manual 13.010 and the availability of water commensurate with the proposed development of the subject property is demonstrated by the analysis and conclusions of EGR and Associates, Inc. (EGR). The results of the aquifer analysis by EGR, dated July 27, 2004, are provided as evidence by the attachment of the analysis to the original application as Exhibit E.

In that aquifer analysis EGR concludes that there is sufficient water available for domestic use from the aquifer for all of the proposed parcels without adverse effects to neighboring wells. The record contains no other evidence from professional consultants that the analysis and conclusion of EGR is inaccurate or in error. The EGR report is sufficient and substantial evidence of the availability of water on the subject property and within its vicinity and demonstrates that application approval would be consistent with Goal 6.

The proposed amendments will not produce results that will be in conflict or inconsistent with the purpose and intent of Goal 6. The proposed amendments change the use designation on the subject property and any additional uses or change of use will require compliance with Lane County's existing regulatory system and measures.

(7) Goal 7 - Areas subject to Natural Disasters and Hazards.

To protect life and property from natural disasters and hazards.

No areas containing or prone to natural disasters or natural hazards have been identified on the subject property.

(8) Goal 8 - Recreational Needs.

To satisfy the recreational needs of the citizens of the state.

Goal 8 is not applicable to this request. There has previously been a legislative determination by Lane County, as embodied in the acknowledged Lane County Rural Comprehensive Plan, that no Goal 8 resources exist on subject site. The subject property has not been included in any inventory of recreational needs as defined by Goal 8. The proposed amendments will not conflict with any Goal 8 resources.

(9) Goal 9 - Economy of the State..

To diversify and improve the economy of the state.

TPR provides that a plan or land use regulation amendment significantly affects a transportation facility if it:

- (a) Changes the functional classification of an existing or planned transportation facility;
- (b) Changes standards implementing a functional classification system;
- (c) Allows types or levels of land uses which would result in levels of travel or access which are inconsistent with the functional classification of a transportation facility; or,
- (d) Would reduce the level of service of the facility below the minimum acceptable level identified in the TSP (Transportation System Plan).

The Board finds that the approval of the proposal cannot result in any of the four situations provided by the TPR criteria listed above. Development of 11 parcels with dwellings will produce typically 10 trips per day for each parcel, resulting in a total trip per day count of approximately 110. Willamette Street, a major collector, will not experience a change in its functional classification as a result of an additional 110 trips per day and the total trips per day are not inconsistent for a major collector and will not reduce the level of service below the minimum acceptable level identified in the TSP (Transportation System Plan).

The engineering firm Branch Engineering has analyzed the traffic impact resulting from approval of the application and has concluded that it would not have a significant impact on transportation facilities.

Application approval is consistent with Goal 12.

#### (13) Goal 13 - Energy Conservation..

#### To conserve energy.

Goal 13 requires that land uses maximize conservation of all forms of energy based on sound economic principles. It is implemented by local plans and regulations that control location, orientation and density of development to minimize net energy consumption. Any development on the subject property will be subject to those rules.

### (14) Goal 14 – Urbanization To provide for an orderly and efficient transition from rural to urban land use.

OAR 660-004-0040(2)(c)(G) specifically exempts marginal land from the provisions of Goal 14 and its implementing rules. The rule specifically states that it does not apply to marginal land. Upon application approval the subject property will be designated marginal land. Therefore, Goal 14 is has little, if any, application to this application.

The entire ownership of the applicant is within an area committed to rural uses, both resource and non-resource in nature, as designated and provided by Lane Code and the acknowledged Lane County Rural Comprehensive Plan. No urban uses are contemplated as a result of

To conserve, protect, where appropriate develop, and where appropriate restore the resources and benefits of coastal beach and dune areas.

The subject property contains no beaches or dunes. Goal 18 is not applicable to this request.

(19) Goal 19 - Ocean Resources

To conserve the long-term values, benefits, and natural resources of the nearshore ocean and the continental shelf.

The subject property contains no ocean resources. Goal 19 is not applicable to this request.

4.4 Lane Code 16.400(6)(h)(iii)(bb).

For Major and Minor Amendments as defined in LC 16.400(8) (a) below, the Plan amendment or component is:

#### (i-i) necessary to correct an identified error in the Plan; or

The subject property was designated Agriculture and zoned EFU 30 as part of the Lane County Rural Comprehensive Plan (RCP) adoption process in 1984. Nonetheless, it was so designated and zoned pursuant to County policy which determined that lands that might qualify as marginal lands should be addressed subsequently on a case-by-case basis pursuant to policies in the RCP and the statutory criteria in ORS 197.247.

(ii-ii) necessary to fulfill an identified public or community need for the intended result of the component or amendment; or

Not applicable.

(iii-iii necessary to comply with the mandate of local, state or federal policy or law; or

Not applicable.

(iv-iv) necessary to provide for the implementation of adopted Plan policy or elements, or

ORS 197.247 (1991 ed.) authorizes counties to designate land as marginal land. Lane County has acted to utilize this authority through the adoption of RCP Goal 3, Policy 14 and Goal 4, Policy 3. Those policies require an applicant for a marginal lands designation and zoning to address and satisfy the requirements of ORS 197.247 (1991 ed.) and applicable Lane County policies and requirements. The subject application is implementing policies in the RCP which allow qualified resource lands to be designated as Marginal Lands rather than Agriculture or Forest.

In order to aid applicants, county planning staff and the general public in addressing the marginal lands criteria, the Lane County Board of Commissioners, in 1997, adopted an interpretation of and supplement to the County's marginal lands information sheet ("the Board interpretation") a

with trespass and vandalism problems on the subject property. Mr. Moshofsky testified that at no time did monetary consideration between the parties for the grazing exceeded \$1000 annually. Mark Minty, a partner in C&M Livestock Company during that period, provided testimony in an affidavit in the record that Mr. Moshofsky's description of the activity and the agreement of the parties was accurate and that the company did not own or manage any property adjacent to, contiguous with or in the vicinity of the subject property. Mr. Minty also testified that it is his opinion that the subject property is of marginal value for grazing or other agricultural production and could not be managed as part of a farm operation capable of producing \$20,000 in gross income annually.

Furthermore it is found that the applicant has demonstrated that the subject property was not managed as part of a forest operation that produced an average, over the growth cycle, of \$10,000 in annual gross income.

The applicant's forester, Marc Setchko, provided an analysis to the record of the timber-growing potential of the subject property and concluded that the subject property could not be managed as a forest operation capable of producing an average, over the growth cycle, of \$10,000 in annual gross income. Mr. Setchko, with both professional credentials and 27 years of experience, is highly qualified to render such any analysis and conclusion.

Mr. Setchko's opinion was based on a detailed analysis of the existing soils, their ability to grow timber (primarily Douglas-fir) and conversion of that growth potential into dollars based upon log prices in 1983. Mr. Setchko's methodology is dictated by the Board interpretation (Direction for Issue 4). Mr. Setchko's analysis used a fifty-year growth cycle as directed by the Board interpretation (Direction for Issue 5).

Mr. Setchko, in his report dated March 27, 2005, conducted a forest income analysis of the subject property that included the entire 387.65 acres of common Moshofsky ownership in 1983. In that report Mr. Setchko calculated the average gross annual income of the property through a complete growth and harvest rotation. He calculated what the forest operation on the subject property was capable of, in terms of income, based on actual stocking of the property during the 1978-1983 period. His calculation is based upon the actual volume of timber removed from the property in 1990 by Mr. Moshofsky (Mr. Moshofsky's affidavit of that timber removal, dated March 15, 2005, is included in the record) and his timber cruise of the remaining portion of the property containing stands of merchantable Douglas Fir. Included in Mr. Setchko's report is a map of the property with areas of timber harvest and existing stands of merchantable Douglas Fir delineated. Mr. Setchko's earlier reports in the record of this proceeding, and incorporated herein by this reference, demonstrate that significant portions of the property have not had any merchantable trees growing thereon for at least 50 years (and likely 100 years), due primarily to the steep, rock-laden, barren slopes of the northern portion of the property and the continually moist bottom land throughout the middle of the property. Those areas of the property contain poor soils for timber production (138G, 52 D, and 28C) as shown in Mr. Setchko's numerous reports in the record of this proceeding. The record of this proceeding includes aerial photos of the property, dating back to 1952, that display that those same areas have been devoid of any trees, merchantable or otherwise, long before the 1978-1983 period and continue to this day to be devoid of trees. Mr. Setchko was not required to make any assumptions on stocking levels in his

Goal One Coalition argues that the applicant has not conducted any analysis of the "income-producing capability" of the proposed marginal lands using "current timber values" to calculate the potential gross income over the growth cycle. Goal One Coalition is correct in asserting that the calculation of the annual gross income for the ORS 197.247(1)(a) income test can be accomplished by the use of timber values. However, it is incorrect in its assertion that the calculation must use "current timber values."

Goal One Coalition references language in *DLCD v. Lane County* (Ericcson)<sup>1</sup> that mentions that "current prices" were used in the calculations of the Ericcson application. In that case, however, the use of a particular year's prices was not at issue and LUBA made no determination regarding such use. What the decision in Ericcson did establish, in addition to affirming Lane County's approval of a Marginal Lands re-zoning application, was that on-site evaluation of forest productivity by a qualified expert is weightier evidence than published data or that provided by individuals not qualified as experts in forest management.

Mr. Setchko used 1983 Douglas-fir log prices and volumes in his calculation of the projected gross forest operation income of the proposed marginal land. In this case Mr. Setchko is the qualified expert with 27 years of forest management experience, including 17 years as a private consultant and a Master's Degree in Forestry. Goal One Coalition has not established that it has any experience or credentials in forest management. Furthermore, it has not provided any testimony from a qualified expert in forest management to support its assumptions and conclusions.

Lane County, in response to and in reliance upon Ericcson, issued its interpretations of the Marginal Lands statutes in the Board of Commissioners' 1997 Supplement to Marginal Lands Information Sheet. A copy of the supplement and the information sheet was provided to the record of this decision. It is a binding policy statement providing guidance and direction to applicants, county planning staff, the public and to the Lane County Planning Commission and Board of Commissioners regarding the statute. The Board direction stated in ISSUE 4 of the supplement provides:

## "ISSUE 4: What price date should be used to calculate gross annual income for forest lands?

#### **Board's Direction:**

The legislative intent of the "management and income test" of the Marginal Lands Law was to identify those lands which were not, at the time the Marginal Lands law was enacted (1983), making a "significant contribution" to commercial forestry. Therefore, it is appropriate and statistically valid to use the following methodology:

<sup>&</sup>lt;sup>1</sup> 23 Or LUBA 33 (1992)

3. Additional documentation is required concerning timber companies in which Mr. Moshofsky held financial interest, in order to ascertain if those companies conducted forest operations of which the subject property was part of, and if those operations grossed more than \$10,000 annual during 1978-1983.

Goal One Coalition raised this issue in its letter to the Lane County Planning Commission, dated February 25, 2005. In that letter, Mr. Just provided documentation of several timber harvesting companies that were in whole or in part, owned by Mr. Moshofsky. The Board finds that such additional information is unnecessary, as the record contains Department of Forestry/Department of Revenue information on the 1990 harvest which occurred on the subject property. That document does not indicate that the harvesting was carried out by any of the companies with which Mr. Moshofsky was affiliated. The Board reasonably concludes that the subject tax lot (#300) and contiguous property (tax lot #1300) was not part of a larger forest operation during the period of 1978-1983.

4. All income from operations of C&M Livestock Company must be included in the calculations for the agriculture income test.

Mr. Minty has testified that C&M Livestock Company owned no property contiguous to, adjacent to or nearby the subject property. Mr. Moshofsky testified that he requested that the cattle be grazed on the property to create a presence on the property in his absence and that the consideration for the grazing was primarily in the form of the presence and maintenance of fencing and never in an amount exceeding \$1000 in a particular year. It is found that Mr. Moshofsky, the owner of the property during the five-year period preceeding January 1, 1983, did not manage the property for or as a farm operation beyond the intermittent grazing of a limited number of cattle and that that farm operation did not produce \$20,000 or more in annual gross income. Therefore, it is found that the intermittent grazing of a limited number of cattle on the subject property should be reasonably considered as not contributing significantly to the agricultural economy of the area or state and that the subject property was not managed as part of a farm operation that produced more than \$20,000 in annual income during the subject period.

5. The applicant has not established that the subject parcel is not capable of producing 85 cu.ft./ac./yr. of merchantable timber.

Goal One Coalition argues two points within this argument. First it argues that the applicant's consulting forester has not applied a sanctioned methodology for determining forest productivity.

Mr. Setchko used information generated by Lane County and the Oregon State Forester's office consistent with LCDC regulations for providing such ratings. Mr. Setchko calculated the forest productivity capability of the subject property using the same sources of ratings that were used in the Carver application (the subject of *Just v. Lane County* referred to hereinabove). Those

<sup>&</sup>lt;sup>2</sup> See OAR 660-006-0005(2)

misused information from various internet publications to conclude that Ponderosa Pine, Hybrid Poplar and KMX have a much higher productivity potential on Western Oregon soils than is accurate and than can be scientifically verified. His conclusions in his Ponderosa Pine analyses mirror his earlier opinions, provided as evidence herein, that all other potentially merchantable tree species would either not grow on the soils of the subject property or would not produce a volume in cubic feet that would equal the growth rate of Douglas-fir.

Forest soil productivity data can be found in several sources:

- Soil Survey of Lane County Area, Oregon;
- Office of State Forester Memorandum (Exhibit 24);
- Lane County Soil Ratings for Forestry and Agriculture [LCOG] (Exhibit 23).

The Soil Survey contains productivity ratings for soil map units in Lane County, but does not provide forest productivity ratings for soils considered primarily farm soils or composite ratings for soil complex units. The State Forester memo provides ratings for those soils based upon a field review of soil map units in Lane County by State Forestry staff. The Soil Ratings document provides ratings for the soil complexes using a weighted average methodology for the complextype soil map units. Of the three sources, the Soil Survey is considered the primary source of soils data for Lane County. The State Forester's ratings for the soils not rated in the Soil Survey is considered the second best source of forest productivity ratings since it was based upon field inspections of sites in Lane County and was produced by the Oregon Department of Forestry. The Soil Ratings document using a weighted average methodology for complex soil map units is considered the next credible forest productivity ratings data for those soil map units.

The Goal One Coalition submittal argues that the Goal 4 provisions found in OAR 660-006-0010 and 660-006-0005 govern the methodology to be used in the assignment of forest productivity ratings for the subject application. However, nothing in the statutory provisions identify these rules as requirements that apply to a Marginal Lands determination or prevent Lane County from determining forest productivity ratings from any credible source. The administrative rules may be useful to use as guidelines when making a determination regarding the appropriate ratings to assign a particular soil map unit, but they are not necessarily governing. LUBA made a footnote to this effect in the *Carver* decision (footnote 11).

The opponents maintain that these two soil map units have a higher productivity rating for Ponderosa Pine. The Ponderosa Pine productivity ratings assigned to the soil map units that opponents argue should be used instead are apparently taken from a document titled: "Establishing and Managing Ponderosa Pine in the Willamette Valley," Oregon State University Extension Service, EM 8805, May 2003." Mr. Setchko testified that a complete reading of that document reveals that it repeatedly states that its data is from a very small sample and should not be used at this time until more long term data can be collected. Goal One Coaltion has not produced any evidence that refutes Mr. Setchko's analysis or conclusions regarding this matter.

#### Ponderosa Pine

The following observations are instructive on this issue:

### "ISSUE 4: What price date should be used to calculate gross annual income for forest lands?

#### Board's Direction:

The legislative intent of the "management and income test" of the Marginal Lands Law was to identify those lands which were not, at the time the Marginal Lands law was enacted (1983), making a "significant contribution" to commercial forestry. Therefore, it is appropriate and statistically valid to use the following methodology:

- 1. Based on the best information available regarding soils, topography, etc., determine the optimal level of timber production for the tract assuming reasonable management.
- 2. Assume that the stand was, in 1983, fully mature and ready for harvest.
- 3. Using the volumes calculated in step (1), and 1983 prices, calculate the average gross income over the growth cycle." (Emphasis added)

The Board's direction to use 1983 prices was an essential and reasonable approach to determining the productivity of forest lands at that time and obviates the need to make annual adjustments for inflation as the years go by (by adjusting the \$10,000 income figure).

Mr. Setchko's use of 1983 prices to determine average annual gross income is consistent with Lane County policy and is directed by the Board of Commissioners' binding local level policy statement in the aforementioned supplement. Using 1983 prices, Mr. Setchko has determined that the subject property was not capable of being managed for forest operations producing at least \$10,000 in annual gross income. Opponents have provided no evidence that contradicts or refutes Mr. Setchko's conclusions.

The Oregon Land Use Board of Appeals affirmed Lane County's policy of utilizing 1983 log prices in the forest income test analysis. In *Just v. Lane County*, LUBA No. 2005-029, dated June 8, 2005, LUBA affirmed the use of 1983 log prices in another Marginal Lands case and stated:

"Although ORS 197.247(1)(a) does not expressly mandate that counties use 1983 timber prices in applying the gross income test, we agree with the county and intervenor that it implicitly does so. The purpose of the forest operation test is to identify lands that are not capable of meeting the specified \$10,000 threshold averaged over the growth cycle. Both the "farm operation" and "forest operation" prongs of the test are specifically linked to January 1, 1983."

Productivity Analysis" that were provided to the record in support of the application. Mr. Setchko's experience and expertise provides the conclusion that many of the species, especially KMX and hybrid poplar, have no established market and are, therefore, not merchantable. His overall conclusion is that if the proposed marginal land is not capable of producing an average of \$10,000 in annual gross income from Douglas-fir, then there are no other merchantable tree species that could produce any more than the calculated figures that he has provided in his analysis for Douglas-fir. Goal One Coalition has not provided any evidence that contradicts or conflicts with the findings and conclusion of the Setchko reports. It is found that the applicant, through the evidence provided by Mr. Setchko's reports, has demonstrated that the subject property is not capable of producing more than 85 cu.ft./ac./yr. of merchantable timber.

#### ORS 197.247(1)(b)(C):

The applicant has demonstrated, through use of the 1987 SCS Soil Survey of Lane County Area, Oregon, (1987 Soil Survey) that the subject property contains predominately classes V-VIII in the Agricultural Capability Class Classification System in use by the United States Department of Agriculture Conservation Service on October 15, 1983. The applicant has further demonstrated, with the inclusion of the Lane County Agricultural Lands Working Paper of the Lane Rural Comprehensive Plan ("Working Paper") published in November 1981, and its 1983 Addendum, the cover page and forward of the 1987 Soil Survey and the forward of the 1987 Soil Survey currently posted on the NRCS web site, that the soil map units and soil classifications contained in the 1987 Soil Survey were the classifications of the SCS system in use on October 15, 1983.

It further found that, in addition to the findings contained in the previous sub-paragraph 5. findings regarding Goal One Coalition arguments, that the applicant has adequately demonstrated, through the evidence provided by Marc Setchko, that the subject property is not capable of producing more than 85 cubic feet per acre per year in merchantable timber.

### Conclusion: The subject property qualifies under ORS 197.247(1) as marginal land because:

- (a) it was not managed during three of the five calendar years preceding January 1, 1983, as part of a farm operation that produced \$20,000 or more in annual gross income;
- (b) it was not managed as a part of a forest operation during that same time period which was capable of producing an average, over the growth cycle, of \$10,000 in annual gross income;
- (c) it is composed predominantly of soils in agricultural capability classes V through VIII, and
- (d) it is not capable of producing 85 cubic feet of merchantable timber per acre per year.

#### (2) GOAL TWO: LAND USE PLANNING.

#### (a) Policy 25: Changes to Plan Diagram.

This application for amendment of the Plan Diagram designations for the subject property has been evaluated through the county's plan amendment procedure and approval of this application is based upon fulfillment of the criteria of Lane Code 16.400 which is addressed in Section 4 of these findings.

#### (3) GOAL THREE: AGRICULTURAL LANDS.

There has previously been a legislative determination by Lane County, as embodied in the acknowledged Lane County Rural Comprehensive Plan, that the subject property is not agricultural land and is not High Value Farmland. Nonetheless, consideration of agricultural use of the subject property and application of all relevant criteria regarding agricultural considerations has been adequately provided in the application and during the evidentiary hearings.

#### (4) GOAL FOUR: FOREST LANDS.

#### (a) Policy 1: Conservation of forest lands.

The primary policy of both the comprehensive plan and statewide planning goals regarding forest lands is the conservation of those lands for multiple forest uses. Approval of this application is consistent with and supports Policy 1 of Goal Four of the Comprehensive Plan.

#### 4.6 Lane Code 16.400(6)(h)(iii)(dd)

For Minor Amendments as defined in LC 16.400(8)(a) below, the Plan amendment or component is compatible with the existing structure of the Rural Comprehensive Plan, and is consistent with the unamended portions or elements of the Plan.

As discussed in previous sections, this plan amendment is consistent with and satisfies the criteria that are referenced and adopted by specific policies in the RCP. Those policies are RCP Goal 3, Agricultural Lands, Policy 14 and RCP Goal 4, Forest Lands, Policy 3 which specifically allow certain, qualified, resource lands to be designated and zoned as marginal lands. Approval of this amendment is consistent with the RCP policies for farm (Goal 3) and forest (Goal 4) lands.

The Board interpretation recognizes this consistency. It states under "ISSUE 1":

"Marginal land is intended to be a sub-set of resource land, i.e., there are 'prime; resource lands and 'marginal' resource lands. The marginal lands are to be available for occupancy and use as small tracts than are required in the better resource lands. The criteria in the law define which lands may be designated as marginal. Evidence for this position is found in the legislative history and the fact

- 5) By its location near the Metro Plan UGB, it will provide for the orderly and efficient transition from rural to urban lands and the efficient provision of public facilities and services;
- 6) By virtue of regulations discussed above, it will protect the quality of the land, air and water of the county and will protect life and property in areas subject to flooding.

This zone change is consistent with the purposes of the Marginal Lands Zoning District because it provides an alternative to more restrictive farm and forest zoning and it will allow any of the uses permitted in the Marginal Lands zoning district and thereby provide opportunities for persons to live in a rural environment and to conduct part-time farm or forest operations. It is being applied to property in accordance with Lane Code Chapter 16 criteria and procedures, RCP plan policies and criteria in ORS 197.247 (1991 ed.).

#### **CONCLUSION**

This application has addressed the applicable criteria, shown consistency with that criteria, has demonstrated good public policy through the public and private benefits accruing from its proposals.

Based on the substantial evidence presented above and included in the record of this decision, the Board of County Commissioners finds and concludes that the subject application for plan amendment and zone change meets and satisfies all of the relevant criteria and hereby is granted approval.