

Paul Blikstad

From: Carol Macbeth <carol@centraloregonlandwatch.org>
Sent: Monday, November 23, 2015 9:45 AM
To: Paul Blikstad; Peter Gutowsky
Subject: COLW Comments Aceti
Attachments: Attachment 1- Increased Global Demand for Hay Exports from Western States.pdf; Attachment 2 USDA Weekly Hay Report Nov. 20, 2015.pdf; Attachment 3 Capital Press, No Place to Graze.pdf; Attachment 4 DLCD Guide Resource Land Capability Challenges.pdf; Attachment 5 NRCS Upper Deschutes Hydrologic Unit.pdf; Figure 1 Aceti.png; Figure 2 Aceti.png; Figure 3 Aceti.png; Figure 4.png; Figure 5 Aceti.png; Figure 6.png; Figure 7.png; Figure 8 Class III.png; Figure 9 Class VI.png; Figure 10 swaths of soil types.png; Figure 11 lateral.png; Figure 12 ZONING.png; Figure 13.png; Figure 14.png; Final Comments Colw.doc

Hello Paul and Peter,

Attached please find our comments on the Aceti application. We will print these out hard copy for submission by 5 PM today.

Best regards,

Carol Macbeth
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November 23, 2015

Deschutes County Board of Commissioners
117 NW Lafayette Avenue
Bend, OR 97701

Delivered by hand

RE: *File Nos. 247-14-00045-ZC; 247-14-000457-PA*

Dear Deschutes County Board of Commissioners,

On behalf of Central Oregon LandWatch thank you for the opportunity to comment on the above-referenced application for a plan amendment, zone change and goal exception for a 21.59 irrigated hay farm with 19.71 acres of water rights. The subject property has been used by successive generations of farmers since 1905, including the applicant, to produce grass hay and other irrigated crops. We respectfully urge you to deny the application for the reasons outlined below.

Background

Throughout 1996 and 1997 the Bend Bulletin reported on Deschutes County's ongoing challenge to rebuild the deadly intersection at Deschutes Junction. By the end of 1996, the design for the new intersection was approved, the funding was in place, and negotiations with most surrounding landowners were concluded. According to the Bulletin, "the only thing standing in the way of the \$3.9 million project"¹ in late 1996 was a hay farmer, who demanded extensive mitigation from Deschutes County and the state of Oregon to permit the continued integrated use of his farm to grow irrigated crops, specifically grass hay. Negotiations with the hay farmer continued for weeks, then months. The hay farmer would not settle with the county until the Board of Commissioners agreed to ensure that even after a new highway access road crossed his hay farm, the hay farmer's irrigated cropland would continue to function as an integrated whole.²

The hay farm had been in use for irrigated agriculture since approximately 1905.³ The hay farm was irrigated with a single wheel line, but after the property was bisected, the property would need another wheel line or a hand line, according to the hay farmer who, along with his family, had been irrigating the property since the 1950's.⁴ See Figures 1 and 2, a recent aerial

¹ Michelle L. Klampe, Bend Bulletin, Nov. 14, 1996.

² Deschutes County CU-96-45, Deschutes Market Interchange, Letter from Sharon Smith, Bryan, Lovlien, & Jarvis, on behalf of Applicants Deschutes County Public Works Department. July 31, 1996, and associated materials.

³ Deschutes County 247-14-00045-ZC; 247-14-000457-PA, Decision of the Deschutes County Hearings Officer, July 14, 2015 (HO Decision), 14-16.

⁴ Deschutes County CU-96-45, Deschutes Market Interchange, Deschutes County Public Hearing, July 16, 1996, Gary Barrett testimony (hay farmer whose farm originally encompassed the subject property and surrounding lands and whose family irrigated the subject property for irrigated cropland for four decades beginning in the 1950's, a party to the 1997 Deschutes County Settlement Agreement); See *Id.*

photograph of the hay farm, 2009, showing the new road, and a 1995 aerial photograph of the hay farm just prior to the new road.

The hay farmer's demands to the Deschutes County Board of Commissioners included mitigation for the cost of revising the irrigation system and multiple other costly elements, as explained in contemporaneous Deschutes County records,⁵ including:

- 1) relocate the entrance to the hay farm;
- 2) construct a new turn lane at the new entrance to the hay farm sufficient to accommodate 90-foot hay trucks;
- 3) place a multi-stranded barbed wire fence across the property fronting Tumalo Road and Deschutes Market Road;
- 4) install metal gates at three different locations;
- 5) build a box culvert 16-foot high by 16-foot wide, consisting of a concrete floor slab, walls, ceiling, and wing walls at no cost to the hay farmer, to allow farm equipment, irrigation lines, livestock, and hay trucks passage under the road from the north section to the south section; See Figure 3, box culvert under the road on the subject property; See Figure 4, an aerial photograph showing tracks in the hay stubble on the north and south sections of the subject property, showing where hay trucks have moved through the box culvert and created a track;
- 6) provide a utility pipe for electrical and telephone connections under the new road;
- 7) provide a culvert pipe under the existing Tumalo Road and under the relocated road at no cost to the hay farmer to accommodate extension of water lines and related utilities and revise the then-existing irrigation system to defray the costs of "tapping into the existing water line and running said line in the culvert to the hay farm's northern boundary." See Figure 5 showing irrigation wheel lines at the northern boundary of the subject property.

The hay farmer demanded these mitigation elements not only to mitigate for changes to operation of the hay farm as irrigated cropland, but also to mitigate for speculative harm for speculative future use of the subject property for livestock grazing.⁶

After months of negotiations the county agreed to pay over \$110,000 in mitigation investments⁷ to ensure the hay farm could continue to function as an integrated unit even after a

⁵ Deschutes County CU-96-45. Deschutes Market Interchange, Settlement Agreement, May 14, 1997, signed by the Chairwoman of the Deschutes County Board of Commissioners Nancy Pope Schlangen and Anthony J. Aceti and Gary Barrett.

⁶ *Id.*

⁷ In today's dollars, i.e. \$75,000 in 1997. Michelle L. Klampe, Bend Bulletin, May 6, 1997, "Deschutes Junction Settled, Finally," "The agreement is expected to cost the county an estimated \$75,000 in additional costs." That equates to over \$110,000 in 2015 dollars.



highway access road separated the northern end of the hay farm from the southern end of the hay farm.

It wasn't easy for Deschutes County to come to terms with the hay farmer. As the Bend Bulletin reported:

"Overpass Waits as Farmer Digs In:"

"[The hay farmer], who has won several concessions from the county in the land-use process, now wants additional compensation in the site-acquisition processThe county and the state fear that the agencies will, in effect, pay ...twice for one set of damages if they agree to his latest terms."

Michelle L. Klampe, Bend Bulletin April 22, 1997.

In an April 30, 1997 letter to the Deschutes Board of Commissioners, the farmer wrote:⁸
"I am a farmer. I make my living growing and selling hay. You understand it is my duty to protect my property rights."

General Comments

The hay farmer described above is the applicant, Anthony J. Aceti. See Figure 6, a photograph of the applicant from the Bend Bulletin in 1996, showing the applicant sitting on bales of grass hay.⁹ The hay farm described above is the subject property, a 21.59 acre farm in Deschutes County's EFU zone. See Figures 1 and 7, recent aerial photographs of the subject hay farm.

Except for the bisection of the property by the new road, the circumstances on and around the subject property remained unchanged, as can be seen by comparing Figure 1, a recent aerial photograph, with Figure 2, a 1995 aerial photograph. There is no visible change in road networks, surrounding land uses, or any other feature. There is no evidence that anything about the land itself, including its soils, have changed: it remains the same land used by successive generations of farmers beginning in 1905 for irrigated agriculture.

As Figures 1 and 2 show, the surrounding lands are indistinguishable now from what they were in 1995 with the sole exception of the new road. The new road was already in place when a Deschutes County Hearings Officer for MC-02-12¹⁰ found that the soils on both parts of the subject property were in agricultural production for hay.

The Hearings Officer in 2002 correctly found evidence of the shallowness of the soils in the northern portion of the property irrelevant to whether the land was suitable for production of irrigated crops. The 2002 Hearings Officer quoted an earlier 1997 Hearings Officer decision on the same matter. Both the 1997 and 2002 decisions concluded there was nothing in the record to indicate the southern and northern portions could not both be irrigated and maintained in hay production. The 2002 HO decision quoted the 1997 decision as follows:¹¹

"The record indicates this area is level, clear of trees, currently is irrigated, and is in hay production. The applicant argues this area is not suitable for farming because it has shallow, rocky soil. However, there is nothing in the record to indicate the soils in this area are different from those on the rest of the property on which hay is being produced. The applicant also argues he would not be able to irrigate this area because of its

⁸ Deschutes County CU-96-45, Deschutes Market Interchange records

⁹ Bend Bulletin, Nov. 14, 1996.

¹⁰ Deschutes County MC-02-12, Decision of Deschutes County Hearings Officer, October 29, 2002.

¹¹ *Id.*

separation from the southern part of the site due to the planned interchange alignment. The Hearings Officer disagrees. Unlike the storage/display area proposed for the northeastern western portion of the site, which is located in a relatively small space between the second hay barn and the planned interchange right-of-way, making its irrigation very difficult, the proposed storage/display area adjacent to Highway 97 is in a much larger, open portion of the site. There is nothing in the record to indicate this area could not be irrigated and maintained in hay production. "

The 2002 Hearings Officer noted that the applicant's 2002 soils consultant dug a number of soil pits to analyze the soils, just as the applicant's current soils consultant did; both consultants concluded that the soils on the irrigated land to the north are shallower and less productive than those to the south currently in irrigated hay production. Nevertheless the 2002 Hearings Officer found the soils report data unpersuasive:

"While the soils on the northern irrigated area are less deep and productive than the soils on the southern irrigated area, nevertheless they are in hay production. Therefore, I cannot find the northern irrigated area is the least suitable for the production of farm crops and livestock."

As we explain in detail below, the subject farm is unchanged from 1997 and 2002 with respect to suitability for farm or agricultural use. We urge the Board to find, as the County's hearings officers did in both 1997 and 2002, that the entire property, connected as it is through the expensive box culvert, is agricultural land suitable for continued use as it has historically been used, for irrigated hay production.

The subject property is suitable for farm use based on the seven factors of OAR 660-033-0020: soil fertility; suitability for grazing; climatic conditions; existing and future availability of water for farm irrigation purposes; existing land use patterns; technological and energy inputs required; and accepted farming practices. Therefore the application should be denied. Our specific comments are below.

Specific Comments

Agricultural land

The applicant is requesting approval of a plan amendment and zone change for the subject property on the basis that it does not constitute "agricultural land" requiring protection under Goal 3. As the Oregon Supreme Court has explained, ORS 215.243 provides in part that open land used for agricultural use is an efficient means of conserving natural resources that constitute an important physical, social, aesthetic and economic asset to all of the people of this state. The preservation of a maximum amount of the limited supply of agricultural land is necessary to the conservation of the state's economic resources and the preservation of such land in large blocks is necessary in maintaining the agricultural economy of the state and for the assurance of adequate, healthful and nutritious food for the people of this state and nation. Expansion of urban development into rural areas is a matter of public concern. Exclusive farm use zoning as provided by law, substantially limits alternatives to the use of rural land. *Wetherell v. Douglas County*, 342 Or 666, 676 (2007); *Smith v. Clackamas County*, 313 Or 519, 522 (1992).



The standards and procedures for identifying and inventorying agricultural land are found in OAR Chapter 660, Division 33.¹² The purpose of OAR 660-033-0010 is to preserve and maintain agricultural lands as defined by Goal 3 for farm use, and to implement ORS 215.203 through 215.327 and 215.438 through 215.459 and 215.700 through 215.799.

Goal 3 defines "agricultural land" in relevant part as follows:

"Agricultural land - * * * in eastern Oregon is land of predominantly Class I, II, III, IV, V and VI soils as identified in the Soil Capability Classification System of the United States Soil Conservation Service, and other lands which are suitable for farm use taking into consideration soil fertility, suitability for grazing, climatic conditions, existing and future availability of water for farm irrigation purposes, existing land-use patterns, technological and energy inputs required, or accepted farming practices. Lands in other classes which are necessary to permit farm practices to be undertaken on adjacent or nearby lands, shall be included as agricultural land in any event."

More detailed soil data to define agricultural land may be utilized by local governments if such data permit achievement of this goal.

Soil fertility

Under the above definition, which is mirrored in the Goal 3 administrative rules (OAR 660-033-0020), "agricultural land" consists of:

- Land that is predominantly Class I-VI soils in Eastern Oregon unless a goal exception is merited;
- Land that is predominantly Class VII and VIII soils and that is "suitable for farm use" considering the factors set forth in OAR 660-033-0020(1)(a)(B);
- Land that is necessary to permit farm practices on adjacent or nearby agricultural lands; and
- Class VII and Class VIII land that is adjacent to or intermingled with Class I-VI land within a farm unit.

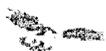
The most recent NRCS soils data indicate the subject property is 100% Class III when irrigated and 100% Class VI when not irrigated. See Figures 8 and 9. Because the applicant has water rights for 19.71 acres, the relevant question here is whether the subject property is generally unsuitable for farm use or production of farm crops and livestock with the irrigation rights, that is, with irrigation, which renders the soils Class III. As LUBA explained in *Peterson v. Crook County*, 49 Or. LUBA 223 (2005),

"If it is feasible to transfer irrigation rights back to the property, the county must consider whether the property is generally unsuitable for the production of farm crops and livestock with those irrigation rights."

As LUBA similarly explained in *Doob v. Josephine County*, 31 Or. LUBA 275 (1996),

"Given that the SCS soil survey rates soils on the site as Class III when irrigated, the county must consider the potential for achieving Class III soils on the parcel. This requires the county to, at a minimum, consider in its evaluation of the soils, the feasibility of providing irrigation to the parcel."

¹² Deschutes County MC-02-12, Decision of Deschutes County Hearings Officer, October 29, 2002.



As a threshold matter the applicant's soils report cannot challenge the NRCS soil capability classifications on the subject property because the soils report did not establish that NRCS data for the site are inaccurate. The soils report states that NRCS data are not as detailed as the applicant's report, however there is no argument or evidence that the NRCS data are inaccurate. See Attachment 4: DLCD Guide to Resource Land Capability Challenges, June, 2012.

According to DLCD, NRCS soil capability may only be challenged when NRCS data are determined to be inaccurate. The applicant has not met this burden. There is no evidence that the NRCS classification of the soils as Class III when irrigated is inaccurate. To the contrary, the NRCS classification accords precisely with the weight of evidence in the record that the subject soils were used for irrigated cropland from 1905 till 2002.

Simply because the applicant may have collected more samples than NRCS does not mean applicant's results are more accurate. The NRCS could obtain the same results with fewer samples where, as here, the relevant soil types are spread out over wide swaths of land. See Figure 10 showing the soil types on the surrounding lands.

The applicant's soils report determined that the land is composed of 80% Class VII and Class VIII soils.¹³ This is surprising. As the attached NRCS Upper Deschutes 8-Digit Hydrologic Unit Profile explains, 0% of the 60,000 irrigated acres of farmland in Deschutes County are in NRCS capability Class VII or Class VIII. Attachment 5.

In fact, 0% of Deschutes County irrigated farmland soils are NRCS capability Class I, Class II, Class V, Class VII, or Class VIII. In short, the sole capability classifications on irrigated farmland in Deschutes County are Classes III, IV, and VI.

There is no question that the subject property is "irrigated:" the applicant holds 19.71 acres of water rights from Swalley Irrigation district. The applicant's refusal to irrigate his lands is irrelevant to a legal determination that the subject property is irrigated. It is difficult to understand how even a First Order soil study could find a soil classification that, according to the NRCS, is not present on even a single square foot of Deschutes County irrigated land.

According to documents in the applicant's burden of proof,¹⁴ the soils on the subject property are of volcanic origin¹⁵ and prior to 1960 the area was highly modified from natural conditions:

"Prior to 1960 this area was highly modified from natural conditions. Shallow soil and rock outcroppings in the higher landscape position were removed and leveled and moderately deep soils were used as fill and overburden for rocky areas. This activity resulted in concave depressions now having shallow and moderately deep soils and convex areas having shallow and very shallow soils with some rock outcrops. The area was then smoothed, planted to grass [hay] and sprinkler irrigated with a wheel-line system."¹⁶

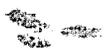
These variable depth areas are visible in Figure 2, an aerial photograph from 1995. They appear as light areas in a field of irrigated grass hay, the entirety of which has been irrigated and cropped for grass hay and other forage since approximately 1905. Whatever effect these shallow

¹³ HO Decision, 10.

¹⁴ Agricultural Soils Capability Assessment for Anthony Aceti, 21235 Tumalo Place, Bend, Or., 2, May 8, 2012.

¹⁵ *Id.*

¹⁶ *Id.*



or rock areas had, they did not prevent the property from being used by a successive line of hay farmers from 1905 up to and including the applicant.

The County should find that this is "agricultural land" whether as NRCS states it is Class III, irrigated, or just "land that is predominantly Class VII and VIII soils and that is "suitable for farm use" considering the factors set forth in OAR 660-033-0020(1)(a)(B).

Whatever the capability class of the soils on the subject property, since 1905 farmers have invested in watering, seeding and irrigating the land and have harvested hay or other agricultural crops. As discussed above, according to the record for Deschutes County CU-96-45, in 1996 the applicant put substantial funds into rehabilitation of the subject property in order to obtain a higher quality forage. The applicant knew about the irrigated farming history of the property from his neighbor and predecessor farmer, whose family had irrigated the property since the 1950's:

"In fact this year both our properties, which is G.B. Ranch which is contiguous to this and Mr. Aceti, just got done putting substantial funds into rehabilitation *sic* the property so that we could put in a higher quality forage... We have irrigated that property since the early 50's, my family and then me as I have grown up..."¹⁷

To summarize, the applicant's determination that the soils on the subject property are 80% Class VII and Class VIII on this irrigated cropland is surprising and appears to be incorrect given that this is irrigated cropland and has been since approximately 1905, and that according to the NRCS there is 0% Class VII and 0% Class VIII soils on irrigated cropland in the entire county.

If the soils report is correct then the soils report proves that Class VII and Class VIII soils in Deschutes County are agricultural soils capable of growing irrigated hay. It does not show that the subject property is nonresource land. Therefore the application should be denied.

Suitability for grazing

Farm use is not limited to irrigated use. Nothing about the subject property indicates that it could not be used for livestock grazing, dry pasture, boarding and training of horses, or any of the dozens of other farm uses currently practiced in Deschutes County. By definition Class VII soils are suitable for grazing, an agricultural use.

In 1997 the applicant demanded, and obtained, a costly box culvert under the new road for the express purpose of ensuring future use of the subject property for livestock production would be possible even after the new road was built.¹⁸ The applicant, and Deschutes County, must have been sure of the suitability of the subject property for livestock grazing after the new road was built or the County would not have agreed to the expensive mitigation elements to support that use.¹⁹

Existing and future availability of water

The applicant's 19.71 acres of water rights are from Swalley Irrigation District.²⁰ Swalley Irrigation District delivers water to the applicant today via the Deschutes Lateral, just as it did in

¹⁷ Deschutes County CU-96-45, Deschutes Market Interchange, Deschutes County Public Hearing, July 16, 1996, Gary Barrett testimony.

¹⁸ Deschutes County CU-96-45. Deschutes Market Interchange, Settlement Agreement, May 14, 1997, signed by the Chairwoman of the Deschutes County Board of Commissioners Nancy Pope Schlangen and Anthony J. Aceti and Gary Barrett.

¹⁹ See *supra* n. 5 and accompanying text.

²⁰ HO decision, 13; HO Decision, 15, Letter from Swalley Irrigation District: "[W]hen you wish to use your water it will be delivered from Gate #0040 on the Swalley Deschutes Lateral."



1996-1997 when the applicant described himself as a hay farmer and was using the land for production of grass hay during his extended negotiations with the Deschutes County Board of Commissioners. See Figure 11 showing the Deschutes Lateral runs within feet of the southern boundary of the subject property.

The applicant must have had an easement from the Deschutes Lateral during the 1996-1997 negotiations, when Gary Barrett stated that he and the applicant had made extensive improvements in the property for the express purpose of producing quality forage.²¹ Gary Barrett, along with the applicant, signed the Settlement Agreement with the Deschutes County Board of Commissioners.²² Because the applicant clearly had an easement for such water delivery in 1996 and 1997 when the entire property was irrigated from the Deschutes Lateral, such an easement is possible. According to the Hearings Officer's decision in the present case, a 1996 aerial in the record shows the property was irrigated in 1996.²³ According to a 1997 Hearings Officer decision quoted in the 2002 HO Decision, in 1997 the north and south portions of the property were currently irrigated and in hay production.²⁴ Therefore the applicant must have had an easement for irrigation since the time the applicant acquired the property in 1995.

Despite extensive information in the record considering applicant's difficulties in obtaining water for irrigation, there is no evidence that the applicant cannot use water on both portions from the Deschutes Lateral. The Deschutes Lateral, from the beginning of the last century to the present day, provides water to within several feet of the southern edge of the subject property and has been used by every farmer on the land from 1905 up to and including the applicant to irrigate the subject hay farm. HO, 13-14. See Figure 11, an NRCS aerial photograph, which clearly shows the Deschutes Lateral in blue to the southwest of the subject property. See also Figures 1 and 7 which also clearly show the vegetation along the Deschutes Lateral and the proximity of the lateral to the subject hay farm. According to Swalley Irrigation District staff (oral communication) it is commonplace for farmers to enter into private agreements to share ditches off the end of lateral canals.

Gary Barrett was the owner of G. B. Ranch, a 120-acre ranch that encompassed the subject property until he sold it to Mr. Aceti in 1995. Gary Barrett and his family irrigated the subject property and harvested grass hay on the property and surrounding lands for at least four decades beginning in the 1950's. In 1996 Gary Barrett explained that the new road would require irrigation to be accomplished with a combination of wheel lines and a hand line:

"I represent three families that are farm agriculture. We have properties that are contiguous to Mr. Aceti's property, so we're down in this quadrant here. Last year we owned Tax Lot 201. Mr. Aceti purchased that from us. The understanding was and is that it is agriculturally zoned property. There are a number of problems that we see with changing that property. One problem that we can see right away.... First of all, you're changing 201 into a diamond shape on one end and then where the hay barn is currently, you are changing it into a triangle. Right now, Mr. Aceti has about a quarter mile of irrigation wheel line which is a one-man operation, You start the motor and move the wheel line down and you got your property covered over a period of time. ... "

²¹ See *supra* note 16.

²² *Id.*

²³ HO Decision, 15

²⁴ See *supra* n. 10 and accompanying text



"[T]his year both our properties, which is G.B. Ranch which is contiguous to this and Mr. Aceti, just got done putting substantial funds into rehabilitation sic the property so that we could put in a higher quality forage..."

"We have irrigated that property since the early '50's. my family and then me as I have grown up..."

"It is a flat piece of property fairly rock free and tree free."

"The issue that we addressed last hearing was the fact that we felt more comfortable with a direction ([or the interchange] more towards Redmond. There were three proposal on the table at that point...if you go towards Redmond and the area there, you now have more rocky terrain and less agriculturally used. It was my understanding that there were already - in inventory from the State or County that could have been utilized for that purpose [i.e. for the interchange.] We now have to be the parties that have the highway over pristine agricultural property, to suffer with for the rest of our lives."

"[In order to irrigate after the road goes in] You would have to go to a hand line situation. You get more labor intensive. You may have to hire another person to help you do it. Because, with a wheel line you basically start the motor roll it over 4 times, hook back up your hoses and you are back in business. It lowers the cost. Of course in agriculture you are trying to lower your cost of operation."

Deschutes County CU-96-45, Deschutes Market Interchange, Deschutes County Public Hearing, July 16, 1996, Gary Barrett testimony.

The above testimony of Gary Barrett directly contradicts the applicant's testimony as quoted in the Hearings Officer's decision in this case. The applicant stated that he couldn't get irrigation water to the site, and even if he could, the new road made any hand line sprinkler system layout impractical.²⁵ The farmer who irrigated the land before him and two Deschutes Hearings officers disagree. The 1997 Hearings Officer, a 2002 Hearings Officer, and Gary Barrett, whose family irrigated this land for decades and who knew exactly the size, area, and shape of the resulting parcels after the new road went in, all stated that continued irrigation after the road is possible.

Gary Barrett was intimately familiar with the irrigation needs of the subject property and uniquely qualified to discuss the impact of the new road and the means for irrigating the subject hay farm once the new road went in. As Gary Barrett explained in detail, the new road would necessitate going to a hand line at greater expense. There is no practical reason the applicant cannot proceed as Gary Barrett described using the utility lines and box culvert built for that express purpose.²⁶ The applicant's signature on the 1997 settlement agreement is substantial evidence that the applicant accepted the mitigation elements as compensation to account for the increased costs of irrigation such as using a hand line.

²⁵ HO Decision, 16.

²⁶ See *supra*, n. 4 and accompanying text.



Farm units: lands in capability classes other than I-VI that is adjacent to or intermingled with lands in Capability Classes I-VI within a farm unit shall be inventoried as agricultural lands even though this land may not be cropped or grazed

The subject property was formerly part of a single farm unit: the 160-acre Low homestead, and later the 120-acre Barrett Ranch. See figures 1, 7, and 12. Based on evidence in the record the original Barrett Ranch was comprised of 120 acres of land including the subject parcel and the parcel to the west and southwest. These lands remain zoned EFU today. Where, as here, a parcel of non-Class I-VI soils has been managed as part of a farm unit for almost a century, then historical joint management is relevant to determining whether the property remains part of a farm unit. As the Court of Appeals explained in *Riggs v. Douglas County*, 167 Ore. App. 1, 7 (2000), if this were not so:

"No matter how long a parcel of non-Class I-IV soils had been managed with adjacent lands as part of a farm unit, it could simply be sold to a developer, and once that developer had ceased joint farm management operations, the parcel would be free of the OAR 660-033-0020(1)(b) requirement to protect 'intermingled lands' that are part of a farm unit, and the developer could claim it was non-agricultural land."

Here, the property, if it does have Class VII and VIII soils, should be considered as intermingled lands of the larger Barrett or G.B. Ranch, necessary for farm practices on the whole farm unit, and therefore agricultural land.

Profitability

In a recent agricultural land case²⁷ the County Board of Commissioners found that farming in Deschutes County may not necessarily garner a large profit margin. The commissioners quoted from the county's comprehensive plan, including the following excerpt p. 9. Sec. 2.2, Agricultural Lands:

"Farm lands contribute to the County in a number of ways. Agriculture is part of the ongoing local economy. Wide-open farm lands offer a secondary benefit by providing scenic open spaces that help attract tourist dollars. Farm lands also contribute to the local character that is often mentioned as important to residents. Finally, it should be noted that agricultural lands are preserved through State policy and land use law because it is difficult to predict what agricultural opportunities might arise, and once fragmented, the opportunity to farm may be lost."

Here, except for a conclusory statement about the amount of land required to support a family with a hay crop - evidence that is unrelated to any relevant legal standard - there is no evidence in the Hearings Officer's decision that the returns for hay or livestock grazing, both possible uses of the subject property, have changed for the worse. There is extensive evidence to the contrary.

A recent report from the U.C. Cooperative Extension Service describes the increasing global demand for alfalfa and other forage from western states.²⁸ The following are excerpts from the attached report:

"Hay has historically been grown a short distance from the animals it feeds. But hay is increasingly moving overseas. The advent of inexpensive containerized shipping,

²⁷ Deschutes County PA-13-1, ZC-13-1, Decision of the Board of County Commissioners, July 9, 2014.

²⁸ Daniel H. Putnam, William Matthews, Daniel A. Sumner, Alfalfa and Forage News, U.C. Cooperative Extension Service, November 1, 2013. Attachment 1.



technology for compression of hay and growing world demand has changed the equation, at least for the Western United States. Currently, the equivalent of over 12% of the alfalfa and over 30% of grassy hays produced in the seven western states are exported."

"Dramatic Increase over 5 Years: Overall volume of U.S. hay exports have increased by over 60 percent since 2007. This increase is largely due to growth in two markets: United Arab Emirates and China."

"Exports are even more important for grass hays. Over 30% of western grass hay production is shipped overseas. While grassy hays (e.g. timothy, Sudan grass, orchard grass, Klein grass) are nearly half of the exports from Western states, they are less than ¼ of the production in this region."

"While exports are not a dominant component of hay demand nationally, it is increasingly important in the West. The rapid increase in hay export importance reflects globalization of diets, and globalization of our food system generally. These data illustrate the historical progression of alfalfa and other hay from being grown and fed on-farm, to being traded locally, to long-distance transport, and then to a crop traded internationally."

"[T]he confluence of:

- 1) generally high quality of Western-grown US hay;
- 2) technology for hay handling that reduces cost of shipping;
- 3) efficient and inexpensive modes of ocean shipping;
- 4) demand for high quality milk and meat products in new markets; and
- 5) scarcity of land or water in many regions, provides a set of circumstances that likely to further increase the importance of Western US hay exports in the future."

Note that a factor contributing to the high international demand for hay is the scarcity of land in many regions. Just as the Board observed in an agricultural land decision last year, Oregon's policy of protecting its agricultural land base is designed to meet unpredicted shifts in agricultural demand, for example when land previously not considered high value becomes high value.

Locally, the price for Deschutes County hay or alfalfa ranges from \$230/ton for good alfalfa to \$270/ton for premium orchard grass. See Attachment 2, USDA Hay Prices for Deschutes County, Nov. 20, 2015. The applicant has 19.71, or approximately 20 acres of water rights from Swalley Irrigation District. If the applicant reasonably managed the subject farm to obtain the average Deschutes County yield of 4-5 tons of hay per acre, then the property could produce (20 acres)*(5 tons/acre)=100 tons. Given that each ton, according to the USDA, is worth a weighted average of approximately \$255, that would yield the applicant (100 tons)*(\$255/ton)=\$25,500 dollars.

Livestock grazing is the single most economically important agricultural use in Deschutes County. According to a recent story in the Capital Press, cattle prices are at an all time high while the supply of private pasture land is at an all time low. Attachment 3, John O'Connell, "No Place to Graze," Capital Press, May 22, 2014.



The Capital Press reports that private pasture is "extremely costly and hard to find" and that because "cattle prices are at record highs," western ranchers would "like to expand their herds, but pasture is in short supply and exceedingly expensive." The story features a Dufur rancher who leases private pasture on Deschutes River Ranch.

While profitability is one factor in reviewing agricultural land determinations, it is not the only or the most important factor. The other factors listed above also determine whether the subject property is agricultural land. Here, a profit in money can be obtained from harvesting grass hay, which according to the evidence in the record has been harvested by every farmer on the land since 1905, up to and including the applicant. If irrigation were not feasible, which it is, the land could still be used for private pasture or other farm uses. It is unclear why successive generations of farmers since 1905 would invest in transferring water from the Deschutes River to the subject property, sowing hay seed, fertilizing the soil, and cutting the hay year after year, if there were no financial profit to be obtained by doing so.

Changed circumstances

The applicant himself has used the subject property for growing grass hay, up until at least 2002, according to Deschutes County Hearings Officer Decisions in 1997 and 2002.²⁹ There is no evidence in the record of any changes in the subject land to alter its suitability for agricultural use. There is no evidence to support the Hearings Officer's statement that the overpass resulted in an "adverse change in soil." Circumstances relevant to farming have not changed on the subject property at all. It is incorrect to say that circumstances have changed since this farm was used in its entirety for irrigated cropland except for the addition of a road bisecting the property, the effects of which have been fully mitigated.

It is incorrect that the new road "resulted in a lack of irrigation water." There is no evidence the applicant could not use the culverts beneath the new road and a combination of wheel lines and hand lines to irrigate the subject property and there is no indication the applicant tried to incorporate this approach.

The Hearings Officer's Decision is factually inaccurate in its description of allegedly changed circumstances. The attached aerial photographs demonstrate that the landscape surrounding the hay farm is visually identical in 2009, Figure 1, and 1995, Figure 2. For example the presence of the school to the west is listed as a "changed circumstance" but the 1995 aerial photograph shows the Seventh Day Adventist School was already present when the county's road bisected the property. For example commercial, or industrial, or wholesale, or retail businesses do not "surround" the property on its northern or eastern side- the eastern boundary was and is Highway 97; the northern boundary was and is rural residential lands: such lands were and are wholly compatible with farming use on the property.

The circumstances are manifestly unchanged since 1996 when the Deschutes County Public Works Department described the southwest quadrant of Deschutes Junction including the subject property as follows:³⁰

"The southwest quadrant of the intersection is zoned EFU-Exclusive farm use, *and is composed of level, irrigated farm land.* There is a very large hay storage structure on tax lot 201, and several other smaller irrigated acreages with dwellings beyond...

²⁹ Deschutes County MC-02-12, Decision of Deschutes County Hearings Officer, October 29, 2002.

³⁰ Deschutes County CU-96-45. Deschutes Market Interchange, Deschutes County Public Works Department Burden of Proof, 1996.



All alternatives will require the acquisition of some EFU land. The proposed alternative has the least amount of EFU land. It also takes the least amount of MUA 10 land, which although not resource land, in many cases is utilized for farming in the community. The proposed alternative does transect the EFU lands West and South of the Intersection. However, access will be provided to both pieces of Tax Lot 201, which will be separated by the elevated Interchange. *The current utilization of such property is for a grass hay operation. The property will still be able to be utilized for that purpose after the construction is complete.*" (Emphasis added)

In 1996-1997, the Deschutes County Public Works Department Staff and the County Board of Commissioners recognized the subject property as level, irrigated farmland used for production of grass hay. Deschutes County was so sure the subject property was irrigated, productive farmland that the commissioners invested over \$110,000 of taxpayer money³¹ in mitigation elements to ensure that irrigated farm use could continue on the EFU-zoned subject property into the future after the new road crossed the hay farm.

Specifically, the County invested over \$110,000 of taxpayer money to ensure that after an elevated road crossed the subject property, the property could continue to function as an integrated irrigated farm unit, by providing multiple mitigation elements including, again:

- 1) a large box culvert, illustrated in Figure 3, that permits the movement of farm equipment, irrigation lines, hay trucks, and livestock between the southern and northern parts of the irrigated hay farm;
- 2) a culvert pipe under the existing Tumalo Road and under the relocated road at no cost to the hay farmer to accommodate extension of water lines and related utilities and revise the then-existing irrigation system to defray the costs of "tapping into the existing water line and running said line in the culvert to the hay farm's northern boundary." See Figure 5 showing irrigation wheel lines at the northern boundary of the subject property.

The surrounding land in all directions was zoned EFU in 1997 and is zoned EFU now as shown clearly in Figure 12. The sole exception is a fraction of Rural Commercial lands to the NE and MUA 10 lands across the northern edge.

As the Deschutes County Public Works Department explained in 1997, in many cases the MUA 10 lands to the north, even though they are not resource lands, are still used for farming:

"The proposed alternative has the least amount of EFU land. It also takes the least amount of MUA 10 land, which although not resource land, in many cases is utilized for farming in the community."

By comparing area zoning in Figure 12 and recent aerial photographs in Figures 1 and 7 it can be seen that many lands zoned MUA 10 near the subject property are in irrigated agriculture.

The bases for the Hearings Officer's decision that the subject property is not agricultural land are devoid of legal merit. The Hearings Officer found:

"The property is unsuitable for farm use considering, among other things, difficulties associated with irrigating the subject property,...the surrounding road network, impacts of nearby heavy traffic and transportation, impacts on the subject property of the expansion

³¹ In 2015 dollars, *see supra* NOTE XXX.



of Highway 97, the bisection of the property with the construction of Tumalo Road, surrounding commercial and industrial uses, the lack of surrounding farm uses, and the relatively small size of the parcel..."

These factors do not provide a legal basis for finding the land is not resource land. First, there is or should be no difficulty associated with irrigating the subject property according to the applicant himself, whose signature on the 1997 settlement agreement with Deschutes County indicated his acceptance of mitigation, \$110,000 worth of improvements in today's dollars. The improvements the applicant accepted included the 16x16 foot concrete box culvert to connect the northern and southern half of the property, shown in Figure 3, and compensation to revise the irrigation system "tapping into the existing water line and running said line in the culvert to the northern boundary of the Aceti property." If after the applicant received these costly mitigation elements in 1997 the applicant did not in fact revise the irrigation system to run the water line to the northern boundary of the Aceti property, it is not because such irrigation is not possible but because the applicant did not choose to apply irrigation.

Second, comparison of Figures 1 and 2 show except for the bisecting road that has been fully mitigated there is no visible change to the surrounding road network, the impacts of nearby heavy traffic and transportation or expansion of Highway 97 since 1995. According to the HO Decision itself, Highway 97 was expanded in 1991, but the applicant did not acquire the subject property until 1995. HO Decision 13,14. The expansion of Highway 97 could not constitute a "changed circumstance" since the time in 1996-1997 that according to the evidence in the record for Deschutes County CU-96-45 the applicant was a hay farmer actively engaged in farming or leasing the entirety of the subject parcel from north to south for farm use. See Figure 2 which shows the entire parcel was an irrigated hay field in 1995; see generally Deschutes County CU-96-45. Moreover working farmland across Oregon is visibly unaffected by proximity to larger highways than Highway 97. The Willamette Valley is the most productive agricultural land in the state and I-5 runs up the center of the valley. Working vineyards, orchards, cropland, pastures, nurseries, and tree farms can be seen growing within a few feet of the six-lane interstate highway.

Third, as shown in Figures 1, 7 and 12 there are no surrounding industrial or commercial uses except the few acres or less that are zoned Rural Commercial to the NE. There is no evidence that this Rural Commercial land prevents the applicant's farm use. In the absence of such evidence the mere existence of that Rural Commercial use, or of rural residential use, is not relevant to whether the subject property is resource land.

As LUBA explained in *1000 Friends v. Clackamas County*, if a county fails to address how small parcel ownerships would affect a particular area the conclusion that because properties were held in small ownership the use of the subject property as either agricultural or forest land was somehow prevented is unsupported.³² Even if the subject property were completely surrounded by such use that would not support a conclusion that the subject property is committed to nonresource use. *Id.* (the fact that a county designation of a 454-acre parcel as forest would result in an irregularly shaped forest area almost completely surrounded by developed rural areas, does not support a conclusion that the parcel is committed to nonresource use.)

³² *1000 Friends v. Clackamas County*, 3 Or. LUBA 281 (1981).

Fourth, there is not a lack of surrounding farm use, as shown in the attached aerial photographs. On the contrary the vast majority of the lands to the west of the subject property³³ are in use for irrigated agriculture. As the record in CU-96-45 establishes, and as clearly shown in aerial photographs from both 1995 and the present, much of the EFU and MUA-10 lands near the subject property within the boundaries of the Swalley Irrigation district appear to be in active farm use for irrigated agriculture. But even if they were not, unless MUA-10 or the lack of active farm use on nearby EFU lands prevent the subject property's use as resource land, county designation of the lands as MUA-10 does not support a conclusion that the subject property is committed to nonresource use.

In 1995, 1996, and 1997, the applicant as the owner of the subject property applied irrigation water from the Deschutes Lateral to his hay farm to produce grass hay. Deschutes County CU-96-45. Having bought the land in 1995 the applicant clearly had an easement for the few feet between the end of the lateral and the subject property. See Figure 9, showing the end of the lateral canal no more than several dozen feet from the edge of the subject property. Since the applicant had such an easement or similar arrangement in 1995-1997, such an easement is physically possible. There is no evidence that the current owner of the intervening few dozen feet is unwilling to provide the applicant with an easement. The fact that the applicant did not purchase such an easement is irrelevant as long as such an easement is possible, as it obviously is.

Other than a volcano, Mount Mazama, which last erupted 6500 years ago, and the smoothing out of the property and irrigation by wheel lines for planting with grass hay, there is no evidence the soils on the subject property have ever changed at all, except to be improved by agricultural management.³⁴ There is no evidence that the soils have changed since the last time they were in productive farm use: this is substantial evidence supporting a finding the land is agricultural, and not unsuitable for livestock grazing or other farm uses.

As LUBA explained in *Adams v. Jackson County*:

"Where property has been used for grazing and growing of hay in the past and there is no evidence that anything about the land has changed to make it generally unsuitable for those purposes, there is substantial evidence to support a finding that the property is not generally unsuitable for the production of livestock." 20 Or LUBA 398 (1991).

Transportation Planning Rule

The Transportation Planning Rule is not met where as here the conditions of approval are not shown to satisfy OAR 660-012-0060(4).

Exceptions

³³ The farm use compatibility of lands to the north, west, and south of the subject property are not divided from the subject property by Highway 97 and thus could be available for use in conjunction with the subject property, moreover the subject property forms the eastern boundary of the Swalley Irrigation District as shown in attached aerial photographs.

³⁴ Agricultural Soils Capability Assessment for Anthony Aceti, 21235 Tumalo Place, Bend, Or., 2, May 8, 2012 (stating that sometime before 1960 the soils on the subject property were smoothed, planted to grass and sprinkler irrigated, changes which increased, not decreased, the soils capability on the property)



Ironically, during the protracted settlement agreements between the applicant and Deschutes County in 1996-1997 the applicant's counsel argued that the Deschutes Junction interchange should not be placed on the subject property, because Mr. Aceti's land is such good farmland, while other proposed locations are not as productive:³⁵

"The other legal issue that I want to address briefly has to do with the a *sic* EFU process here and the exceptions process. I belatedly checked the file. To my knowledge on the north side of Tumalo Road, that is MUA 10 on the east side of 97, north of Deschutes Market Road. I am not sure how much of that is EFU or MUA 10, all I know is that it is not productive land, in the same sense, as Mr. Aceti's is. It is a consequence when you are looking at the EFU exceptions process on its face, it seems to me that there is no question that there are other lands available, immediately available for the project that would not involve the disturbance of an active EFU property."

As the applicant's counsel stated, the subject property is productive farm land. The property does not qualify for either a reasons or irrevocably committed exception.

The Hearings Officer's decision errs in stating that the subject property is "virtually surrounded by existing industrial development." HO Decision, 76. Instead, the property is surrounded by rural land uses, almost exclusively EFU, in all directions. See zoning map

Nor is there substantial evidence to support the HO Officer's determination that "the subject property bears a greater relation to the existing industrial uses to the east...than to rural residential uses in the south and west." HO Decision, 73. A glance at Figures 1, 5, 7, 13, and 14 shows the subject property is simply a rural hay farm with a green barn and bears no resemblance to an industrial use. No irrevocably committed exception is available because as can be clearly seen from the attached aerial photographs of the subject property, the surrounding land uses remain as they have been for the decades, overwhelmingly agricultural and rural residential.

There are no characteristic of the surrounding network of roads, or traffic, or other factors that qualify the subject property for a committed exception. The hearings officer's reliance on the traffic on area roads is not in and of itself sufficient to conclude commitment exists. There is no showing that traffic on a roadway invariably will turn otherwise farm property into nonresource land.

The physical developments on and surrounding the subject property except to the northeast corner all occurred in accordance with Goal 3. None of the development is a sign that the land is irrevocably committed to nonresource use.

There is insufficient evidence to show that Deschutes County cannot meet its obligations under Goals 3-19 unless it takes the proposed exception. The application requires a fundamental shift in the County's comprehensive plan away from the Statewide Planning Goals. Exceptions are permitted deviations from state law and policy, and as LUBA said in *VinCep v. Yamhill County*, exceptions should be "exceptional": not granted lightly but only when facts and land use policy considerations justify them.³⁶ 55 Or LUBA 433, 449 (2007) (*citing Friends of Oregon v.*

³⁵ Deschutes County CU-96-45, Deschutes Market Interchange, Deschutes County Public Hearing, July 16, 1996, testimony of Paul Speck representing Anthony J. Aceti.

³⁶ OAR 660-004-0000(2) provides:

"An exception is a decision to exclude certain land from the requirements of one or more applicable statewide goals in accordance with the process specified in Goal 2, Part II, Exceptions. The documentation for an exception must be set forth in a local government's comprehensive

LCDC, 69 Or App 717, 731 (1984)). Here, the applicant's rationale for approval essentially argues that the statewide planning goals that protect farmland for farm uses and direct urban development to land inside urban growth boundaries should not apply because, in essence, there is a highway to the east and the land is at an intersection. These conditions were not sufficient to change the zoning on the subject property in the past and are not changed since then. The subject property is surrounded, except to the north, by EFU land, which stretches on both sides of the highway. This is not a sufficient basis for an exception to Goals 3 and 14. This does not constitute a need for the proposed use. Goal 3 was enacted to preserve resource land "from encroachment by urban and suburban sprawl by subordinating the free play of the marketplace to broader public policy objectives." Land is not excepted from a resource goal merely because somebody wants to place businesses on his farm land. See *Still v. Marion County*, 42 Or App 115, 122 (1979). The proposed businesses could be accommodated within the UGB. Many of the factors cited predate Goal 3 and cannot be used to justify the exception.

Most importantly, the property has been in farm use since 1905. Except for changes in average parcel size, which does not matter in itself, nothing on the surrounding lands or on the subject property has changed in any way to preclude resource use on the subject property. The Hearings Officer erred in finding otherwise. As LUBA explained in *1000 Friends v. Clackamas County*, 3 Or. LUBA 281 (1981):

"Existing parcel sizes and their ownership must be considered together in relation to the land's actual use. Rural lands in farm and forest use have been assembled and disassembled for years. ...*The mere fact that small parcels exist does not alone constitute a basis for commitment.*"

The Hearings Officer did not explain why small ownerships nearby "commit" land to nonresource use. The existence of homesites nearby does not necessarily indicate that the subject property is lost to resource management. It may be that residents on the small acreages keep livestock or do intensive, small scale farming and would not interfere with farm or forest management. *Id.*

The Hearings Officer erred in considering soil quality as relevant to the application of the irrevocable commitment test. HO Decision, 75-76. In general, the Hearings Officer's irrevocable commitment determination is unsupported because the facts in the record are directly at odds with the Hearings Officer's conclusions about adjacent uses, parcel size and ownership, public services, neighborhood and regional characteristics, natural boundaries, and other relevant factors. There are numerous factual inaccuracies regarding the nature of the surrounding lands and the subject property's characteristics.

The land is shown in both aerial photographs and photographs to be a piece of regular farm ground surrounded, except by the highway to the east, by other properties that could be in active farm use, or rural uses fully compatible with farm use. The subject property could be used for irrigated agriculture, for livestock grazing, or for any other of a number of other farm uses such as equine training and boarding. Therefore no exceptions are available.

plan. Such documentation must support a conclusion that the standards for an exception have been met. The conclusion shall be based on finding of fact supported by substantial evidence in the record of the local proceeding and by a statement of reasons which explain why the proposed use not allowed by the applicable goal should be provided for. The exceptions process is not to be used to indicate that a jurisdiction disagrees with a goal."



Conclusion

We urge you to deny the application for the reasons outlined above. Thank you for your attention to these views. Given the direct relevance of Deschutes County MC-02-12 and CU-96-45 to this proceeding, we request the county's records for those decisions, including negotiations for the 1997 settlement agreement, be made a part of the record for this application. Please consider this a formal request under ORS 197.615(2) for written notification of any decision in this matter.

Best regards,

Carol Macbeth
Central Oregon LandWatch



ML_GR313

Moses Lake, WA Fri Nov 20, 2015 USDA Market News

THIS REPORT WILL NOT BE ISSUED NEXT WEEK, NOVEMBER 27 DUE TO THE HOLIDAY

Oregon Weekly Hay Report

Tons: 573 Last Week: 3559 Last Year: 6137

Compared to November 13: Prices trended generally steady compared to week ago prices. The upcoming holidays have slowed sales. Many producers have decided to hold on to their hay for now, in hopes for higher prices. Snow has hit some of the hay producing areas. All prices are in dollars per ton and FOB unless otherwise stated.

Crook, Deschutes, Jefferson, Wasco Counties:

	Tons	Price Range	Wtd Avg	Comments
Alfalfa				
Small Square				
Premium	21	250.00-260.00	257.14	Retail/Stable
Good/Premium	19	240.00-240.00	240.00	Retail/Stable
Good	61	230.00-235.00	230.08	Retail/Stable
Orchard Grass				
Small Square				
Premium	193	250.00-270.00	255.54	Retail/Stable

Eastern Oregon:

	Tons	Price Range	Wtd Avg	Comments
Alfalfa				
Small Square				
Good	100	190.00-190.00	190.00	

Klamath Basin:

	Tons	Price Range	Wtd Avg	Comments
Alfalfa				
Large Square				
Premium	75	210.00-210.00	210.00	
Small Square				
Premium	50	220.00-220.00	220.00	Retail/Stable

Lake County:

	Tons	Price Range	Wtd Avg	Comments
Alfalfa				
Small Square				
Good	28	250.00-250.00	250.00	Organic
Alfalfa/Orchard Mix				
Small Square				
Premium	23	265.00-265.00	265.00	Organic
Good	3	240.00-240.00	240.00	Organic

Harney County: No New Sales Confirmed.

Alfalfa hay test guidelines, (for domestic livestock use and not more than 10% grass), used with visual appearance and intent of sale Quantitative factors are approximate and many factors can affect feeding value.

	ADF	NDF	RFV	TDN-100%	TDN-90%	CP-100%
Supreme	<27	<34	>185	>62	>55.9	>22
Premium	27-29	34-36	170-185	60.5-62	54.5-55.9	20-22
Good	29-32	36-40	150-170	58-60	52.5-54.5	18-20
Fair	32-35	40-44	130-150	56-58	50.5-52.5	16-18
Utility	>35	>44	<130	<56	<50.5	<16

ADF = Acid Detergent Fiber; NDF = Neutral Detergent Fiber;
 RFV = Relative Feed Value; TDN = Total Digestible nutrients.
 RFV calculated using the Wis/Minn formula. TDN calculated using the
 western formula. Values based on 100% dry matter, TDN both 90% and 100%.

Quantitative factors are approximate, and many factors can affect
 feeding value. Values based on 100 pct dry matter. End usage may
 influence hay price or value more than testing results.

Grass Hay guidelines

Quality	Crude Protein Percent
Premium	Over 13
Good	9-13
Fair	5-9
Utility	Under 5

Contracted price - Price and conditions of sale agreed upon when buyer
 and seller negotiate a transaction.

Source: USDA Market News Service, Portland, OR
 Niki Davila 503-326-2237
 Portland.LPGMN@ams.usda.gov
 www.ams.usda.gov/mnreports/ML_GR313.txt
 www.ams.usda.gov/lsmarketnews

Alfalfa & Forage News

News and information from UC Cooperative Extension about alfalfa and forage production.



HAY EXPORTS FROM WESTERN STATES HAVE INCREASED DRAMATICALLY



- Author: [Daniel H Putnam](#)
- Author: [William Matthews](#)
- Author: [Daniel A Sumner](#)

Published on: November 1, 2013

For those of you not yet convinced that we live in an increasingly international economy, button up your Dacca-made parka– globalization is bringing alfalfa and hay crops increasingly into the world of global trade.

If you don't know where Dacca is– look it up on your Shenzhen-made iPhone!

While many crops (corn, wheat, soybeans, almonds and citrus) have long been traded on the world market, forages have been historically fed within a few miles of the animals they nourished (Figure 1). After all, hay and silage are bulky commodities.



Figure 1. Hay has historically been grown a short distance from the animals it feeds.

But hay is increasingly moving overseas (Figure 2). The advent of inexpensive containerized shipping, technology for compression of hay and growing world demand has changed the equation, at least for the Western United States. Currently, the equivalent of over 12% of the alfalfa and over 30% of grassy hays produced in the seven western states are exported.

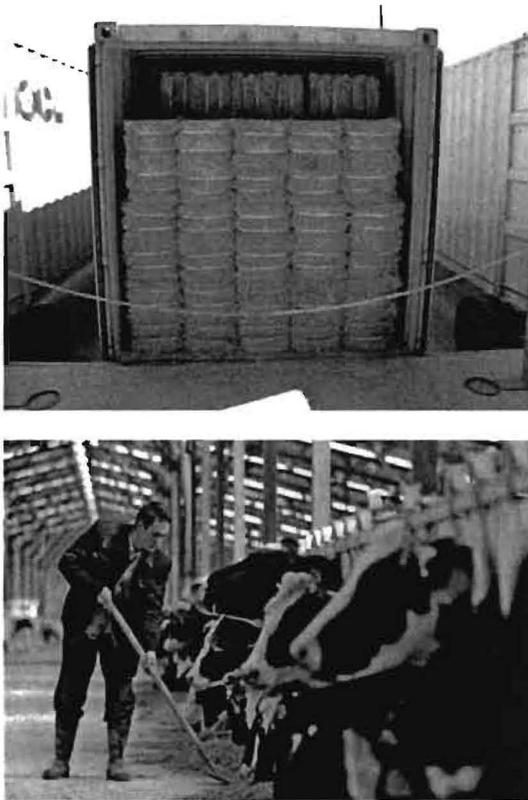


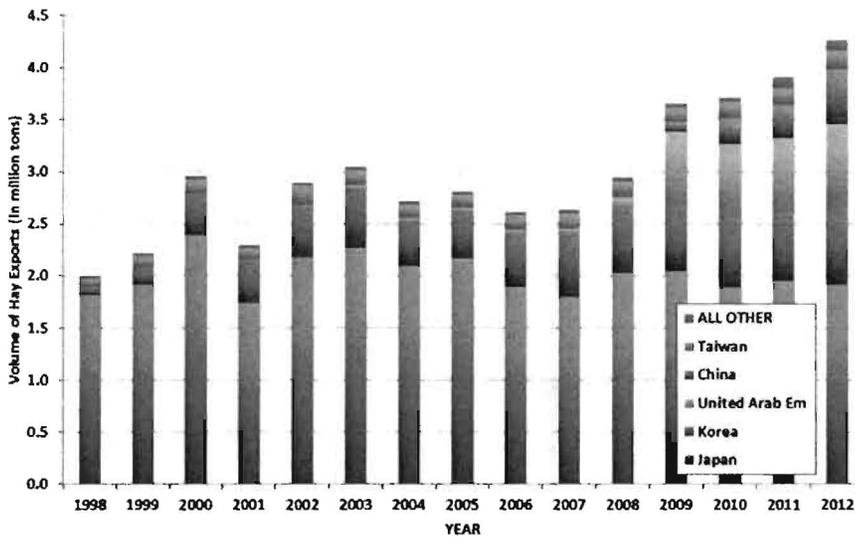
Figure 2. Containerized compressed alfalfa hay awaiting export from the US (top) and being fed to Chinese dairy cows (bottom). While Japan is the major recipient of US hay, China, Korea, and the UAE have become major importers in recent years.

How Much Hay is Now Exported?

In 2012, over 4 million Metric Tons (MT) of hay were shipped overseas, approximately double what it was in 1999 (Figure 3 – note, to convert MT to short tons, multiply by 1.102). For reference, the state of Nevada produced about 1.2 million MT and California 8.7 million MT in 2012.

Asia and Pacific Rim countries have been the primary destination for U.S. hay exports. Almost all (>99 percent) of US hay exports are shipped from Western ports, with Japan as the largest buyer. From 1998 to 2012, Japan purchased, on average, slightly less than 1.8 million MT annually including alfalfa, timothy, sudangrass and kleingrass (Figure 3).

**Volume of US All-Hay Exports from Western Ports¹
(1998-2012)**



¹ Western ports include all ports in California, Oregon and Washington. Data from US Dept. Commerce.

Figure 3. Volume of US Hay Exports from Western Ports by Top 5 Destination Countries, 1998-2012. Over 99% of all hay exports are from western ports. Western ports include all ports in California, Oregon and Washington. Source: US Dept. of Commerce.

Dramatic Increase over 5 Years. Overall volume of U.S. hay exports have increased by over 60 percent since 2007. This increase is largely due to growth in two markets: United Arab Emirates and China (Figure 3). UAE purchased just over 743,000 MT in 2012, a 20-fold increase from 2007, when it purchased just 37,000 MT of U.S. hay. China’s imports increased 200 times from 2,400 MT in 2007 to just over 485,000 MT in 2012 (all figures from US Dept. of Commerce).

In 2013, exports to these two countries have intensified. If early 2013 data continues apace, the totals may put just these two countries at over 1.7 million MT of combined imported US hay demand this year (Table 1). Alfalfa exports increased 14% and total hay exports about 7% between 2012 and 2013 (first six months), but exports to UAE and China increased 40-60% (Table 1).

Table 1. Comparison of 2012 and 2013 (First 6 Months Only) Alfalfa and All Hay Exports to Top Destination Countries from Western Ports¹

ALFALFA HAY						
	Value (\$ millions)		Percent Change	Volume (1,000 MT)		Percent Change
	2012	2013		2012	2013	
Japan	122	123	1.2	382	371	-2.9
UAE	71	97	36.5	275	406	47.6
China	54	91	67.7	202	296	46.5
Korea	25	33	25.7	96	103	7.3
Taiwan	12	13	5.1	56	45	-19.6
Total Exports	309	369	19.5	1,103	1,260	14.2

ALL HAY						
	Value (\$millions)		Percent Change	Volume (1,000 MT)		Percent Change
	2012	2013		2012	2013	
Japan	348	341	-2.2	1,031	965	-6.4
UAE	87	127	46.0	315	500	58.7
China	76	118	55.8	269	387	43.9
Korea	104	100	-3.1	344	302	-12.2
Taiwan	22	27	21.3	87	94	8.0
Total Exports	665	731	9.9	2,156	2,303	6.8

¹ Western ports include those in California, Oregon and Washington.

Share of US Production Exported. The share of US-produced alfalfa that is exported grew from 1.5% in 2007 to 4.5% in 2012 (Figure 4). The equivalent share of Western-grown alfalfa is much larger, at 12.5% in 2012, up from about 5% in 2007 (Figure 5). Although some hay may originate further east, the lion’s share of exported hay is thought to be from the Western U.S. states (Arizona, California, Idaho, Nevada, Oregon, Utah and Washington). In specific regions, particularly the Imperial Valley of California, and the Columbia basin of Washington-Oregon, the percentage of alfalfa and grassy hays exported may be over 50% of production.

Exports are even more important for grass hays. Over 30% of western grass hay production is shipped overseas (Figure 5). While grassy hays (e.g. timothy, sudangrass, orchardgrass, kleingrass) are nearly half of the exports from Western states, they are less than ¼ of the production in this region (Figure 6).

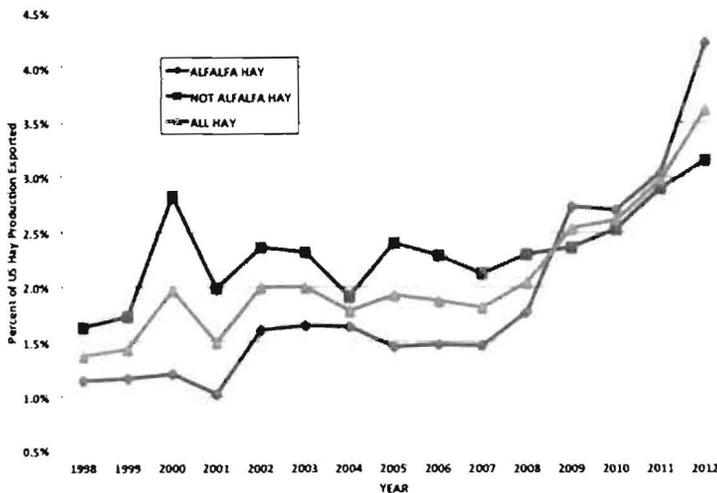


Figure 4. Share of US hay production exported, 1998-2012. Source: US Dept. of Commerce and USDA-NASS.

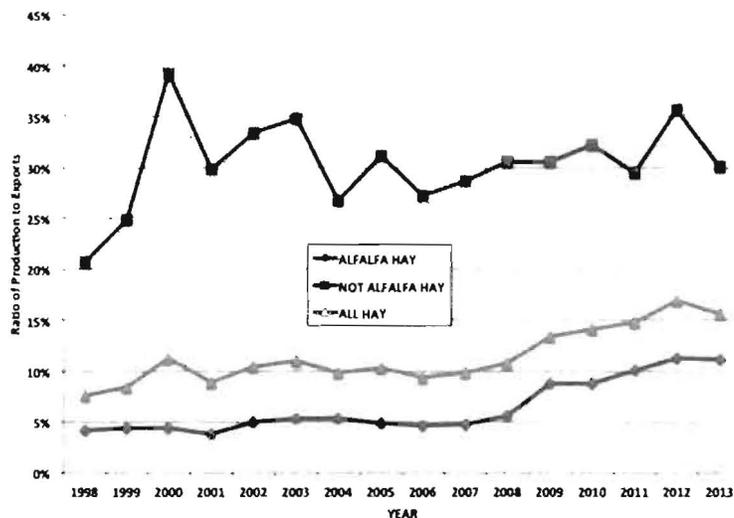


Figure 5. Ratio of Western Exports to Western Production shown as a Percentage. Source: US Dept. of Commerce and USDA-NASS.

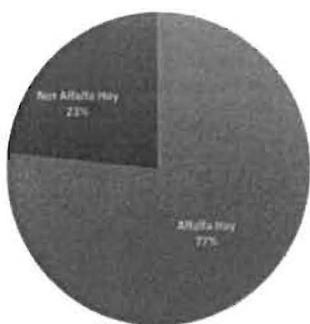


Figure 6. 2012 Hay Production by Type in U.S. Western States (top) and 2012 US Export of hay through western ports by type. Western US include the states Arizona, California, Idaho, Nevada, Oregon, Utah and Washington, and Western ports include all ports in California, Oregon and Washington.

What are the key drivers?

Demand is the Common Denominator. The UAE, China, and Korea all have increasing demands for milk products and feed for local herds. In the UAE, the high population of camels, horses, sheep, and goats is important, in addition to dairy and beef cattle, as demands for both milk and meat are increasing. Milk is also the key issue in China. Although China is not historically a milk-consuming culture, the per capita demand for milk products has been rising dramatically: from 4.2 kg in 1990 to 28 kg in 2012 (Figure 7). The Chinese government has encouraged more modern and larger dairy production units, to improve quality after a 2008 adulteration scandal. This has accompanied a significant rise in dairy cow numbers, up from about 2-5 million to 14 million today, according to government sources (Figure 6).

Water in the Mideast. The UAE government decided in 2008 to stop producing alfalfa hay in the kingdom, due to their increasingly scarce water resources. Given local herd dependence on forage, this created an immediate demand for imported hay. In that part of the world, pumped water largely originates from fossil sources, which will never be renewed in human history.

Knowledgeable sources expect a similar decision from the government of Saudi Arabia in the very near future. An abrupt decision to stop hay production in the kingdom would cause the rapid development of new hay markets much larger than that in the UAE, perhaps in the 3-4 million MT range. Parts of the world outside the western States (Mideast, North Africa, Europe, South America) may satisfy much of this demand. However, this illustrates the importance of water to the future of food production, and the resulting globalization of the feed supply.

China Dairy Growth. Water is also a major limiting factor in China. However, the increase in dairy demand, increased cow numbers in China, and limitations in arable land near the cities where dairy cows are located are major factors in the increased demand for high quality alfalfa imports.

The imbalance of trade with Asia means that the price of ocean shipping to Asia is cheaper than over-land transport costs within China, or even within the US. (This factor does not apply to shipments to the Mideast). Further, summer rains make hay production difficult in China (as it is in many parts of the eastern United States), and infrastructure for hay baling, handling and transport is limited. Long distance transport from alfalfa-producing areas to dairies is also an important cost factor domestically, since ocean shipping is cheaper than overland shipping.

Chinese Efforts to Improve Alfalfa. Although the Chinese government is embarking on a major program to improve domestic alfalfa production (more on that later), most experts believe that the domestic production will not satisfy domestic Chinese demand, at least for the next 5-15 years. Figure 6 highlights the 6-7 fold increase in milk demand and dairy cow numbers in just two decades (Figure 7).

A key factor to watch will be milk prices in China. While China imports significant dried milk products, government policies and consumers favor production of fresh milk products near population centers for quality reasons. Farm milk prices have lately been about double those received by California dairy farmers, making it economically feasible for Chinese dairies to purchase hay delivered to the dairy at prices between \$350 and \$500 per ton.

What are the implications here at home? This is a more complex question. Western hay farmers have been happy to see the new markets open up, because new demand translates into firmer prices. Western dairy farmers, who face many pressures, are certainly not overjoyed at having to compete with foreign buyers for a limited supply of hay. Some critics have questioned the export of 'water' in the form of hay (see Wall Street Journal 'Shipping water to China Bale by Bale' <http://online.wsj.com/news/articles/SB10000872396390444517304577653432417208116> – see also this BLOG <http://ucanr.edu/blogs/blogcore/postdetail.cfm?postnum=8825> for further discussion).

In many respects, hay crops are following (to a much more modest extent), the pathway of other crops (corn, soybeans, wheat, rice, citrus, and almonds), which have long been truly global commodities. Dairy exports themselves have also increased rapidly, so we may be exporting hay directly or hay in the form of milk powder or cheese. Dairy exports are now the #2 export commodity (by value) from California agriculture.

What about the Future of Hay Exports? While exports are not a dominant component of hay demand nationally, it is increasingly important in the West. The rapid increase in hay export importance reflects globalization of diets, and globalization of our food system generally. These data illustrate the historical progression of alfalfa and other hay from being grown and fed on-farm, to being traded locally, to long-distance transport, and then to a crop traded internationally. To some degree this is a logical extension of markets in the western US, where over 90% of the hay is marketed off the farm anyway. This is not true of the Midwest or East where most forage is fed on-farm.

Prognostication is a dangerous thing. However, the confluence of 1) generally high quality of Western-grown US hay, 2) technology for hay handling that reduces cost of shipping, 3) efficient and inexpensive modes of ocean shipping, 4) demand for high quality milk and meat products in new markets, and 5) scarcity of land or water in many regions, provides a set of circumstances that is likely to further increase the importance of Western US hay exports in the future.

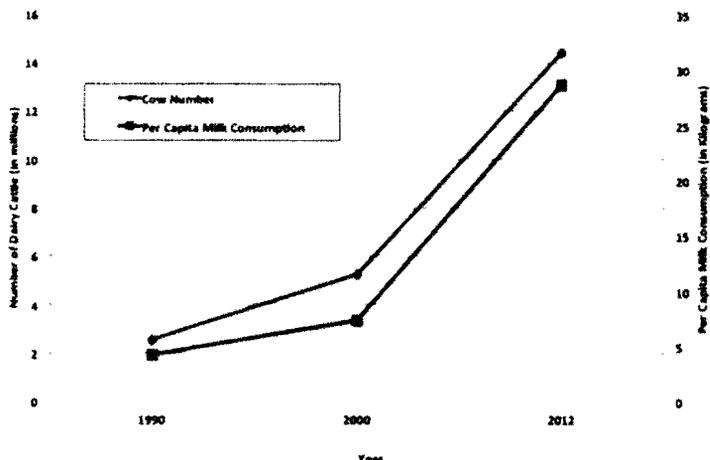


Figure 7. Change in Chinese milk consumption and cow numbers, 1990-2012. Source: Chinese Grassland Association. Note: data may differ depending upon source.

Comments: 34

Comments:

by Jose Porta

on January 2, 2014 at 1:23 PM

Dear Sir,

Do you have more information about the international hay market? Thank you very much. Best regards.

by [Daniel H Putnam](#)

on January 2, 2014 at 1:28 PM

Jose;

I'm not sure what type of information you're looking for. Where are you writing from?

Dan

by Vance Hodgson

on January 19, 2014 at 11:22 PM

Hi Dan,

I am a alfalfa grower in South Africa, getting 40 metric/tons /Ha under centre pivot and am looking to move production to Sudan as input costs here are making it very difficult to survive, especially electricity and diesel. Do you have any connections with buyers and producers in Sudan so that I can contact.

Excellent article, thank-you.

Sincerely

Vance Hodgson

Reply by [Daniel H Putnam](#)

on January 20, 2014 at 8:53 AM

Thanks for the comment, Vance.

Let's see, for our Yankee Metric challenged folks - that's about 17.8 tons/acre yield. Wow. Unless the DM% is wrong, in the US that would be considered stellar performance for hay. Average in AZ and CA is less than 9 tons/acre, best in the US, and maximum yields have been close to 17 tons, but not average. Unless your costs are extremely high, or value of the crop very low, not sure why this wouldn't make money.

I've met several people who are setting up hay production there in Sudan using Nile River water, to market hay to Saudi. A higher risk region to do business, though, I understand.

Dan

by Mustafa

on February 2, 2014 at 1:04 PM

hi Dan

iam form sudan and iam in the hay export industry . although it is risky still it has its differential advantages.

as vance said nice article.

vance ,

happy to help you with any information.

mustafa

by Sean

on February 12, 2014 at 9:43 AM

Hi Dan,

Do you know of any producers in Arizona or Southern California that export to overseas markets? Prices in the PNW are high and is accompanied by high transportation costs as well. It's obvious to me that I need to start sourcing from the PSW. I talk with a few brokers but am always looking for sources of hay to service my overseas customers. Do you know of anyone that would be interested in talking about having dealings in the PSW?

Reply by [Daniel H Putnam](#)

on February 14, 2014 at 9:24 AM

Sean;

There are lots of producers in Arizona and Southern California that currently export. We have at least a dozen presses in the SoCal area. You'll have to do some digging down there - the blog is probably not the place.

Cheers,

Dan

by Nathan

on February 20, 2014 at 10:36 AM

Hi, great article! Does anyone know if any hay from the United Kingdom is shipped over seas?

Nathan

Reply by [Daniel H Putnam](#)

on February 20, 2014 at 11:29 AM

Nathan;

Yes, some is shipped to Europe. There are emerging markets in the Middle East as well. Haymaking may be a challenge.

by Charles Oden

on March 5, 2014 at 2:00 PM

Hey Nathan,

Do you know of anyone exporting grasses from the southeast. We have quite a few farmers struggling to keep their hay businesses running since the margins are so slim. Wondering if exporting might be an option to assist possibly going through Jacksonville or Savannah.

by Chao Liu

on March 5, 2014 at 8:44 PM

Hi,

Thanks for the excellent article!

I have read your interview posted in China's website as well. And I am very interested in this industry now!

Is here any chance to communicate with you, Dan?

Best,

Chao

by Cody

on March 25, 2014 at 7:11 AM

Hello, I am a farmer in the Southern California area. We are looking to find contacts to directly export our hay, preferably over seas. Does anyone know how to go about finding these contacts, seems like many come from the Dubai area.

Thanks

by Sherralie Majeski

on March 31, 2014 at 4:57 PM

With California in drought, is there going to be any hay to ship?

Reply by [Daniel H Putnam](#)

on April 4, 2014 at 12:58 AM

Sherralie;

There will still be exports in spite of the drought, I would expect.

Dan

by rob

on April 1, 2014 at 2:07 PM

Hello Daniel i am an alfalfa grower from Chile and in my field we grow 23920 cubes(prismatic) of alfalfa per year and i want to know how can we enter in the international market of alfalfa, also how we can get the international prices because we don't want to get over the limit of the price of alfalfa with the cost of shipment in containers. we will be grateful if you can answer this, thanks.

Also a cube of alfalfa is like between (28 - 32) kg

by [Daniel H Putnam](#)

on April 4, 2014 at 1:14 AM

To my knowledge there are no independent sources of international prices for hay. So you can either work with a broker or another exporter or do market research on your own.

by Sergio Alvaado

on April 20, 2014 at 4:40 PM

Dear Dan:

What is the best way to find final users of hay in overseas markets?

Reply by [Daniel H Putnam](#)

on April 20, 2014 at 4:59 PM

Hi Sergio;

Those companies and individuals who are exporting hay have typically invested quite a bit of time and energy to find markets and understand their needs. So I think the best way to find the end-users is either to do the footwork yourself, or to work with an established company.

Meanwhile, US Exporters have an association which has 29 members, The US Forage Export Council: <http://www.usaforage.org/>

They serve the industry as a whole to assist buyers and sellers, but of course represents different companies who are competing for the same markets.

You may want to contact them.

Dan

by Nick Reynolds

on May 1, 2014 at 9:16 PM

Very well written article, both informative and easy to read.

Yes there is a substantial trade in Hay or Fodder into Asia, although not all fodder is the same. With the increase in demand there should be enough demand to go around, although the water issue in the US could limit their exports.

I am writing from Western Australia, where our exports are Oaten Hay, which is a good compliment to your alfalfa. While demand is stable in Japan, we expect to see demand increase substantially.

It certainly is an interesting market and one that will become more international over time. I look forward to your analysis in a year or two's time.

Reply by [Daniel H Putnam](#)

on May 3, 2014 at 11:21 AM

Nick;

Yes, the Australian oaten hay is a major factor for importing countries, and affects the demand for the sudangrass, timothy, and other grasses from the US. If you have a bad year, it's good for us, and visa versa. I'm not sure if it affects the demand for alfalfa as much.

Cheers,

Dan

by kk kwok

on May 21, 2014 at 5:19 AM

Dear Hay,

Some Chinese listed company said that importing alfalfa from US cost 200USD per tone but China grow alfalfa themselves cost 70 USD only. Any way can prove the above statement true or not?

Moreover, what is the profit margin of alfalfa?

Thanks a lot for the article, it is very useful.

by [Daniel H Putnam](#)

on May 21, 2014 at 11:21 AM

Hi KK Kwok;

My name isn't Hay (funny!). However, I'll give it a try.

I don't think your numbers are right. Domestic Chinese alfalfa hay of high quality will bring close to the imported price, I think, delivered. Domestic Chinese poor quality hay isn't worth very much to dairies. I'm not 100% sure but currently Chinese dairies are likely paying closer 300-450 or 500/ton for alfalfa. California price this year is 250-\$350/ton.

Profit margin will depend upon location grown and cost of production vs. price. There is no single margin. Price mostly follows market supply-demand rules, since there is no govt. subsidy.

Contact USFEC (US Forage Export Council) for their take on this issue, or Chinese or American companies in China.

Dan

by Dana Bartlett

on July 8, 2014 at 6:46 PM

I live in the US Virgin Islands where I have horses and donkeys. Im trying to find a consistent source of 110 lb bales of straight timothy. Thanks

by James

on October 23, 2014 at 1:15 AM

Professor Putnam,

Excellent information! Much appreciated your effort in leading the industry. Could you please elaborate on the general quality variances between the Chinese grown vs. California grown Alfalfa?

Go Aggies!

@coby, very interest to talk to you about your alfalfa!

James

by Riz Dinani

on March 25, 2015 at 4:40 PM

I have excess to 80,000 tons of Alfalfa hay directly from farmers on a yearly basis from Utah, Idaho and Nevada.

Looking at customers overseas.

Thank You

by Sam

on April 27, 2015 at 9:52 AM

Hello and great article for a newbi like me. I a looking for premium alfalfa to export overseas and looking for sources in the western US. I noticed on your blog that farmers listed availability but no contact information is listed.could you please help me contacting these farmers?

Thank you

Reply by [Daniel H Putnam](#)

on April 28, 2015 at 3:32 PM

It would be helpful to contact the USEFC (US Export Forage Council) who represent many of the major exporters. Additionally, contact the state hay associations (e.g. California Alfalfa & FOrage Association, Washington State Hay Associations, Idaho Hay Association).

Reply by [Daniel H Putnam](#)

on April 28, 2015 at 3:38 PM

It would be helpful to contact the USEFC (US Export Forage Council) who represent many of the major exporters. Additionally, contact the state hay associations (e.g. California Alfalfa & FOrage Association, Washington State Hay Associations, Idaho Hay Association).

by Jim

on May 26, 2015 at 5:36 AM

Great article!

Daniel, what is the best resource for getting up to date pricing both stateside and overseas?

Jim

by [Daniel H Putnam](#)

on June 10, 2015 at 11:46 AM

You could contact US Forage Export Council <http://www.usaforage.org/>

Also, Seth Hoyt's newsletter contains price information (The Hoyt Report)for export and domestically. That's a subscription service.

Public USDA-Market News information about hay prices can be seen at: <http://www.ams.usda.gov/AMSv1.0/ams.fetchTemplateData.do?template=TemplateN&leftNav=MarketNewsAndTransportationData&page=LMarketNewsPageHay>

by Abdul Samad Ghaznavi

on August 3, 2015 at 2:03 AM

I am from Oregon interested finding customers for Hey in Dubai....can any one help connect to the sources there. Thank you indeed for the lively and informative article... so useful. Thanks Dan, I also saw your correspondence, very much appreciate your knowledge of sector and you being responsive...

Reply by [Daniel H Putnam](#)

on August 3, 2015 at 7:21 AM

Abdul;

We don't allow fully commercial correspondence on this blog, Abdul.

However, you may want to contact the US Forage Export Council. They represent 29 export members, 80% of the exporters in the US. John Szezpanski has a lot of contacts, and may be able to guide you. Normally, it takes a lot of footwork to develop those markets.

See their website:

<http://www.usaforage.org/>

Cheers,

Dan

by Steve Haupt

on September 18, 2015 at 7:02 AM

Greetings Dan,

Where can we source current milk and hay prices in China?

Is dry milk production still going in Nevada?

Reply by [Daniel H Putnam](#)

on September 19, 2015 at 10:21 AM

Steve;

I actually don't know immediately how to access reliable information about milk prices in China. A big factor recently has been the strength of the US dollar, which puts a damper on exports - in spite of this exports to China have increased (for hay).

If I find out, I'll let you know.

Dan

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Capital Press

The West's **Ag** Website

No place to graze

By John O'Connell
Capital Press

Published:
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May 22, 2014 10:26AM



Photo submitted Mike Filbin, a Dufur, Ore., rancher, rides throughout the Deschutes River Ranch, which he now leases. He may soon lose his access, once the land is sold. Filbin is concerned about the loss of grazing opportunities in the West.

◀ 1 of 4 ▶

short supply and exceedingly expensive. At the same time, managers are reducing the number of cattle allowed on public land.

Guthrie estimates the cost of leasing private pasture has doubled during the past eight years. He attributes the higher prices and increased competition for private acres to lost grazing opportunities on public land. Thousands of acres of public lands have been temporarily closed to grazing to recover from a string of catastrophic wildfire seasons, and wildlife

Western ranchers say pressures on public-land grazing have made private pasture extremely costly and hard to find.

Jim Guthrie has given up on looking for private pasture land to lease for his cattle.

Last spring and summer, the McCammon, Idaho, rancher was unable to replace lost grazing leases and had to sell half of his livestock. He's now resigned to a smaller herd of 100 mother cows.

"I just don't have the appetite any more for scrounging for pasture," Guthrie said. "I figure I could just sell the extra hay and not have to fight finding pasture and probably be just as well off in the long run."

Ranchers throughout the West share Guthrie's frustration. Cattle prices are at record highs and they'd like to expand their herds, but pasture is in

and habitat concerns have spurred a continuous reduction in the amount of livestock allowed to graze on public land.

Demand for private pasture has also changed how Lava Hot Springs, Idaho, rancher Ken Andrus operates. Andrus, a Republican who chairs Idaho's House Agricultural Affairs Committee, sold some Caribou County grazing land last year to a cattle grazing association in dire need of private pasture.

"They just offered us too much money to refuse," Andrus said.

Andrus looked for replacement grazing land in Idaho, Montana and Nebraska but eventually settled on a ranch in Concho, Ariz., that two of his sons now run.

"I think (Arizona) is going to get more popular because it's such an opportunity for people like us who can't find grazing here," Andrus said.

Public grazing dwindles

The grazing occupancy of U.S. Forest Service lands in Southern Idaho, Western Wyoming, Utah and Nevada has been reduced to roughly 60 percent of 1980s densities, estimates Terry Padilla, the agency's range program coordinator for the Intermountain Region.

"On public lands, it's just gotten so hard to graze," said Padilla, likening grazing restrictions to protect water quality, wildlife and habitat to a regulatory "mine field."

He also believes strong hay prices because of high demand have also prompted private landowners to sell forage rather than run cattle.

Grazing density has also dropped during the past few decades on Washington and Oregon Forest Service allotments, said Tom Hilken, regional range program manager for the agency's Pacific Northwest Region.

He attributes public grazing reductions in his region to denser forests choking out forage in the understory, and to efforts to protect species that are listed as threatened and endangered under the Endangered Species Act.

His region has prioritized thinning forests and restoring vegetation to reduce wildfire fuel loads. More wood has also been made available to mills like those in John Day, Ore. As a secondary benefit of fuel reductions, Hilken anticipates increased carrying capacity for livestock on public lands.

Especially in sagebrush steppe ecosystems, he believes targeted grazing will play a role in controlling fuels and invasive annual plants. Hilken said the Forest Service started a small pilot project this spring within Oregon's Crooked River National Grassland, seeking to reduce cheatgrass loads with targeted grazing.

Increasing cattle, range prices

Though cattle prices reached record highs during the first four months of 2014, cow numbers are down in the West.

According to a Jan. 31 USDA report, Idaho started 2014 with 445,000 beef cows that had calved, compared with 510,000 at the same time in 2013. Washington's numbers dropped by 12,000 cows to 209,000 head, Oregon dropped by 11,000 cows to 516,000, and California, at 600,000 cows, lost 10,000 head.

University of Idaho Extension livestock specialist Wilson Gray attributes some of the decrease to Midwestern ranchers bringing back displaced cattle as their grazing lands have recovered from the recent drought.

But Gray said constraints on grazing have also limited herd expansions. He estimates summer pasture that would have rented seven years ago for \$12-\$15 per animal unit month — the amount of forage needed to support a 1,000-pound cow and her suckling calf for a month — is now fetching \$25-\$30.

Jack Field, executive vice president of the Washington Cattlemen's Association, said endangered species and competition with feed crops have made pasture hard to find in his state. Furthermore, he said the Washington Department of Fish and Wildlife has purchased private ranch land for wildlife habitat. Agency officials said they allow grazing on some of their lands.

California Cattlemen's Association government relations director Justin Oldfield said that in his state the combination of drought, wildfires, high cattle prices and the conversion of range to orchards and crop land in the Central Valley have created a "perfect storm" to limit pasture availability.

Competing demands on public land

In the 1960s, the U.S. Forest Service allowed 760 cow-calf pairs to graze the 35,000 acres of public land now permitted to Mike Filbin.

The Dufur, Ore., rancher said the agency has gradually whittled down the number of cow-calf pairs allowed since then — and asked him to build riparian fencing near streams. His combined grazing limit on the allotments was reduced to 100 pairs, and the Forest Service has proposed further reducing grazing occupancy to 50 pairs. The Forest Service also shortened the time allowed on the allotments from 4 months to 2 1/2 months, based largely on endangered species, wildlife and recreational concerns.

Because of all the restrictions he has stopped grazing on those allotments.

"They're concerned about the frogs. They're concerned about the fish. I think they're concerned about the mosquitoes," Filbin joked. "I think it's a movement to get everybody off of public lands and turn it into a national park or something."

After giving up on his public land, he moved cattle to private pasture, which is now for sale at a price he can't afford. The national Trust for Public Lands is seeking to buy the 10,000-acre Deschutes River Ranch to supplement a wildlife area. Jeremy Thompson, Oregon Department of Fish and Wildlife district wildlife biologist, said the department allows grazing in its wildlife areas and is working on a grazing management plan for the land.

Nonetheless, Filbin has come to associate public land with more restrictions. Rather than making good on increasing his herd by 100 head to bring his son into his operation, he worries that he may have to reduce it.

Doing more with less

First-generation rancher Keith Nantz started his operation in Maupin, Ore., six years ago. He raises forage crops and runs 100 cow-calf pairs.

"I'd love to continue growing our herd, but I can't find pasture. That's the biggest dilemma," Nantz said.

Earlier this year, he analyzed the economics of converting farm land to provide the more grazing land. Even with record cattle prices, the switch wouldn't pencil out on 400 acres of irrigated ground, but he intends to plant native grasses on 600 acres he's used for dryland wheat to supply new winter range.

In today's ranching environment, Nantz considers it a necessity to make the most of every acre, so he practices management-intensive grazing. Herds are moved daily, confined to small paddocks with portable electric fencing to more completely and uniformly utilize forage while giving individual acres more rest. Nantz believes the practice increases forage utilization by 25-60 percent and improves overall range health, giving native perennial plants a chance to compete with invasive annuals.

Proponents say the practice works.

Jim Gerrish, a management-intensive grazing consultant with American Grazinglands Services in May, Idaho, said most of his customers see a 20-40 percent increase in carrying capacity after implementing the practice, and a few have tripled their forage. Gerrish has noticed a surge in electric fencing sales this spring.

"If you do a cost-benefit analysis, it will always pay off," Gerrish said.

He considers management-intensive grazing to be a good option for producers facing "reduced AUMs because of a short-term drought or wildlife situation, or just an agency reducing AUMs on a permit."

Preston, Idaho, rancher Joe Daniel also advocates opening Conservation Reserve Program acres to more frequent grazing without penalties, convinced the change would provide forage while making CRP land less prone to wildfires.

"Every time we graze the CRP ground, especially in the fall after grass is seeded, you'll see the CRP almost double (in productivity)," Daniel said. "Everywhere I go, people have asked me, 'What am I going to do? I need this pasture.'"



Guide to Resource Land Capability Challenges

DLCD – June 2012

This Guide summarizes statutory and rule requirements that apply when more detailed soils data than that in the U.S. Natural Resources Conservation Service (NRCS) Internet soil survey are used to argue that land is not agricultural or forest land. Different requirements apply to challenges on agricultural land, forest land and high-value farmland, as described below. The Guide is intended for use by soils professionals, foresters and county planning staff. It answers common questions from the perspective of the Department of Land Conservation and Development, which has oversight over the implementation of applicable statute and rules, but is not intended to provide legal advice or to be a substitute for rulemaking.

1. Agricultural Land Capability Challenges

This is when more detailed soils data is used to challenge the accuracy of a property's NRCS land capability class assignment in determining whether it is agricultural land. This may be to support a rezoning proposal or nonfarm dwelling approval. A new process was adopted when the Legislature passed HB 3647 in 2010, which is codified at ORS 215.211 and implemented through rules at OAR 660-033-0030 and -0045. The new process and applicable forms are found here: [Oregon Department of Land Conservation and Development Agricultural Soils Capability Assessment](#). Soils professionals or applicants who have acquired professional soil services submit onsite soils assessments to DLCD, which reviews and forwards them to the counties for decisions.

2. Forest Land Capability Challenges

This is when data on forest land capability (cubic feet per acre per year) is unavailable or is challenged under OAR 660-006-0010(3). The Oregon Department of Forestry has prioritized alternative data sources that may be used in its updated Land Use Planning Notes and Attachment A tables, which may be found here: [Oregon Department of Forestry Forest Resources Planning](#). Professional foresters or applicants who have acquired professional forester services submit onsite capability assessments directly to counties for decisions.

3. High-Value Farmland Soils Challenges for Lot-Of-Record (LORs)

This is when high-value farm soils are challenged in the review of lot-of-record dwellings under ORS 215.705 and OAR 660-033-0030(7). Soils professionals or applicants who have acquired professional soil services submit these onsite soils assessments to the Oregon Department of Agriculture for its review and decision.

4. High-Value Farmland Soils Challenges for Other Uses

This is when high-value farm soils are challenged in an application for permitted uses under OAR 660-033-0030(8). This section requires soil classes and ratings on high-value farmland to be those of the NRCS Internet soil survey, meaning that they may not be challenged. However, high-value farm soils may be challenged to show that they are not agricultural land under option #1 above. Soils professionals or applicants who have acquired professional soil services submit these soils assessments directly to counties for decisions.

Soil Capability Challenges

Two of the above options for soil capability challenges (#s 1 and 2) are described in more detail in the attached Table 1, which compares the two different processes. Table 2 describes the specific circumstances under which all four options for soil capability challenges may or may not be used.

In developing this guide and tables, the Oregon NRCS State Soil Scientist and the Oregon Department of Forestry were consulted in March of 2012 and recommendations solicited. Those recommendations together with those of DLCD are reflected in the guide and tables.

Q & A

Q: What is the status of Natural Resources Conservation Service (NRCS) soil mapping in Oregon Counties?

A: The soils information via the Internet on Web Soil Survey (<http://websoilsurvey.nrcs.usda.gov>) is the official source of NRCS soil mapping, data and interpretations. It is NRCS policy that the soils information at this source be deemed the official soil survey information and NOT the maps and information in the hard copy (paper or CD) soil survey reports. However, soil survey information in the hard copy soil survey reports is still good reference information and, depending on the age of the survey, much of the information may still be appropriate. A majority of the changes to the maps have been to improve the "joins" along boundaries between the surveys. In addition to the changes to the maps, other changes may include new and updated data for soils in the survey and occasionally changes to land capability class assignments. Changes have also been made to standardize all forest productivity data to a uniform 50-year King curve for Douglas fir. Some older hard copy soil survey reports display Douglas fir productivity using a 100-year McArdle Curve, however, the Internet soil survey information now displays 50-year King Curve productivity. The NRCS continues to periodically update soil survey information as staff resources permit. This updated information is reposted to Web Soil Survey on the Internet, typically in September and October.

Q: When may soil capability be challenged?

A: Soil capability may be challenged when NRCS data are not available, when data of comparable quality to NRCS data are not available (forest lands only) and when NRCS or comparable data are determined to be inaccurate, as permitted by law. A soils challenge requires the services of either a soils professional or a professional forester, or sometimes both (in the case of a rezoning to a nonresource use based on nonresource land). NRCS soils mapping and associated data and interpretations are generally conducted at a scale of 1:24,000. Soils challenges must be conducted at a mapping scale finer than 1:24,000.

Q: Can it be argued that the line between two soil types is inaccurate?

A: Yes, if the scale of revised mapping is at a significantly more detailed scale than the NRCS mapping, which is typically 1:24,000. For instance, the new agricultural soils onsite investigation or assessment report requires revised mapping be at a scale of 1:5,000 or finer.

Q: Can inclusions of surface rock fragments and other significant differences in soil characteristics identified during onsite investigation or assessment of soil mapping be used to challenge the soil mapping and land capability class assignment?

A: Maybe. The NRCS recognizes the legitimacy of more intensive soil investigations, depending on the needs of the user. These investigations and subsequent interpretations must stand on their own merit. They are considered a more detailed level of mapping at a “finer” mapping scale. This does not change the NRCS mapping, data and interpretations, such as the land capability class assignment as contained in the official soil survey. This is because the interpretations of the NRCS mapping for any particular map unit encompass all polygons or areas of that particular map unit and are not based on one or more site specific areas. A more intensive investigation on forest land can, however, “supersede” the NRCS mapping, data and interpretations for a specific area, when a professional forester performs direct tree measurements to show that on-site forest capability is lower than the NRCS Internet soil survey shows. Where such a finding is made, counties should seek additional verification, such as from an examination of similar areas or polygons of the same map units. (See also answer to following question)

Q: Can site productivity data (crop yields or tree measurements) be used to challenge soils capability?

A: Maybe. The use of site productivity data such as crop yields or other productivity information may be a relevant consideration in determining whether class V-VIII/VII-VIII soils are “suitable” for farm use, “necessary” to permit farm practices or “intermingled” with farmland under OAR 660-033-0020(1)(a)(B), (C) and (b). However, this information cannot be used to show that the land is a different soil type or has a land capability class assignment different from the NRCS official soil survey information.

The use of direct tree measurements to determine forest land productivity is only appropriate if there are no NRCS or comparable data or if these sources are shown to be inaccurate (OAR 660-006-0010(3)). This is because differing landowner management practices can influence forest land productivity. NRCS productivity ratings for forest lands are based on natural stands. Thin tree cover or openings in tree cover are normal for some soil types and this factor is included in the NRCS forest productivity rating. Any direct tree measurements must be made from dominant and not suppressed trees, either on-site or on an adjacent site, following ODF's updated Land Use Planning Notes.

Q: Can an argument be made that soils as identified during onsite investigation or assessments are different from NRCS soils mapping or classifications?

A: Maybe. This is a more difficult assertion to justify and depends on the expertise of the soils professional and the basis of the justification. Drastic deviations from NRCS mapping or classifications, such as a finding that soils are shallow instead of deep or class VI instead of class III should be viewed with caution. Where such an assertion is made, counties should seek additional verification, such as from an examination of similar areas or polygons of the same map units.

Q: Can an argument be made that a particular soil type is not high-value, class I-IV/I-VI or of a cubic foot rating as published?

A: No. There is no authorization in statute or rule for challenging the identification of specific soil types as falling into these capability categories.

Q: Can high-value farm soils be challenged?

A: Yes and no. They may be challenged where lot-of-record dwellings are proposed (OAR 660-033-0030(7)). However, for other proposed uses, high-value farm soils may not be challenged for the purpose of showing only that land is not high-value, if it is otherwise agricultural land. But because neither HB 3647 nor implementing OARs differentiate between high-value and non high-value farmland, both types of farmland may be challenged if the purpose is to show that they are not agricultural land.

Q: If the Internet NRCS soil survey already identifies a property as having a predominance of soils that are not I-IV in western Oregon or I-VI soils in eastern Oregon, would a soils assessment still have to go through the new DLCD review process?

Yes. This is because HB 3647 applies when "more detailed soils information" is provided that "would assist a county" to make a better determination of whether land is agricultural. Presumably, any such soils information would be intended to influence such a county determination. Such information could be used to argue that class V-VIII soils are "unsuitable" for farm use or are not necessary to permit adjacent farm practices, or are not

intermingled with higher-class soils.

Q: How can the Department of Forestry's updated Land Use Planning Notes be used to challenge forest land capability?

A: In April of 2010, the ODF updated an earlier version of Land Use Planning Notes, after which DLCD updated OAR 660-006-0010 to reflect this change and to clarify the requirement that the Notes be used when challenging forest land capability. The Notes provide excellent guidance for foresters, soils professionals and counties, and prioritize alternative data sources that may be used when NRCS or other specified comparable data are not available or are shown to be inaccurate. When direct tree measurements are made, specific tables as identified in the Notes must be used for the predominant on-site tree species. These include tables A, B or C in Attachment A, which employ growth curves that are consistent with the curves used in the NRCS Internet soil survey.

Table 1: Two Processes for Challenging Agricultural and Forest Land Capability

How Does It Work?	Agricultural Land Capability OAR 660-033-0030 & 0045	Forest Land Capability OAR 660-006-0010
<i>When</i> does the process apply?	<ul style="list-style-type: none"> When NRCS class I-IV/I-VI soils are challenged 	<ul style="list-style-type: none"> When NRCS cubic foot ratings are challenged (no specific threshold)
<i>What</i> does the process apply to?	<ul style="list-style-type: none"> Rezoning & most nonfarm dwellings 	<ul style="list-style-type: none"> Rezoning & some template dwellings
<i>Who</i> submits the onsite investigation or assessment?	<ul style="list-style-type: none"> Applicant chooses a certified soils classifier or equivalent professional from DLCD list of soils professionals 	<ul style="list-style-type: none"> Applicant chooses a professional forester
<i>How</i> is resource capability determined?	<ul style="list-style-type: none"> Onsite assessment of soils at a more detailed scale than the NRCS scale of mapping 	<ul style="list-style-type: none"> Using ODF prioritized alternative data sources (soils testing last priority)
<i>Where</i> is the onsite investigation or assessment submitted?	<ul style="list-style-type: none"> DLCD, which forwards it to county after completeness check & sometimes professional review & field verification 	<ul style="list-style-type: none"> County
Who determines acceptability of the onsite investigation or assessment?	<ul style="list-style-type: none"> County 	<ul style="list-style-type: none"> County
Is ODA or DOF involved?	No	No
Can DLCD de-list professionals?	Yes	No
When are two professionals needed?	In a rezoning to nonresource use when direct tree measurements are made	
Is there additional information?	<u>Oregon Department of Land Conservation and Development Agricultural Soils Capability Assessment</u>	<u>Oregon Department of Forestry Forest Resources Planning</u>

Table 2: When Can Soil Capability Be Challenged?

Circumstance	Yes/No/ Maybe	Where	Applicability
1. When NRCS data are not available	Yes	Farm or forest land	- Consult NRCS Web Soil Survey for new or updated data. If no data, then for: - Farmland: conduct onsite soil assessment - Forest land: consult <u>Oregon Department of Forestry Forest Resources Planning Land Use Planning Notes (Updated)</u> for prioritized alternative data sources ¹
2. When data of comparable quality to NRCS data are not available	Yes	Forest land	- Consult <u>Oregon Department of Forestry Forest Resources Planning Land Use Planning Notes (Updated)</u> for prioritized alternative data sources
3. When NRCS or comparable data are challenged to be inaccurate based on:	See below	Farm or forest land	- Farmland: Goal 3 states: "More detailed soil data to define agricultural land may be utilized by local governments if such data permits achievement of this goal." ¹¹ - HV farmland LORs: soil classes or ratings may be challenged; OAR 660-033-0030(7) - HV farmland otherwise: soils classes or ratings may be challenged only to show that land is not agricultural; OAR 660-033-030(8) - Forest land: consult <u>Oregon Department of Forestry Forest Resources Planning Land Use Planning Notes (Updated)</u> for prioritized alternative data sources
A. Inaccurate placement of line between soil types	Yes	"	- If scale of revised maps is 1:5,000 or finer & otherwise justified
B. Inclusions of surface rock fragments or other significant differences in soil characteristics and mapping not identified in the NRCS mapping, data and interpretations	Maybe	"	- A finding of inclusions or significant differences in soil characteristics does not change the mapping, data or interpretations of the map unit such as the NRCS land capability class assignment. The map unit information is based on all polygons or areas of the map unit, not on one or more onsite investigations
C. Actual site productivity data using crop yields or tree measurements	Maybe		- Farmland: Not to imply that land is a different soil type or has a land capability assignment that is different from the NRCS rating - Forest land: only if no NRCS or comparable data are available or are inaccurate
D. A belief that onsite soils are different from the NRCS soils mapping or classifications	Maybe	"	- Only if well documented by soils professionals or foresters and onsite findings are reasonable when compared to similar areas or polygons of the same map unit
E. A belief that a particular soil type is not HV, class I-IV/I-VI or of cubic foot rating as published	No	"	- No authorization in statute or rule

¹ OAR 660-006-0010(3)

¹¹ OAR 660-015; related provisions are in OAR 660-033-0030(5)(a): "More detailed data on soil capability than is contained in the [NRCS] soil maps and surveys may be used to define agricultural land. However, the more detailed soils data shall be related to the NRCS land capability classification system" and Oregon Laws 2010, chapter 44, S. 1, which permits the submittal of "more detailed soils information than that contained in the Internet [NRCS] soil survey..."



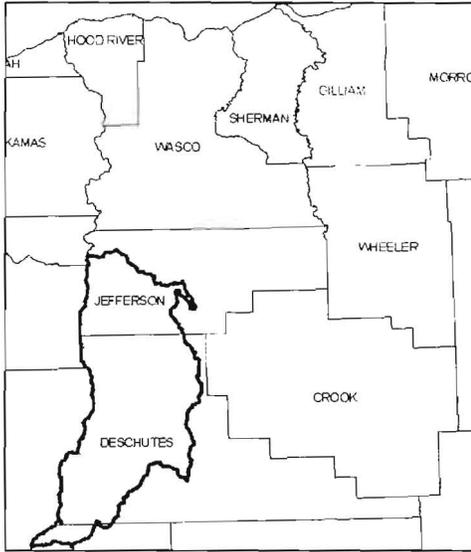
DECHUTES COUNTY

THE DAMES & MOORE ENGINEERS



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Introduction



The Upper Deschutes 8-Digit Hydrologic Unit Code (HUC) subbasin is comprised of 1.4 million acres. It extends into three counties, with 70 percent in Deschutes County, 25 percent in Jefferson County, and 5 percent in Klamath County. There are about 1,100 farms in the subbasin, 80 percent of which are less than 50 acres in size, and about 1,800 operators, two-thirds of which are part-time.

Over 70 percent of the subbasin is forested. Of this, 57 percent is under public ownership. Approximately thirty-five percent of the private forest land is under industrial ownership. Other land uses include range (13 percent), row and specialty crops (7 percent), and grass and alfalfa hay (6 percent).

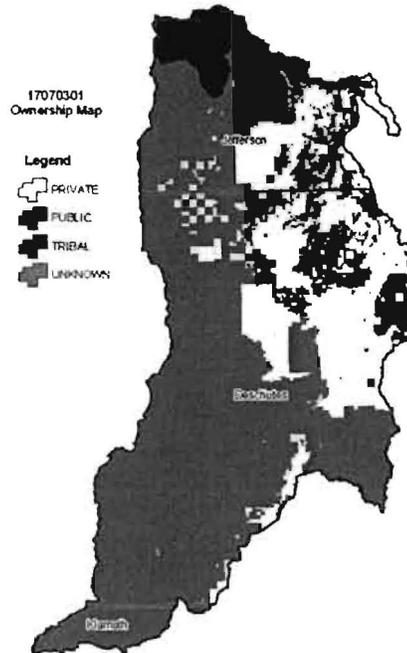
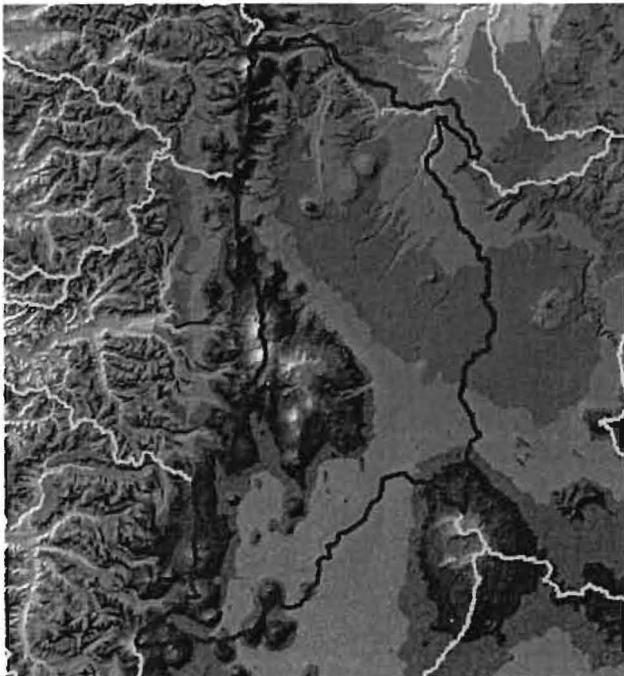
Conservation assistance is provided by three NRCS service centers, one soil survey office, one resource conservation and development (RC&D) office, and two satellite field offices (Warm Springs Indian Reservation and Hood River).

Profile Contents

- [Introduction](#)
- [Physical Description](#)
- [Land Use Map & Precipitation Map](#)
- [Common Resource Area](#)

- [Resource Concerns](#)
- [Census and Social Data](#)
- [Progress/Status](#)
- [Footnotes/Bibliography](#)

Relief Map



Produced by the
Water Resources
Planning Team
Portland, OR

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Physical Description

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Land Cover/Land Use (NLCD ^{1/2})	Ownership - (2003 Draft BLM Surface Map Set ^{1/3})						Totals	% of HUC
	Public		Private		Tribal			
	Acres	%	Acres	%	*	%		
Forest	790,600	57%	172,000	12%	56,100	4%	1,018,700	74%
Grain Crops	*	*	*	*	0	0%	*	*
Conservation Reserve Program (CRP) Land ^a	0	0%	0	0%	0	0%	0	0%
Grass/Pasture/Hay	27,300	2%	48,400	4%	*	*	76,700	6%
Orchards/Vineyards/Berries	0	0%	0	0%	0	0%	0	0%
Row Crops	*	*	*	*	0	0%	*	*
Shrub/Rangelands	88,700	6%	88,100	6%	*	*	182,700	13%
Water/Wetlands/Developed/Barren	74,000	5%	20,100	1%	*	*	98,100	7%
HUC Totals^b	980,600	71%	330,600	24%	67,000	5%	1,378,200	100%

*: Less than one percent of total acres. See below for special considerations.
a: Estimate from Farm Service Agency records and include CRP/CREP.
b: Totals are approximate due to rounding and small unknown acreages.

Special Considerations for This 8-Digit HUC:

- ~ Approximately thirty-five percent of the private forest land is under industrial forest ownership.
- ~ 24,000 acres are used for grass and alfalfa hay.
- ~ Row crops and other specialty crops include potatoes, vegetable seed, garlic, mint, and nursery crops.

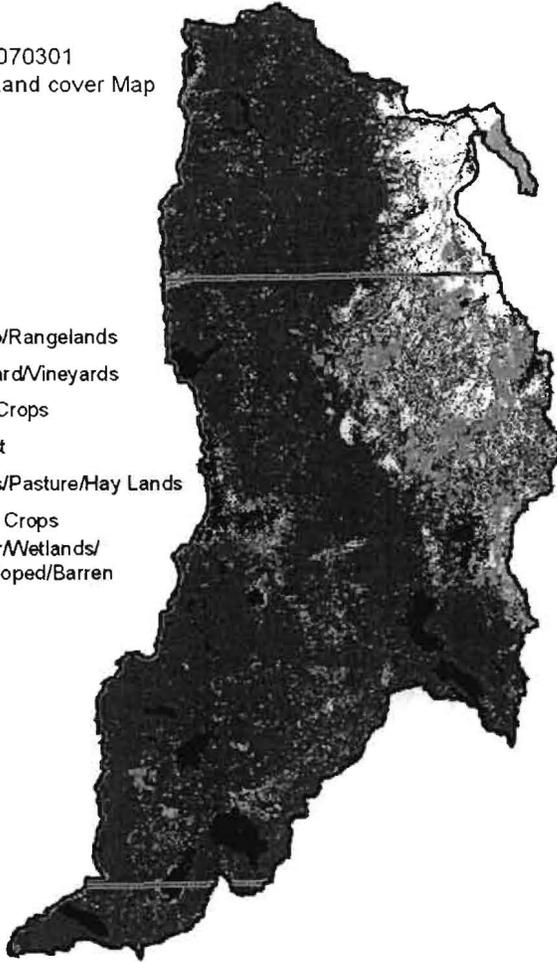
Irrigated Lands (1997 NRI ^{1/3} Estimates for Non-Federal Lands Only)	Type of Land	ACRES	% of Irrigated Lands	% of HUC
		Cultivated Cropland	400	1%
	Uncultivated Cropland	15,900	27%	1%
	Pastureland	43,700	73%	3%
	Total Irrigated Lands	60,000	100%	4%

(Continued on following pages)

17070301
Land use/Land cover Map

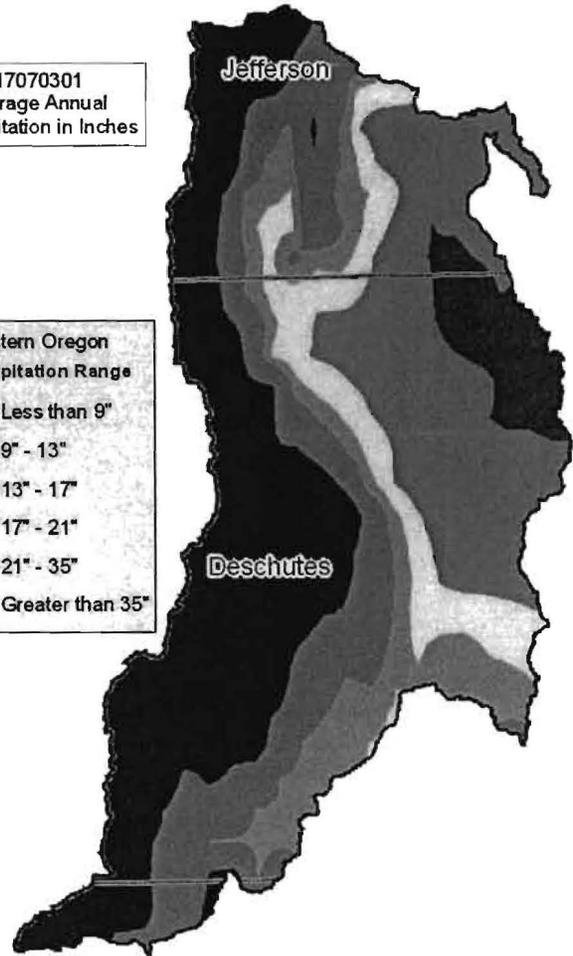
Legend

-  Shrub/Rangelands
-  Orchard/Vineyards
-  Row Crops
-  Forest
-  Grass/Pasture/Hay Lands
-  Grain Crops
-  Water/Wetlands/Developed/Barren



17070301
Average Annual
Precipitation in Inches

- Eastern Oregon
Precipitation Range**
-  Less than 9"
 -  9" - 13"
 -  13" - 17"
 -  17" - 21"
 -  21" - 35"
 -  Greater than 35"

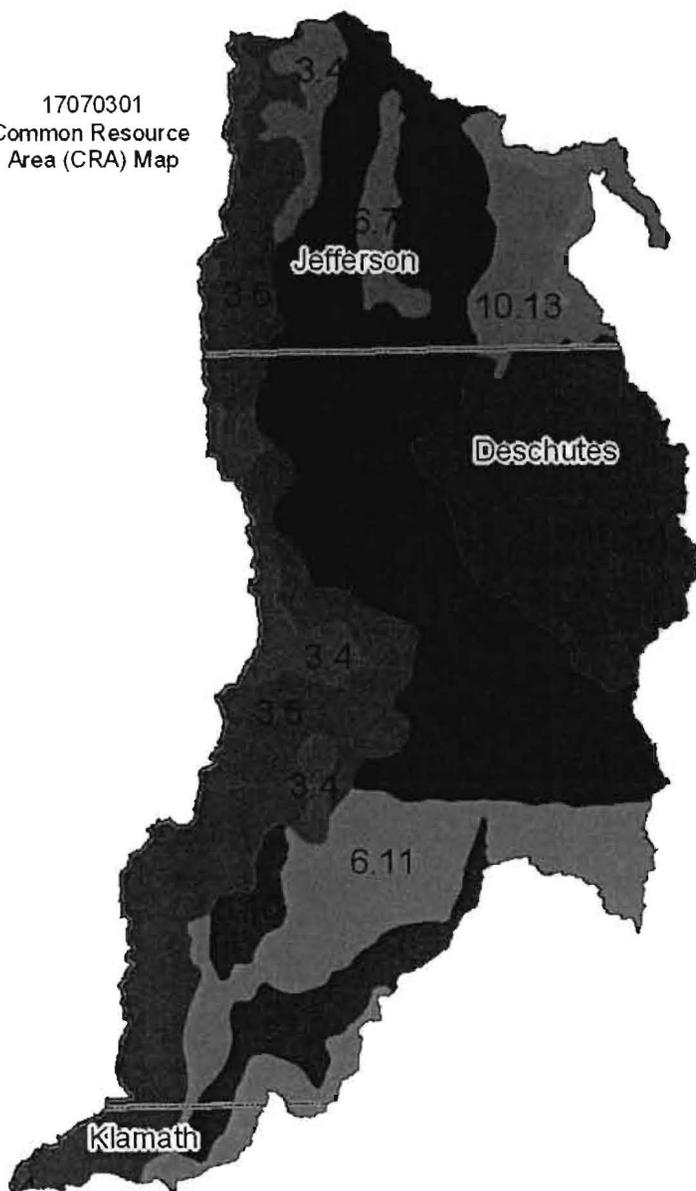


Common Resource Area Map

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Only the major units are described below - for descriptions of all units within the HUC, go to: <http://ice.or.nrcs.usda.gov/website/cra/viewer.htm>

17070301
Common Resource
Area (CRA) Map



3.4 - Olympic and Cascade Mountains - Cascade Subalpine-Alpine: This unit consists of high, glaciated, volcanic peaks that rise above subalpine meadows. It is characterized by barren rock outcroppings, lava flows, and volcanic peaks. Elevation is 5,600 to 12,000 feet. Active glaciation occurs on the highest volcanoes and decreases from north to south. The winters are very cold, and the growing season is extremely short. Flora and fauna adapted to the high elevations include herbaceous and shrubby subalpine meadow vegetation and scattered patches of mountain hemlock, subalpine fir, and whitebark pine.

3.5 - Olympic and Cascade Mountains - Northern Cascade Crest Montane Forest: This unit consists of an undulating plateau punctuated by volcanic buttes and cones that reach a maximum elevation of about 6,500 feet. It is extensively forested with mountain hemlock and Pacific silver fir. The temperature regime is cryic, and the moisture regime is udic. Although this unit has the same moisture and temperature regimes as unit 3.3, this unit is noticeably more moist. The break between units 3.3 and 3.5 is transitional.

6.9 - Cascade Mountains, Eastern Slope - Ponderosa Pine/Bitterbrush Woodland: This unit is characterized by undulating ash-mantled lava flows. The vegetation is dominantly ponderosa pine, antelope bitterbrush, and Idaho fescue. The unit does not have the dominance of lodgepole pine and the coarse pumice fragments that are characteristic of unit 6.1. The temperature regime is frigid, and the moisture regime is xeric.

10.14 - Central Rocky and Blue Mountain Foothills - Bend-Redmond Lava Plains: This unit is characterized by moderately deep and shallow soils that formed in ash from Mt. Mazama and are underlain by basalt. Most areas are used for irrigated pasture or hay. Slopes are nearly level to undulating. The dominant soils are those of the Deschutes and Deskamp series. The soils are sandy loam and loamy sand throughout. The temperature regime is mesic, and the moisture regime is aridic.

Physical Description – Continued

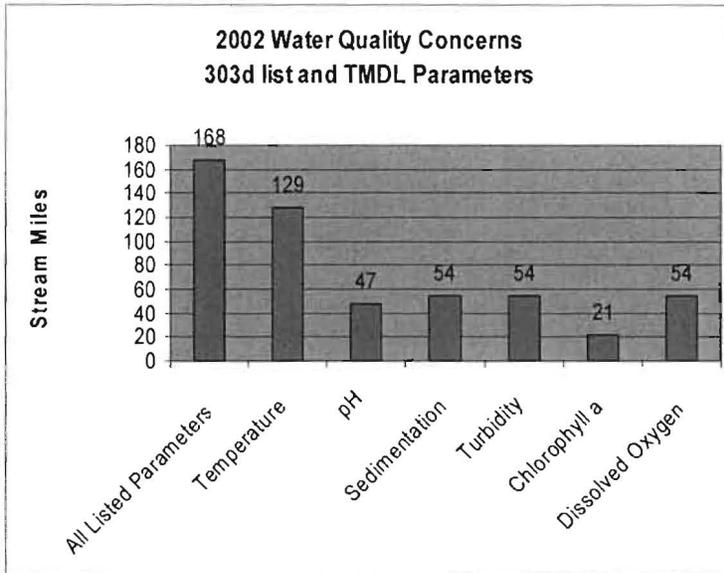
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		ACRES	ACRE-FEET			
Irrigated Adjudicated Water Rights (OWRD ⁴)	Surface	12,764	41,918			
	Well	16,993	50,821			
	Total Irrigated Adjudicated Water Rights	29,757	92,739			
Stream Flow Data	USGS 14076500 DESCHUTES RIVER, NEAR CULVER, OR	Total Avg. Yield	669,499			
		May – Sept. Yield	176,955			
		MILES	PERCENT			
Stream Data ¹⁵ <i>*Percent of Total Miles of Streams in HUC</i>	Total Miles – Major (100K Hydro GIS Layer)	922	---			
	303d/TMDL Listed Streams (DEQ)	168	18%			
	Anadromous Fish Presence (StreamNet)	0.0	0%			
	Bull Trout Presence (StreamNet)	117.7	13%			
		ACRES	PERCENT			
Land Cover/Use ¹² Based on a 100-foot stretch on both sides of all streams in the 100K Hydro GIS Layer	Forest	26,303	70%			
	Grain Crops	61	0%			
	Grass/Pasture/Hay	2,545	7%			
	Orchards/Vineyards	0	0%			
	Row Crops	4	0%			
	Shrub/Rangelands – Includes CRP Lands	4,578	12%			
	Water/Wetlands/Developed/Barren	3,837	10%			
	Total Acres of 100-foot Stream Buffers	37,328	---			
Land Capability Class (Croplands & Pasturelands Only) (1997 NRI ¹³ Estimates for Non-Federal Lands Only)	1 – slight limitations	0	0%			
	2 – moderate limitations	0	0%			
	3 – severe limitations	52,200	83%			
	4 – very severe limitations	4,700	7%			
	5 – no erosion hazard, but other limitations	0	0%			
	6 – severe limitations; unsuitable for cultivation; limited to pasture, range, forest	6,000	10%			
	7 – very severe limitations; unsuitable for cultivation; limited to grazing, forest, wildlife habitat	0	0%			
	8 – miscellaneous areas; limited to recreation, wildlife habitat, water supply	0	0%			
	Total Croplands & Pasturelands	62,900	---			
Confined Animal Feeding Operations – Oregon CAFO Permit – 12/2004						
Animal Type	Dairy	Feedlot	Poultry	Swine	Mink	Other
No. of Permitted Farms	3	0	0	0	0	1
No. of Permitted Animals	685	0	0	0	0	200

Resource Concerns

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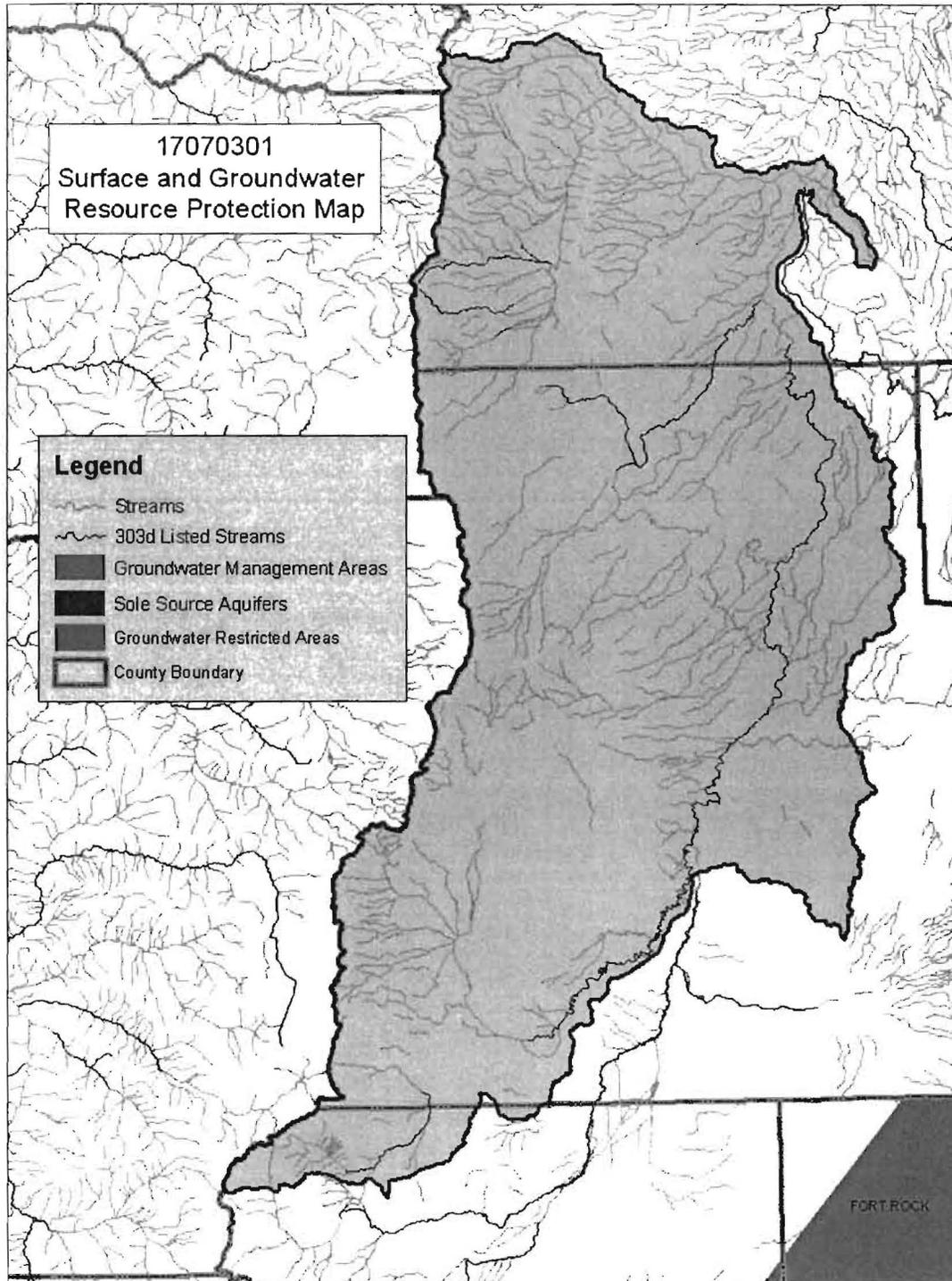
Tons of Soil Loss by Water Erosion: Due to the limited amount of non-Federal cropland and pastureland within this HUC, no reliable NRI soil loss estimates are available.



- ❖ Seventy-seven percent of all listed stream miles have temperatures exceeding State water quality standards. Elevated stream temperatures may be due to inadequate riparian shade, stream channel widening, warm irrigation return flows, and other anthropogenic or natural causes.
- ❖ Stream reaches listed for sediment and turbidity are affected by erosion on croplands and streambanks.
- ❖ Dissolved oxygen, chlorophyll a, and pH commonly are indicative of high nutrient loading from phosphorus attached to sediment or from dissolved nutrients in surface runoff.
- ❖ Conservation practices that can be used to address these water quality issues include erosion control, nutrient management, grazing management, irrigation water management, and use of riparian buffers.

Watershed Projects, Plans, Studies, and Assessments			
NRCS Watershed Projects ⁹		NRCS Watershed Plans, Studies, and Assessments ⁷	
Name	Status	Name	Status
McKenzie Canyon Irrigation Project	Active	McKenzie Canyon Irrigation Project	Completed - 2004
ODEQ TMDL's ⁸		ODA Agricultural Water Quality Management Plans ²	
Name	Status	Name	Status
Upper Deschutes Basin	Data Collection	Crooked River	Completed
		Middle Deschutes	Completed
		Upper Deschutes	Completed
OWEB Watershed Councils ¹⁰		NWPC Subbasin Plans & Assessments ¹⁸	
Watershed Council Assessments ¹¹		Assessments ¹⁸	
Crooked River and Upper Deschutes Watershed Councils	Upper Deschutes Watershed Assessment	Deschutes Subbasin Plan	

(Continued on page 8)



Map Footnote ¹⁷

Resource Concerns - Continued

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Resource Concerns/Issues by Land Use							
SWAPA +H Concerns	Specific Resource Concern/Issue	Pasture \Hay	Grain Crops	Row Crops	Orchards/Vnyrd	Shrub/Range	Forest
Soil Erosion	Wind		X	X			
	Irrigation Induced			X			
Water Quantity	Water Management For Irrigated Land	X	X	X			
Water Quality, Surface	Temperature	X					
Plant Condition	Productivity, Health, and Vigor	X				X	X
Animal Habitat, Domestic	Management	X				X	
Animal Habitat, Wildlife	Food, Cover, and/or Shelter						X
Human, Economics	Land Use Constraints/Restrictions					X	X
	High Capital/Financial Cost			X			
	High Labor Cost or Availability			X			
	Low or Unreliable Profitability	X	X			X	X
Human, Social	Low Community Well-Being						X
Human, Political	Lack of Technical Assistance	X	X	X		X	

Grass/Pasture/Hay

- Water and grazing management are primary concerns in areas of irrigated pasture on small farms and ranches.
- Low profitability on ranches and unavailability of technical assistance for small farms and ranchettes hinder conservation efforts.

Grain and Row Crops

- Wind erosion and water management are resource concerns on irrigated cropland.
- High capital and labor cost to improve and manage more efficient irrigation systems is an obstacle to use of additional conservation practices, especially in areas used for row crops.

Rangeland and Forest land

- Overstocked lodgepole pine/ponderosa pine on forest land and invasive weeds on rangeland reduce the productivity for timber, grazing, and wildlife habitat.
- Some of these areas are under pressure for development into ranchettes and vacation and recreational property.

FEDERALLY LISTED THREATENED AND ENDANGERED SPECIES ¹²	
THREATENED SPECIES	CANDIDATE SPECIES
Mammals - Canada lynx	Birds - Yellow-billed cuckoo
Birds - Bald eagle, Northern spotted owl	Amphibians and Reptiles - Oregon spotted frog
Fish - Bull trout	PROPOSED SPECIES - None
ESSENTIAL FISH HABITAT¹³ - None	

Census and Social Data^{/14}

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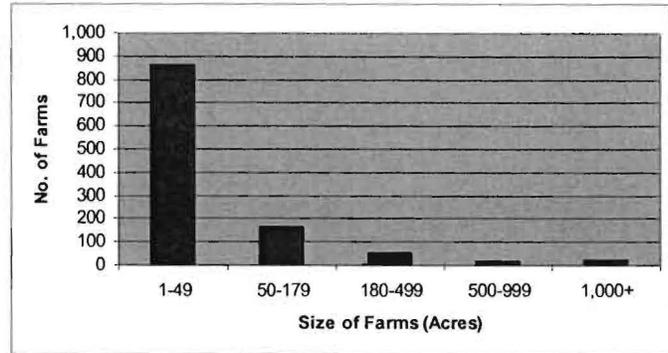
Number of Farms: 1,127

Number of Operators: 1,820

- Full-Time Operators: **571**
- Part-Time Operators: **1,249**

Estimated Level of Willingness and Ability to Participate in Conservation:^{/15}

- Full-time, large-acreage operators farming over 90 percent of the agricultural land: **MODERATE TO HIGH**
- Part-time, small-acreage (<50 acres) operators: **LOW TO MODERATE**

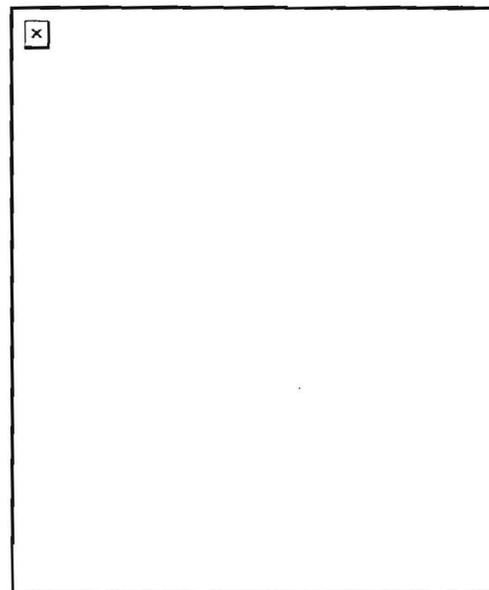
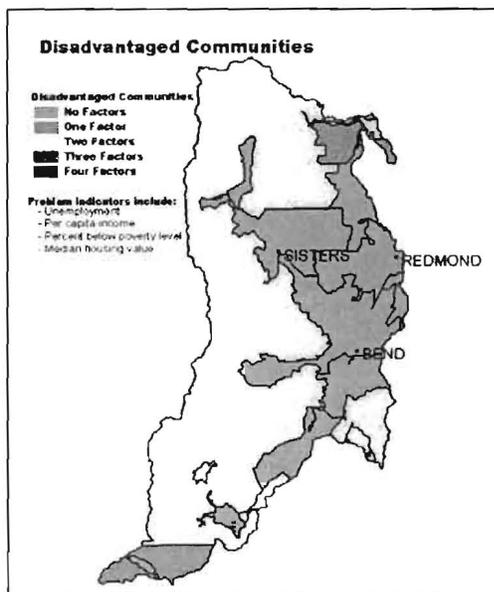


The full-time, large-acreage family farmers in the Upper Deschutes subbasin, whose operations are in at least fair financial health, generally are both able and willing to try conservation practices and systems. Increasing awareness of local resource concerns and the connections to their agricultural operations may improve the rate of adoption of conservation practices.

The part-time, small-acreage farmers, who comprise the majority of the farmers in the subbasin, are well-educated and somewhat aware of the resource concerns in their area. Because of their off-farm work, many of the small-acreage farmers have limited farming experience, minimal familiarity with USDA programs, and limited time to try new conservation practices and systems. While their ability may inhibit adoption of conservation practices, these operators do show concern for the environment and a willingness to consider conservation practices. These landowners, however, will need more time.

Evaluation of Social Capital:^{/16} **MODERATE**

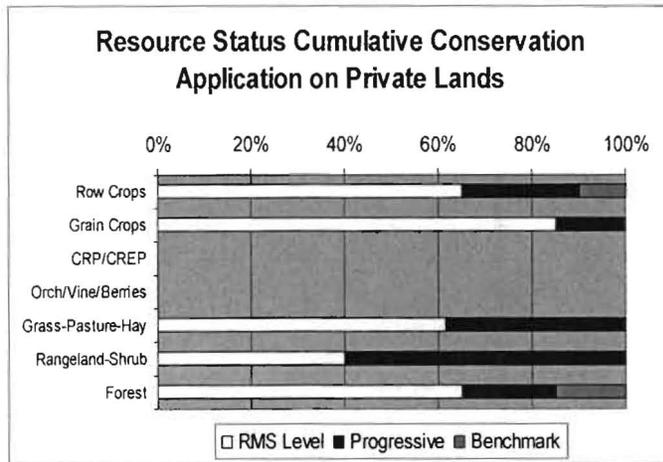
A fundamental problem in the Upper Deschutes subbasin is that the community does not recognize agriculture's contribution to the economic viability and quality of life in the community. Thus, the community is currently not a source of help in promoting conservation among local agricultural landowners. The community has demonstrated an ability to work together to solve other community problems. The key to conservation diffusion among farmers in this subbasin is getting the community to appreciate the value of agriculture to their well-being.



Progress/Status

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PRMS Data	FY99	FY00	FY01	FY02	FY03	Avg/Year	Total
Total Conservation Systems Planned (Acres)	3,302	5,155	1,038	0	0	1,899	9,495
Total Conservation Systems Applied (Acres)	298	262	2,002	0	0	512	2,562
Conservation Treatment							
Waste Management (Number)	0	0	0	0	0	0	0
Buffers (Acres)	0		0	0	0	0	0
Erosion Control (Acres)	218	262	355	0	0	167	835
Irrigation Water Management (Acres)	545	0	296	0	0	168	841
Nutrient Management (Acres)	0	0	0	0	0	0	0
Pest Management (Acres)	0	103	133	0	0	47	236
Prescribed Grazing (Acres)	70	0	1,106	0	0	235	1,176
Trees and Shrubs (Acres)	0	0	32	0	0	6	32
Conservation Tillage (Acres)	0	0	0	0	0	0	0
Wildlife Habitat (Acres)	20	1,005	472	0	0	299	1,497
Wetlands (Acres)	0	0	0	0	0	0	0



(Estimates are based on information received from local conservationists in the watershed.)

- ❖ Progress over the last five years has been focused on:
 - ~ Prescribed grazing on rangeland and pastureland.
 - ~ Erosion control and water management on pastureland and cropland.
 - ~ Wildlife management.
- ❖ Cost to improve irrigation water management can hinder water conservation on cropland.
- ❖ Forested areas developed as homesites and for recreational property commonly are not actively managed for timber or wildlife.
- ❖ Private, non-industrial forest land that is not managed commonly creates fire safety issues.

Lands Removed from Production through Farm Bill Programs

- ❖ Conservation Reserve Program (CRP): **None**
- ❖ Wetland Restoration Program (WRP): **None**
- ❖ Conservation Reserve Enhancement Program (CREP): **None**

Footnotes/Bibliography

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All data is provided "as is." There are no warranties, express or implied, including the warranty of fitness for a particular purpose, accompanying this document. Use for general planning purposes only.

1. Ownership Layer – Source: The 1:24,000 scale public ownership layer is the land ownership/management for public entities, including Federal, Tribal, State, and local entities. This is a seamless, statewide Oregon Public Ownership vector layer composed of fee ownership of lands by Federal, State, Tribal, county, and city agencies. The layer is comprised of the best available data compiled at 1:24,000 scale or larger, and the line work matches GCDB boundary locations and ORMAP standards where possible. The layer is available from the State of Oregon GIS Service Center: <http://www.gis.state.or.us/data/alphalist.html>. For current ownership status, consult official records at appropriate Federal, State, and county offices. Ownership classes grouped to calculate Federal ownership vs. non-Federal ownership by the Water Resources Planning Team.
2. National Land Cover Dataset (NLCD) - Originator: U.S. Geological Survey (USGS); Publication date: 19990631; Title: Oregon Land Cover Data Set, Edition: 1; Geospatial data presentation form: Raster digital data; Publisher: U.S. Geological Survey, Sioux Falls, SD, USA; Online linkage: <http://edcwww.cr.usgs.gov/programs/lccp/nationallandcover.html>; Abstract: These data can be used in a geographic information system (GIS) for any number of purposes, such as assessing wildlife habitat, water quality, pesticide runoff, land use change, etc. The State data sets are provided with a 300-meter buffer beyond the State border to facilitate combining the State files into larger regions.
3. ESTIMATES FROM THE 1997 NRI DATABASE (REVISED DECEMBER 2000) REPLACE ALL PREVIOUS REPORTS AND ESTIMATES. Comparisons made using data published for the 1982, 1987, or 1992 NRI may produce erroneous results. This is because of changes in statistical estimation protocols and because all data collected prior to 1997 were simultaneously reviewed (edited) as 1997 NRI data were collected. All definitions are available in the glossary. In addition, this December 2000 revision of the 1997 NRI data updates information released in December 1999 and corrects a computer error discovered in March 2000. For more information: <http://www.nrcs.usda.gov/technical/NRI/>
4. Irrigated Adjudicated Water Rights – Water Rights Information System (WRIS), Oregon Water Resources Department, <http://www.wrd.state.or.us/maps/wrexport.shtml>
5. StreamNet is a cooperative venture of the Pacific Northwest's fish and wildlife agencies and tribes and is administered by the [Pacific States Marine Fisheries Commission](#). StreamNet provided data and data services in support of the region's fish and wildlife program and other efforts to manage and restore the region's aquatic resources. Official StreamNet website: <http://www.streamnet.org/>
6. Natural Resources Conservation Service, Watershed Projects Planned and Authorized, <http://www.nrcs.usda.gov/programs/watershed/Purpose>.
7. Natural Resources Conservation Service, Watershed Plans, Studies, and Assessments completed, http://www.nrcs.usda.gov/programs/watershed/Surveys_Plnq.html#Watershed%20Surveys%20and%20Plan
8. Oregon Department of Environmental Quality Total Maximum Daily Loads, <http://www.deq.state.or.us/wq/TMDLs/TMDLs.htm>
9. Oregon Department of Agriculture, Agricultural Water Quality Management Plans, http://www.oregon.gov/ODA/NRD/water_agplans.shtml

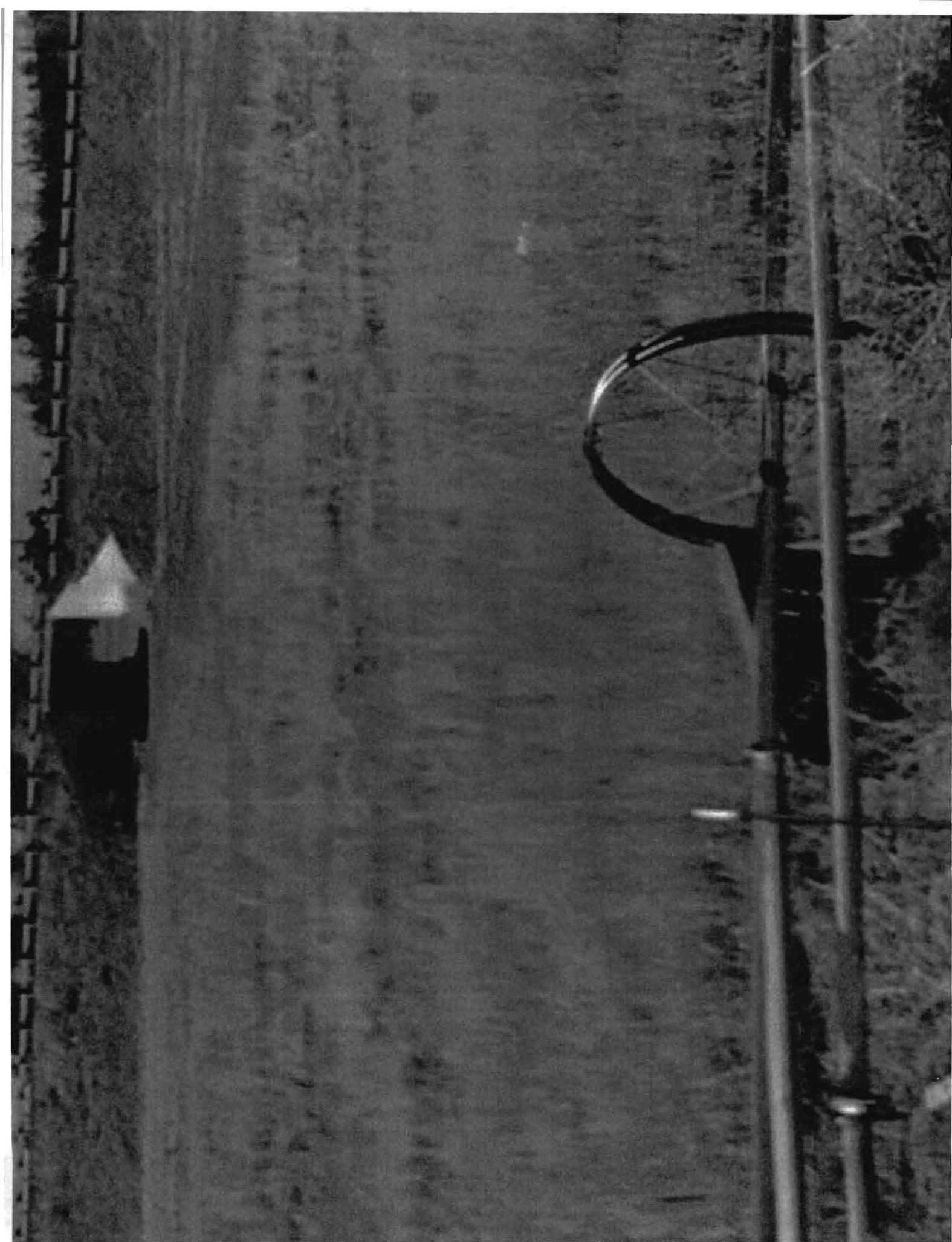
Footnotes/Bibliography Continued

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10. Oregon Watershed Enhancement Board, <http://oregon.gov/OWEB/WSHEDS/index.shtml>
11. Watershed Assessments completed by local watershed councils following the Oregon Watershed Assessment Manual, http://oregon.gov/OWEB/docs/pubs/ws_assess_manual.shtml.
12. NRCS Field Office Technical Guide, Section II, Threatened and Endangered List.
13. Magnuson-Stevens Fishery Conservation and Management Act, Public Law 94-265. As amended through October 11, 1996.
14. Data were taken from the 2002 Agricultural Census and adjusted by percent of HUC in the county or by percent of zip code area in the HUC, depending on the level of data available. Data were also taken from the U.S. Population Census, 2000.
15. Conservation participation was estimated using NRCS Social Sciences Technical Note 1801, [Guide for Estimating Participation in Conservation](#), 2004. Four categories of indicators were evaluated: Personal characteristics, farm structural characteristics, perceptions of conservation, and community context. Estimates are based on information received from local conservationists in the watershed.
16. Social capital is an indicator of the community's ability and willingness to work together to solve problems. A high amount of social capital helps a community to be physically healthy, socially progressive, and economically vigorous. A low amount of social capital typically results in community conflict, lack of trust and respect, and unsuccessful attempts to solve problems. The evaluation is based on NRCS Technical Report Release 4.1, March, 2002: [Adding Up Social Capital: An Investment in Communities](#). Local conservationists provided information to measure social capital. Scores range from 0 to 76.
17. [Surface and Groundwater Resource Protection Map](#)
 - a. 2002 303d Listed Streams designated by Oregon Department of Environmental Quality and approved by the Environmental Protection Agency, Section 303d Clean Water Act, <http://www.deq.state.or.us/wq/303dlist/303dpage.htm>
 - b. Groundwater Management Areas designated by the Oregon Department of Environmental Quality, Oregon Revised Statutes - Ground Water ORS 468B.150 to ORS 468B.190, <http://www.deq.state.or.us/wq/groundwa/wqgw.htm>
 - c. Groundwater Restricted Areas designated by Oregon Water Resources Commission, Oregon Department of Water Resources, http://egov.oregon.gov/OWRD/PUBS/aquabook_protections.shtml
 - d. The Sole Source Aquifer (SSA) Protection Program is authorized by Section 1424(e) of the Safe Drinking Water Act of 1974 (Public Law 93-523, 42 U.S.C. 300 et. seq), <http://www.epa.gov/safewater/ssanp.html>
18. Subbasin assessments and plans are developed by local groups (SWCDs, watershed councils, tribes, and others) as part of the Northwest Power and Conservation Council's fish and wildlife program in the Columbia River Basin. This program is funded and implemented by the Bonneville Power Administration. <http://www.nwcouncil.org/fw/subbasinplanning/Default.htm>.







Google



Warning: Soil Ratings Map may not be valid at this scale.

Tables — Irrigated Capability Class — Summary By Map Unit

Summary by Map Unit — Upper Deschutes River Area, Oregon, Parts of Deschutes, Jefferson, and Klamath Counties (OR620)

Map unit symbol	Map unit name	Rating	Acres In AOI	Percent of AOI
36A	Deskamp loamy sand, 0 to 3 percent slopes	3	20.5	83.5%
38B	Deskamp-Gosney complex, 0 to 8 percent slopes	3	4.0	16.5%
500	Gosney Desert... Deskamp complex, 0 to 15	7	0.0	0.0%



Warning: Soil Ratings Map may not be valid at this scale.

Tables — Nonirrigated Capability Class — Summary By Map Unit

Summary by Map Unit — Upper Deschutes River Area, Oregon, Parts of Deschutes, Jefferson, and Klamath Counties (OR620)

Map unit symbol	Map unit name	Rating	Acres In AOI	Percent of AOI
36A	Deskamp loamy sand, 0 to 3 percent slopes	6	20.5	83.5%
38B	Deskamp-Gosney complex, 0 to 8 percent slopes	6	4.0	16.5%



36A

37B

58C

37B

36A

37B

27A

58C

38B

92ND ST

MALORD

MITHELL LN

WILSON PL

WILSON PL

NORTHSAR WAY

SOLSTICE DR

VISTA DR

HALF MILE LN

STARWOOD DR

DIONE WAY

SARCS LN

MIRACIA



Deschutes Market

26 Lehigh N

70th St

Deschutes

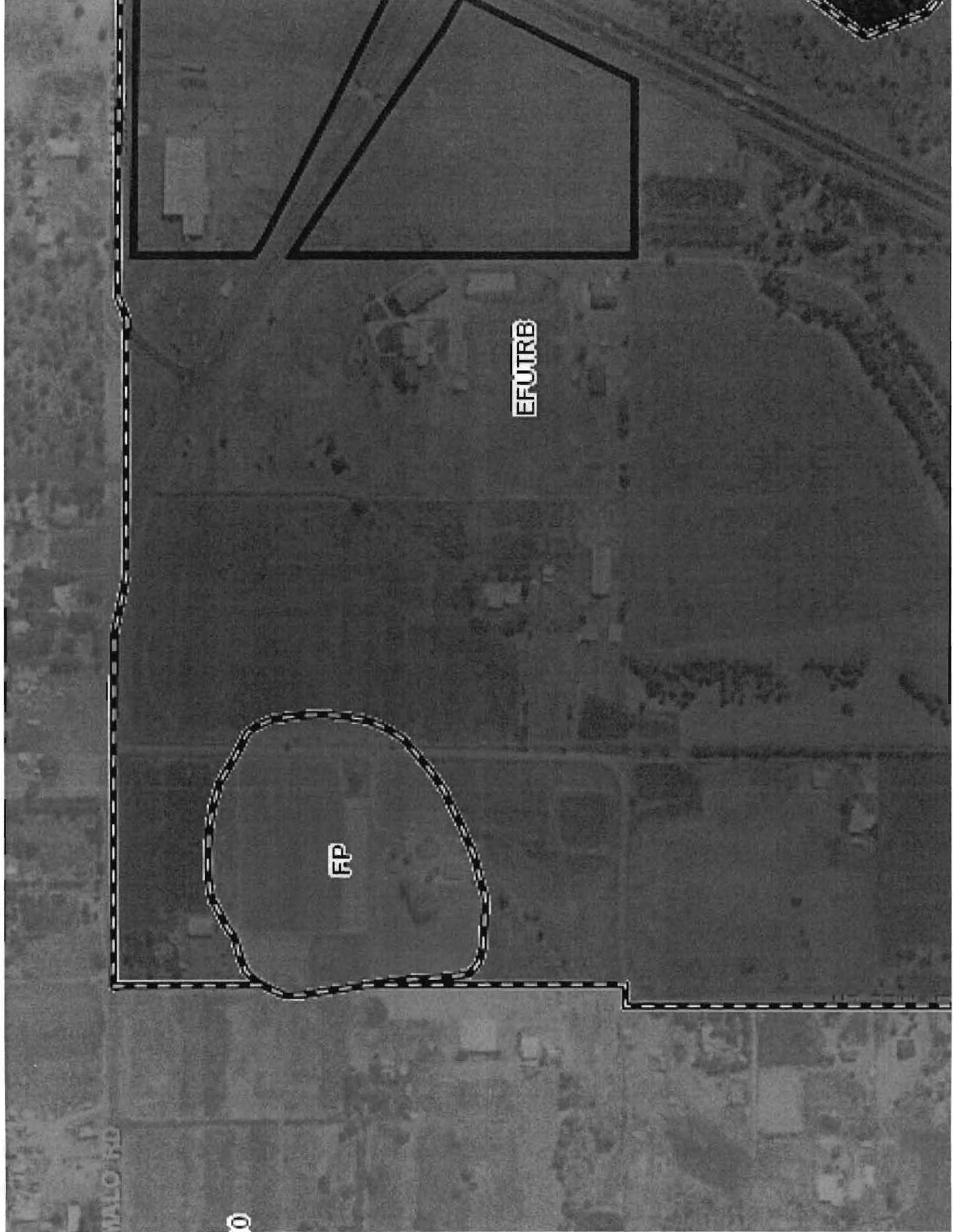
Half Mile Ln

Tumalo

85th St

Bonita Dr

McCreary St

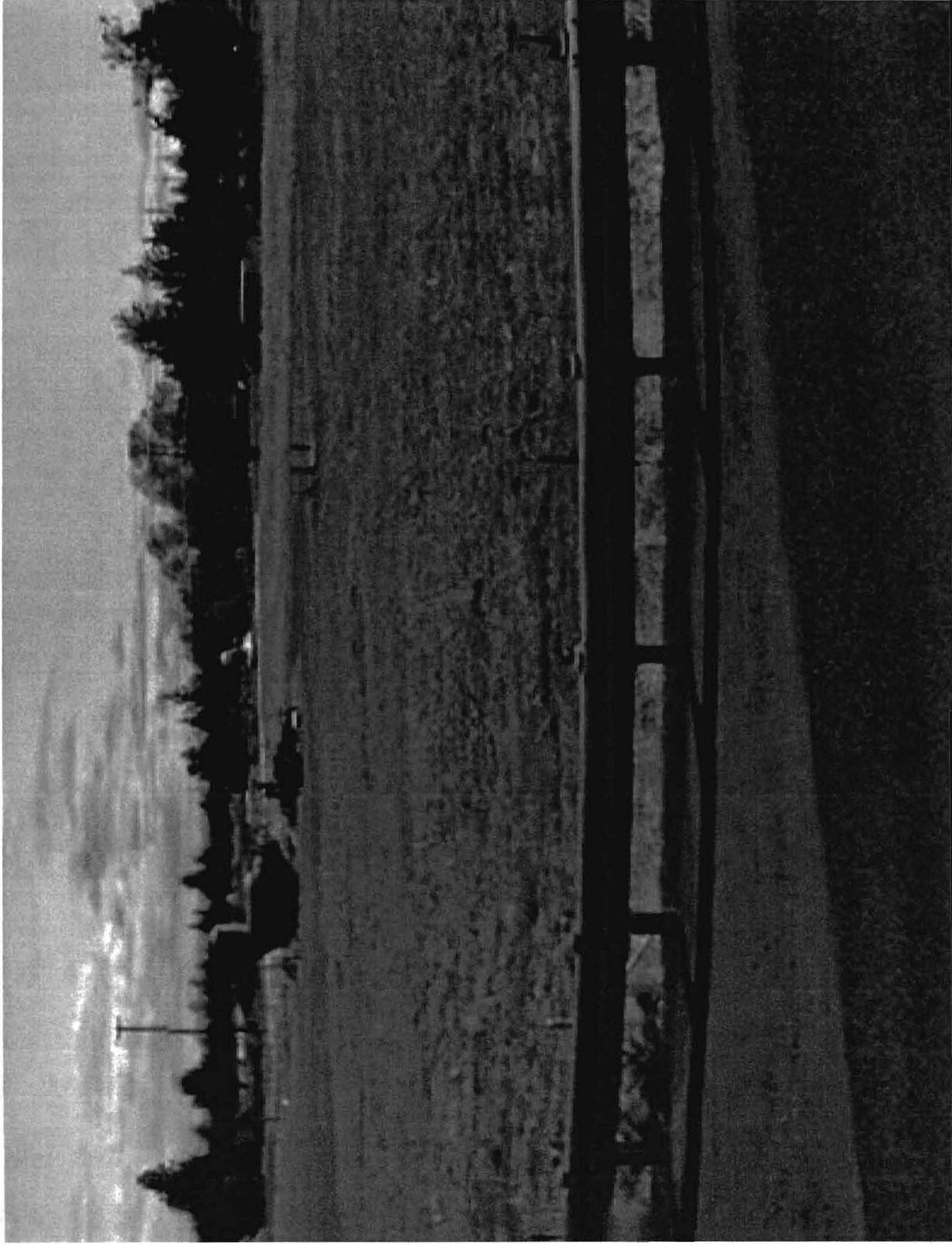


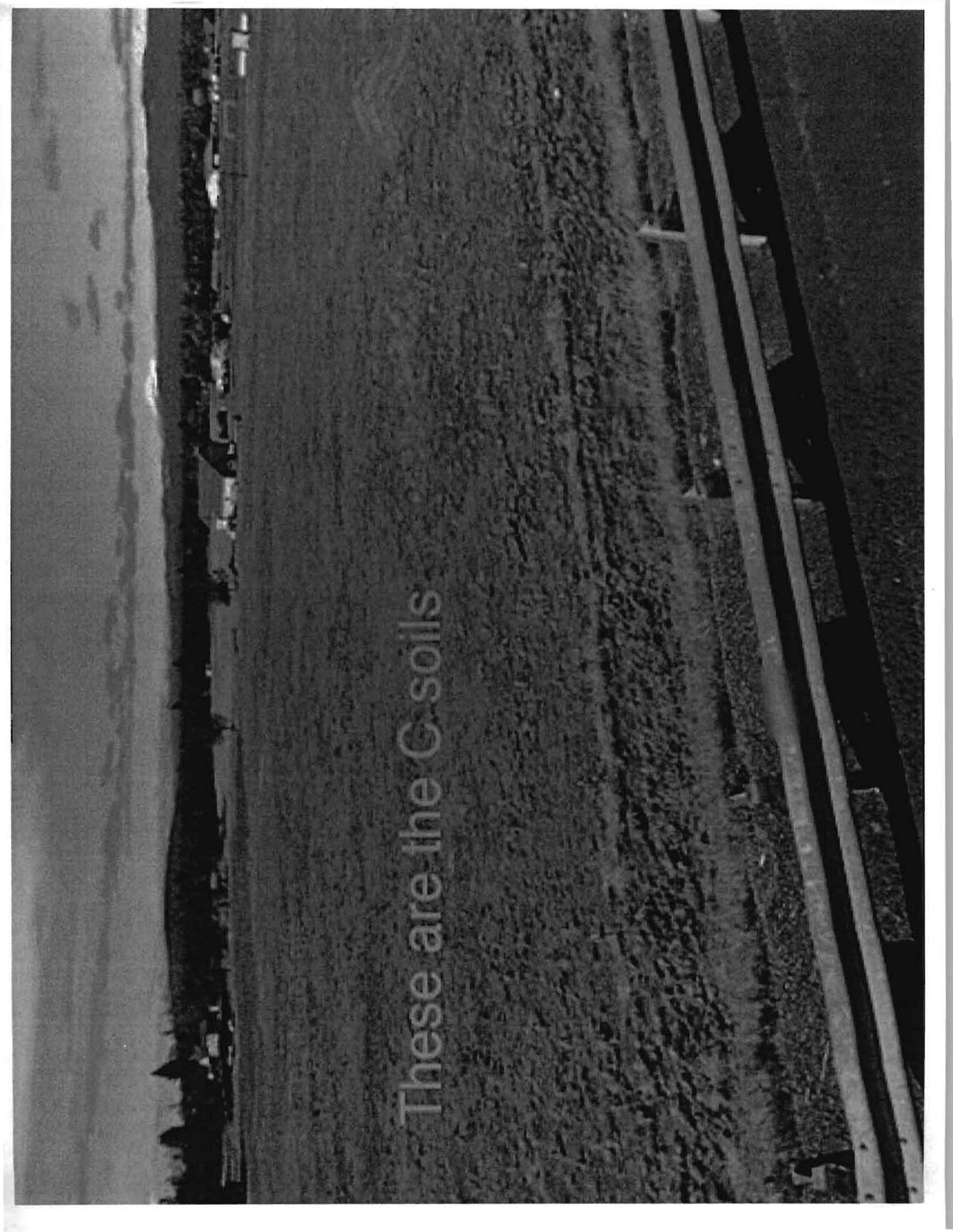
EFUTRB

FP

MALO RD

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These are the C soils