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Special Report 966
October 1996

Issues and Considerations

Ballot Measure 38

“Prohibit Livestock from Certain Polluted Waters or Adjacent Lands”



Oregon State University

- Oregon Agricultural Experiment Station
- Extension Service
- College of Agricultural Sciences

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Oregon Agricultural Experiment Station, Oregon State University Extension Service, and Oregon State University College of Agricultural Sciences do not take a position on any ballot measures. This publication was prepared to examine the issues raised by the ballot measure and should be useful to the citizens of Oregon as they decide the measure.

This College of Agricultural Sciences publication represents a collaborative effort among several disciplines. Not all of the collaborators agree with every statement but do agree with the overall publication. The group was led by John Tanaka (Agricultural and Resource Economics) and included faculty from Agricultural and Resource Economics (Bill Boggess, Fred Obermiller, and Joe Stevens); Bioresource Engineering (Ron Miner and Jim Moore); Fisheries and Wildlife (Dan Edge and Boone Kauffman); Rangeland Resources (Mike Borman, Bill Krueger, and John Buckhouse); and from the College of Forestry, Department of Forest Engineering (Robert Beschta). Additional input and review was received from others, whose help was greatly appreciated.



Dear Interested Oregonian,

The initiative process frequently places before Oregon voters complex policy issues that can affect our State and its citizens for many years to come. One such measure this fall is 38, "Prohibit Livestock from Certain Polluted Waters or Adjacent Lands." In order to have access to information that may not be readily available concerning this measure, many Oregonians have asked me and others in the College of Agricultural Sciences what knowledge our research may provide regarding water, watersheds, cattle, riparian zones, and other relevant matters.

Special Report 966 draws together research-based information relevant to Measure 38. A diverse group of Oregon State University scientists from various departments (listed on the inside front cover) prepared this report. Just as Oregonians will struggle with the issues embodied in Measure 38, so did these scientists struggle to identify research results on which they could all agree, and to portray that information in as balanced and neutral a manner as they possibly could. These scientists have also raised issues that may, as yet, not have sufficient information from which to draw conclusions. These issues are also presented in this report.

Their report does not tell you how to vote. That is not the role of the University. Instead, our role is to portray fairly what we believe scientific study has shown regarding matters at issue in this ballot measure. Integrating this information into your decision-making process is up to you. I hope this helps you feel that you are an informed voter.

Sincerely,

A handwritten signature in cursive script that reads "Thayne R. Dutson". The signature is written in dark ink and is positioned above the typed name.

Thayne R. Dutson,
Dean

Issues and Considerations

Ballot Measure 38

"Prohibit Livestock from Certain Polluted Waters or Adjacent Lands"

Ballot Measure 38 "would prohibit livestock in certain waters in Oregon, and on adjacent land, if waters do not meet state water quality standards and the livestock would contribute to poor water quality. State Department of Agriculture may allow exemptions if certain criteria are met. Any person may sue to enforce law. Measure applies to state, federal, and private waters and land. Persons required to comply may receive tax credit and state funding. Measure's operative dates are delayed, depending on land ownership and type of habitat affected." (Summary statement from the Oregon Voter's Pamphlet)

Introduction

Measure 38 is targeted at all classes of livestock including cattle, horses, sheep, llamas, and any other livestock that is likely to be kept in riparian areas sometime during the year. There currently are about 14,000 cattle owners in the state, but only about 2,000 are considered commercial operations by the U.S. Department of Agriculture. These 2,000 own about 80 percent of the cattle in the state. At this time, there is no estimate of how many cattle operations or how many miles of stream would be affected by the ballot measure should it pass.

Many complex biological, ecological, economic, social, and legal issues are raised by Ballot Measure 38. Some of these issues have been adequately addressed by research, while others remain to be fully explored. Some questions raised by the ballot measure include:

- How should livestock owners address changes in societal goals such as clean water?
- Will voluntary programs work?
- Will government regulations and mandated approaches be required?
- Are there other options?

Livestock and resource management requires watershed-level decisions about the following:

- When animals are placed in a pasture (timing)
- How often they use the pasture (frequency)
- How many animals are placed in a pasture (intensity)
- How long they are left there (duration)
- What facilities are provided

Land managers have recognized that these decisions require a mix of science and art implemented on a site-specific basis. Management decisions about livestock grazing have been and will continue to be made with imperfect knowledge.

Decisions cannot wait for all the needed scientific information, but the current body of knowledge can assist in those decisions.

We know that controlling livestock in riparian areas will lead to improvement in riparian conditions where current grazing practices are retarding needed improvements. However, the extent to which this measure will contribute to better water quality or influence the livestock industry is unquantified.

To help interested citizens better understand these issues, this publication:

- Provides background on current water quality law
- Discusses issues raised by Measure 38
- Provides an example of the possible effects on a "typical" Oregon cattle ranch should it have to comply with the measure
- Reprints relevant portions of the Oregon Revised Statutes (ORS)

Current water law in Oregon

Water in Oregon is governed by a large body of law. This current body of law specifies the beneficial uses for which water can be appropriated for private

use (e.g., water rights granted) and also how that water should be treated (e.g., federal Clean Water Act).

The Oregon Department of Environmental Quality (DEQ) is charged with implementing the Clean Water Act in Oregon. DEQ developed standards for water quality and identified the beneficial uses (not necessarily the same beneficial uses as those specified under Oregon water law) that will be affected if these standards are not met.

Regardless of the outcome of Measure 38, livestock producers in Oregon must address the issue of clean water under the federal Clean Water Act as implemented through the Oregon DEQ and the Oregon Department of Agriculture (ODA) under Senate Bill 1010. Although currently unfunded, this bill requires the state to develop water-quality management plans for water-quality-limited streams.

Issues and considerations

Livestock impact on water quality

A central issue raised by Ballot Measure 38 is whether prohibiting livestock from water-quality-limited waters of the state and their associated riparian areas will achieve the

water-quality standards within Oregon water laws. Related issues are:

- What impact does livestock grazing in water-quality-limited streams and their associated riparian zones have on water quality?
- How much would water quality change if livestock were removed?
- Are there acceptable alternative ways to improve water quality that are less expensive and equally effective?

The water-quality standards directly impacted by livestock include fecal coliform levels, habitat modification, sedimentation, and water temperatures. The current state of knowledge about livestock use and some water-quality standards is not sufficient to indicate whether livestock prohibition will or will not achieve the standard, although it likely will move water quality toward the standard in those cases where livestock are shown to be a problem.

Much of the debate in recent months has focused on the inclusion of stream temperatures as a formal standard to identify water-quality-limited streams. The current temperature standard addresses some of the physiological thresholds of coldwater fishes such as salmon,

steelhead trout, and bull trout, among others. Temperature accounts for about 55 percent of all stream reaches listed by DEQ on the July 1996 303(d) list and contributes to an additional 24 percent. There is uncertainty about whether the temperature standards are attainable in many areas.

A number of factors impact stream temperature, including extent of direct sun striking the stream surface (lack of shade), stream width, water flow, ambient temperature, snowfall accumulation in the uplands, and groundwater flow. Livestock uses are among the activities that may impact some of these factors.

The rate of recovery following livestock exclusion or management changes in livestock use varies among riparian ecosystems. Trade-offs between these different levels of use and time of recovery are site-specific.

Scientific studies that compare the effects of an array of options on the same system are rare because of the cost and complexity of such projects. Thus, what we have in the scientific literature are the results of isolated studies from which only relatively narrow sets of factors can be compared. This may result in different interpretations from the same data. These differences ultimately

may lead to the right questions being asked so that critical research can be initiated to resolve differences of understanding.

Who should pay for cleaner water

In resource management and use, there historically have been costs to society not paid by the user (for example, pollution). In the case of livestock, producers may not pay the full social and environmental costs of production. In cases where this is true, livestock production (how much producers have to sell) will be higher than it would be if producers paid the additional cost.

The related issue is whether those who incur the costs of an action also are the ones who receive the benefits (an economic equity or fairness question). The answer depends on your point of view. If you take the perspective that the livestock producer is causing the societal costs, then requiring producers to pay for the ameliorating actions may be fair. If you take the perspective that livestock producers are following historical public policy and laws, and that society now is changing the rules, then requiring society to pay all or part of the additional costs may be fair. Regardless of the point of view, the cost of the management change must be

paid for by some combination of private business and society.

There are many societal benefits of cleaner water. The passage of clean water laws shows strong public support for better water quality and suggests that these benefits are significant and positive. Studies have not widely established society's willingness to pay to achieve water quality standards, nor have they evaluated the cost effectiveness of alternative approaches.

Livestock owner response

Assuming the passage and implementation of Measure 38, there are at least two possible responses from a livestock owner found to be in violation. The rancher must either: (a) develop and implement a water-quality management plan with the goal of improved water quality, or (b) fence off riparian areas.

The rancher may need to reduce herd size in order to compensate for the lost feed, concentrate the livestock on a smaller land base (i.e., only the uplands), and/or seek alternate feed sources. On the other hand, enhanced management of livestock (as described above) may lead to increased productivity and improved water quality. The impact on livestock production and profitability may be positive, negative, or neutral.

See the example beginning on this page for a more detailed discussion of rancher response.

Effect on voluntary efforts to enhance water quality

Many voluntary activities are occurring throughout the state to try to enhance riparian areas, salmon habitat, and water quality. These activities include watershed councils, the Oregon Cattlemen Association's Watershed Ecosystem program (WESt), the Oregon Watershed Improvement Coalition (OWIC), soil and water conservation districts, USDA Natural Resources Conservation Service programs, the Oregon Department of Fish and Wildlife's (ODFW) Habitat Restoration and Enhancement program, and the Governor's Watershed Enhancement Board (GWEB). The issues raised by Measure 38 include:

- Will voluntary activities lead to sufficient improvements in water-quality-limited streams? If so, over what time frame?
- Will voluntary efforts be compromised or encouraged by passage of Measure 38?

Other issues

Section 3 of the measure allows anyone to bring suit based on alleged violations by a livestock owner of water-quality-limited water bodies as defined

by DEQ. For this reason, a potential social issue is increased restrictions on public access to private land.

Many other legal and social issues are raised by the ballot measure. These issues are beyond the scope of what can be addressed here. We only note that they exist and recommend that voters try to understand the implications of these other issues as well as the issues raised in this publication.

An example of economic impact to an Oregon cattle ranch

The following example attempts to show the costs for a livestock owner who has not complied with existing water quality laws or for one who chooses to fence to avoid allegations of violations under Measure 38.

Many miles of streams have been fenced throughout the state, but there is a paucity of data that evaluated the economic impacts or the management responses to fencing. Therefore, assumptions have been made in the example below to define the effects on a cattle ranch that is required to comply. We recognize that there are many positive benefits from improving water quality that

have not been quantified. These benefits include potential increases in fisheries productivity, wildlife habitat, and livestock management.

Assumptions

Costs in this example are based on peer-reviewed livestock enterprise budgets developed at OSU and other sources from the literature. If fencing riparian areas is deemed the best option to comply with the measure, we can make the following assumptions (we have used conservative values indexed to 1996, and values may have been rounded for simplicity):

- Commercial cattle operations in Oregon generally have a mix of private and public lands. For simplicity, the example assumes that ownership does not affect this analysis.
- Fencing costs (material and labor) to fence both sides of a stream will range from \$8,000–\$12,000/stream mile depending on the terrain. Additionally, it will cost between \$100 and \$200/stream mile (both sides) in annual repair and maintenance costs.
- Depending on the ranch's circumstances, alternative feed for livestock may not be required. If needed, alternative feed will cost about

\$10/cow and calf/month (private lease rates in Oregon; other options may cost more or less). This cost assumes additional feed is available and is not bid higher due to supply and demand.

- The hypothetical Oregon ranch would have 300 breeding cows, and the riparian areas along the streams would contribute between 4 percent and 77 percent of the feed for the cows and their calves for an 8-month grazing season. The 4 percent value could represent either a relatively low production riparian area or few miles of stream in relation to the upland area,

while the 77 percent value could represent the reverse. Given different combinations of upland and riparian productivities, the contribution of riparian area feed could be expected to be about 37 percent.

Analysis

Using a fence construction cost of \$8,000/mile (both sides of the stream), a fence life of 20 years, and a 7 percent interest rate, it will cost \$755/mile of stream/year or \$2.52/mile of stream/year/cow for fence construction. Additionally, it will cost \$0.33/mile of stream/year/cow for maintenance.

The cost of replacement feed (if it has to be purchased) can vary between \$3.20/year/cow and \$61.60/year/cow depending on the percentage of total grazing season feed that is provided by the riparian area (as defined in the ORS) as shown in column 2 of the table below.

The total costs of corridor fencing and finding alternative private land lease feed sources depends on the number of miles of stream to be fenced as shown under "Total \$/Year" in the table. For example, if a rancher is required to fence 10 miles of stream and wants to maintain a constant herd size of 300 cows and not graze the uplands any

An example of economic impact to an Oregon cattle ranch

| Percent Contribution of Riparian Feed | | Total Costs of Fencing, Maintenance, and Replacement Feed | | | | | |
|---------------------------------------|---------|---|---------------|---------------------------|--------------------|---------------|---------------------------|
| | | 1 Mile of Stream | | | 10 Miles of Stream | | |
| Replacement Feed Cost (\$/Cow/Year) | | \$/Cow/Year | Total \$/Year | Percent of Gross Revenues | \$/Cow/Year | Total \$/Year | Percent of Gross Revenues |
| 4% | \$3.20 | \$6.05 | \$1,815 | 2% | \$31.70 | \$9,510 | 8% |
| 37% | \$29.60 | \$32.45 | \$9,735 | 8% | \$58.10 | \$17,430 | 15% |
| 77% | \$61.60 | \$64.45 | \$19,335 | 17% | \$90.10 | \$27,030 | 23% |

Assumptions:

- Ownership (public or private) is not taken into account in this analysis.
- Costs are based on enterprise budgets developed at Oregon State University and other literature sources.
- Fencing costs (material and labor) to fence both sides of a stream range from \$8,000–\$12,000 per stream mile.
- Fence maintenance costs (both sides of stream) range from \$100–\$200 per stream mile per year.
- Alternative feed, if needed, costs about \$10 per cow and calf per month (private lease rates in Oregon).
- Hypothetical ranch has 300 breeding cows.
- The rancher pays the entire cost of fencing, maintenance, and replacement feed.

more heavily than is currently happening, at the 37 percent riparian contribution the total cost will be \$17,430 (\$58.10 x 300). This figure would be 15 percent of the ranch's gross revenues, assuming the rancher pays the entire cost.

Other considerations

It is important to keep in mind that the ballot measure has some exemptions. Livestock operations would be exempt either: (a) with a water-quality management plan approved by the Oregon Department of Agriculture, or (b) for livestock access to streams for watering and crossing once the stream is fenced. The process for developing, approving, and implementing water-quality management plans is under design. Management in accord with ODA plans will be required regardless of whether or not Measure 38 passes.

Various state and federal agencies have cost-share funds available to build fences and for other land management activities. It is unclear whether, and to what extent, practices required by the measure would be funded, or what level of priority such funding would receive. An Oregon Attorney General's opinion stated that it appears that fencing required under this measure would: (a) be added to

the list of legislative priorities, but would not have priority for GWEB funding, and (b) would have priority for any ODFW Habitat and Restoration and Enhancement funds.

There is no requirement that any federal cost-share funds would give practices required by this measure any level of priority different than already exists. Cost-share generally is available only for the original construction costs; the landowner must pay the annual maintenance and alternative feed costs.

Definitions from the Oregon Revised Statutes (ORS)

Various sections of the ORS are quoted below. The sections are referred to in the ballot measure and are provided here for a better understanding of the measure. The interested reader will need a copy of the ballot measure for these definitions to be useful. In some cases, additional sections were included because of the way the statutes are written. Parts that appeared to be extraneous to an understanding of the intent of the section were left out.

308.792 "Designated riparian land" means the beds of streams, the adjacent vegetation communities, and the land thereunder, which are

predominantly influenced by their association with water, not to extend more than 100 feet landward of the line of nonaquatic vegetation, which are privately owned and which qualify for exemption under ORS 308.792 to 308.803.

315.134 Fish habitat improvement. (1) ...a credit against the taxes otherwise due ...based upon the cost of a fish habitat improvement project certified under ORS 496.260. The amount of the credit shall be 25 percent of the amount certified. (2)...(d) The...project must not be required by existing federal or state statute.

541.375 Watershed enhancement projects; application for funds or assistance; criteria for approval. (1) ...request for funding for or for advice and assistance in developing a watershed enhancement project under the program established by the Governor's Watershed Enhancement Board... (4) A watershed enhancement project may use mechanical, vegetative or structural methods including, but not limited to, management techniques, erosion control, streambank stabilization, forest, range or crop land treatment, site specific in-stream structures, watershed assessments and action plan development, implementation and monitoring....

468B.005 "Water" or "the waters of the state" include lakes, bays, ponds, impounding reservoirs, springs, wells, rivers, streams, creeks, estuaries, marshes, inlets, canals, the Pacific Ocean within the territorial limits of the State of Oregon and all other bodies of surface or underground waters, natural or artificial, inland or coastal, fresh or salt, public or private (except those private waters which do not combine or effect a junction with natural surface or underground waters), which are wholly or partially within or bordering the state or within its jurisdiction.

468B.048 Standards of quality and purity; factors to be considered; meeting standards.

(1) ...may establish standards of quality and purity for the waters of the state in accordance with the public policy...shall consider the following factors: ... floating solids...; ...suspended solids, settleable solids, colloids or a combination of solids with other substances suspended in water...; ...organisms of the coliform group, and other bacteriological organisms or virus...; ...oxygen demand...; ...dissolved oxygen content of the waters...; ...other physical, chemical, biological or radiological properties that may be necessary for preserving the

quality and purity of the waters of the state; ...any substance must be excluded from the waters for the protection and preservation of public health; and... The value of stability and the public's right to rely upon standards as adopted for a reasonable period of time to permit institutions, municipalities, commerce, industries and others to plan, schedule, finance and operate improvements in an orderly and practical manner....

468B.050 When permit required. (1) Except as provided in ORS 468B.215, without first obtaining a permit from the director, which permit shall specify applicable effluent limitations and shall not exceed five years in duration, no person shall: ... (d) Construct, install, operate or conduct any industrial, commercial, confined animal feeding operation or other establishment or activity or any extension or modification thereof or addition thereto, the operation or conduct of which would cause an increase in the discharge of wastes into the waters of the state or which would otherwise alter the physical, chemical or biological properties of any waters of the state... (2) ... "confined animal feeding operation" has the meaning given in ORS 468B.205.

468B.205 Confined animal feeding operation; definition. ... "confined animal feeding operation" means the concentrated confined feeding or holding of animals or poultry, including, but not limited to horse, cattle, sheep or swine feeding areas, dairy confinement areas, slaughterhouse or shipping terminal holding pens, poultry and egg production facilities and fur farms, in buildings or in pens or lots where the surface has been prepared with concrete, rock or fibrous material to support animals in wet weather or which have waste water treatment works.

468B.215 Fees; permit conditions. (2) A fee shall not be assessed to nor a permit required of confined animal feeding operations of four months or less duration or that do not have waste water control facilities.... (5) A permit for a confined animal feeding operation shall not expire, but may be revoked or modified by the director or may be terminated upon request by the permit holder...

496.260 Project applications: contents: notice of reasons for rejection: approval conditions: limitations on tax credit. (1)...The department shall develop rules and procedures for administering its responsibilities

under this section and ORS 315.134 and 496.265.

496.265 Limitation on amount eligible for tax credit. ...shall not preliminarily certify under ORS 496.260 (2), in any one calendar year, as eligible for tax credit under ORS 315.134, fish habitat project costs in excess of \$100,000....not grant preliminary certification for a fish habitat improvement project unless application under ORS 496.260 (1) is filed with the department on or before January 1, 1998.

568.900 Definitions for ORS 568.900 to 568.933....
(5) "Plan" or "water quality management plan" means a

plan developed under ORS 568.909....

568.906 Plan implementation to involve local agencies. It is the intention of the Legislative Assembly that plans developed under ORS 568.900 to 568.933 involve soil and water conservation districts as local management agencies to the fullest extent practical, consistent with the timely and effective implementation of these plans.

568.909 Boundaries for land subject to water quality plans; implementation of plan.

(1) The State Department of Agriculture may describe the boundaries of agricultural and rural lands that are subject to a

water quality management plan:
(a) Due to a determination by the Environmental Quality Commission to establish a Total Maximum Daily Load for a body of water...; (b) Due to a declaration of a ground water management area...; or (c) When an agricultural water quality management plan is otherwise specifically required by state or federal law. (2) For an area whose boundaries have been designated under this section, the department shall develop and carry out a plan for the prevention and control of water pollution from agricultural activities and soil erosion. The plan shall be based upon scientific information.

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