South Central Oregon Regional Solutions Advisory Committee
Representing Klamath and Lake Counties

MEETING SUMMARY
Wednesday Oct. 30th, 2019
10:00 am – noon
Building 7 Conference Center
Klamath Community College

Advisory Committee:
Jane O'Keeffe, Convener
Barry Imler, Fremont–Winema USFS Forest Supervisor
Betty Riley, SCOEDD
Kelley Minty-Morris, Klamath County Commissioner
Carol Westfall, Klamath Falls Mayor
Randy Cox, KCEDA
Brad Winters, Lake County Commissioner
Jim Walls, Lake County Resources (via conference call)

Regional Solutions Team:
Annette Liebe, Coordinator
Greg Svelund, DEQ
Mike Hiatt, DEQ
Wade Peerman, DEQ
Beth Pietrzak, ODA
Jarod Johnson, ODOT
Kyle Gorman, OWRD (via conference call)
Jon Jinings, DLCD
Susan Bethers, OPRD

Guests:
Alex Gonyaw, Klamath Tribes
Mason Terry, OIT
Nathan Cherpeski, Klamath Falls
Ray Turner, Lakeview Mayor
Jeremy Austin, ONDA (via conference call)
Bill Lehman, Klamath Watershed Partnership
Karen Chase, Energy Trust
Greg Addington, Environmental Quality Commission

Water Quality update

1. Oregon Department of Agriculture - Beth Pietrzak
   Beth provided an update on the work that the Oregon Department of Agriculture is doing to reduce phosphorous loading from agricultural operations in Upper Klamath Lake. Beth noted opportunities for additional investment (noted in blue in her presentation). These opportunities include: funding for cattle related best management practices, assistance with telling the success stories, and support for additional bio-char projects if the pilot project proves successful. Beth also noted that the Oregon Watershed Enhancement Grants, that the SC Advisory Committee wrote letters of support for, were funded. Beth's presentation can be found on the Regional Solutions website.

2. Aeration Pilot Project – Mason Terry, OIT
   Mason shared a presentation on the solar powered flotation aeration device that he worked on with OIT students. The floatovoltaic aeration system was used to infuse air to counteract hypoxic conditions by increasing dissolved oxygen near the lake bottom. Overall, the project although small in scale, was very effective. Mason is hoping to secure additional funds to double the number of "islands", deploy a tag reader to detect tagged fish and measure water conditions. An application has been submitted to allow the system to be deployed for three years. Mason's presentation can be found on the Regional Solutions website.

3. Water Quality Trading – Wade Peerman, DEQ
   Wade provided a high level overview of the water quality trading program adopted by the Environmental Quality Commission. Trading is voluntary and most commonly involved a point source (permit holder) trading with non-point sources (e.g. agricultural land restoration). The goal is to create additional pollutant reductions than would otherwise be achieved. The Committee and team are interested in exploring opportunities to create additional reductions or "credits" in the Klamath basin that could be available for future economic development projects. Bill Lehman commented that the Klamath Watershed Partnership used to be the Administrator of the Klamath Trading and Accounting program; he highlighted that a significant barrier to creating credits is that federally funded projects can't be used for generating credits. The committee supported the establishment of a sub-group that will dig into greater details and identify potential project opportunities. Wade's presentation can be found on the Regional Solutions website.

Governor's Council on Wildfire Response – Mark Bennett, Baker County Commissioner, Task Force Member and Holly Kerns, Baker County Planning Director

Commissioner Bennett provided an overview of the Council's work and laid out the timeline moving forward. The Council recommendations and report will be in November and there will be hearings on the report during legislative days in November. The Recommendations are in three "buckets": Mitigation, Suppression and Recovery. The goal is to treat 40% of the land in the next 20 years to reduce fuel loads. There are also recommendations to increase fire response and suppression. This includes support for the Oregon Department of Forestry Firefighting and Rural Fire Protection Associations. It is likely that there will be both substantive legislation and a funding request during the 2020 and 2021 legislative sessions.

Holly Kerns, Baker County Planning Director, shared an overview of the recommendations related to creating adaptive communities. Mapping is needed to identify high risk areas and the Council will recommend that LCDC do rulemaking to develop methods for local planning. There will also be a funding request to support mapping and planning. The recommendations are also likely to include building codes for "hardening" structures. Annette agreed to send the committee the link to the Governor's Wildfire Response Council.

Air Quality update – Greg Svelund, DEQ
This agenda item was deferred to the next meeting. The committee ran out of time to cover it on October 30th.

Oregon TECH

Hands on Education for Real-World Achievement

Oregon Renewable Energy Center

Assoc. Prof. Mason Terry, PhD

OREC
Oregon Renewable Energy Center

Endangered Sucker Fish

- Hypoxic conditions in July/Aug./Sept. in Upper Klamath Lake essentually kills adult and juvenile Klamath, Short-nose and Lost River Sucker fish (endangered).

Many Causes?

Facts:

- Excess phosphorus
- Increase/shift in algae
- Algae senesces
- Algae decomposes and sinks
- Decomposition uses oxygen and produces ammonia
- Toxic benthic environment
- Endangered fish live on benthos

Many possible mortality causes:

- Ammonia
- Lack of dissolved oxygen
- Lake ph
- Phosphorous load
- Temperature
- Others?
- Combination?

Algae Treatment Methods

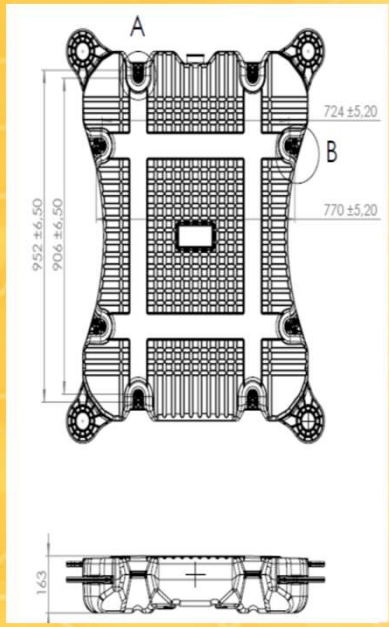
- Remove/eliminate agro-industrial and residential runoff
- Manage waterfowl
- Eliminate soil erosion runoff
- Chemical algaecides
- Fountains
- Aeration
- Filtration
- Harvesting
- Absence of light/shading

Solar Aeration System

- Design and build floatovoltaic aeration systems: infuse air to counteract hypoxic conditions by increasing dissolved oxygen near lake bottom. $0 electricity; the sun is free!
- $32,000 OREC funds committed to project (2 years). Seeking additional funds to expand.

The system

- Two 20x14ft islands.
- Two aeration systems per island.
- System: aeration pump, two solar modules, charge controller, 200Ah battery (32hrs of energy storage).
- Some wire, air tubes, diffusers and anchors.
- That's it!



Hands-on education for real-world achievement.

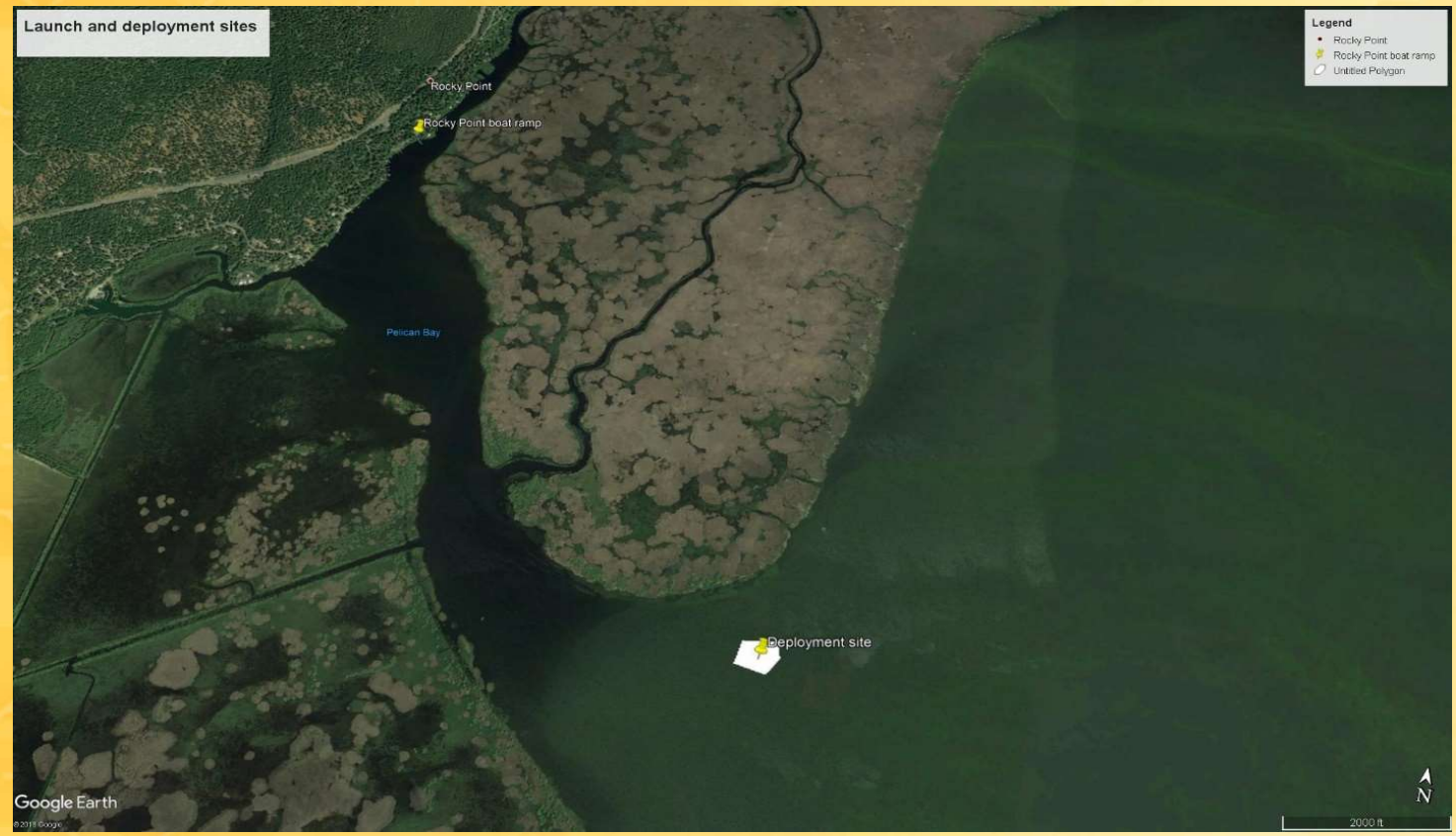
The Finished Product

Blowing Bubbles

Hands-on education for real-world achievement.

Deployment Location

- Known congregation area for the Sucker fish
- Mouth of Pelican Bay



Initial Results

Aeration region DO:
5-6mg/L bottom to surface

With aeration

Lake
botto

Us

Floatovoltaics – Pros/Cons

Pros:

- Doesn't require viable farmland.
- Little to no site lease cost (who owns the lake surface?).
- Would provide shading for fish habitat, reduces algae growth and water evaporation.
- No heavy equipment, pile driving/screws, roads, fencing, etc.
- Boosts efficiency (~10%) do to evaporative cooling in the summer.
- Typically located near to the load.
- Not affected by lake ice formation or waves over 3ft.

Cons:

- Installers need training (only a few installers in US, one located in N. Cal.).
- Needs anchor system (lake bottom, possibly shore).
- Underwater cabling (depending on distance from shore).

What's Next

- Double number of islands.
- Deploy PIT tag reader to detect tagged fish
- Detailed water conditions measurements
- 3 year permit application submitted

Acknowledgments

- Alex Gonyaw and team.
- REE Student team.

Oregon TECH

Q & A

Hands-on education for real-world achievement.

Oregon's Agricultural Water Quality Program

Reducing phosphorous loading from agricultural operations to Upper Klamath Lake

Beth Pietrzak
Oregon Department of Agriculture
Water Quality

Oregon's Agricultural Water Quality Program

AgWQ Management Act (1993)

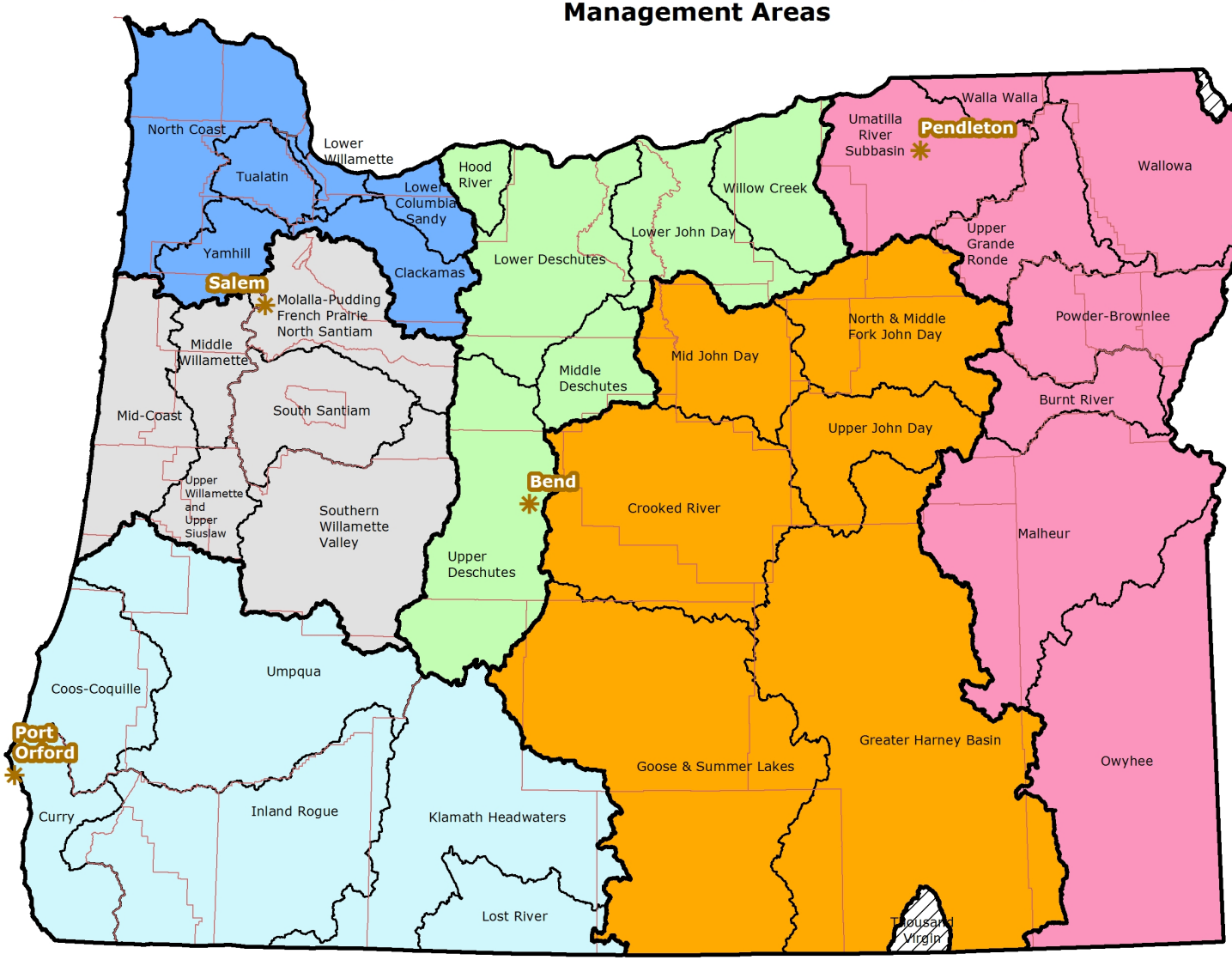
- ODA is lead
- Watershed-based plans
- Emphasis on SWCDs
- Voluntary first
- ODA regulates
- LACs
- 38 Area Plans and Rules

Water Quality Program Goals

Prevent and control water pollution from agricultural activities and soil erosion

Allow streamside vegetation to establish and grow to provide shade, bank stability, and filtration of overland flow

Oregon Department of Agriculture
Agricultural Water Quality Management Program
Management Areas



Agriculture Water Quality Specialists

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Tom Demianew - East
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Excluded from AgWQMA

Location of WQ Specialists

Regional boundaries

SWCD Boundaries

Agricultural Water Quality Management Areas

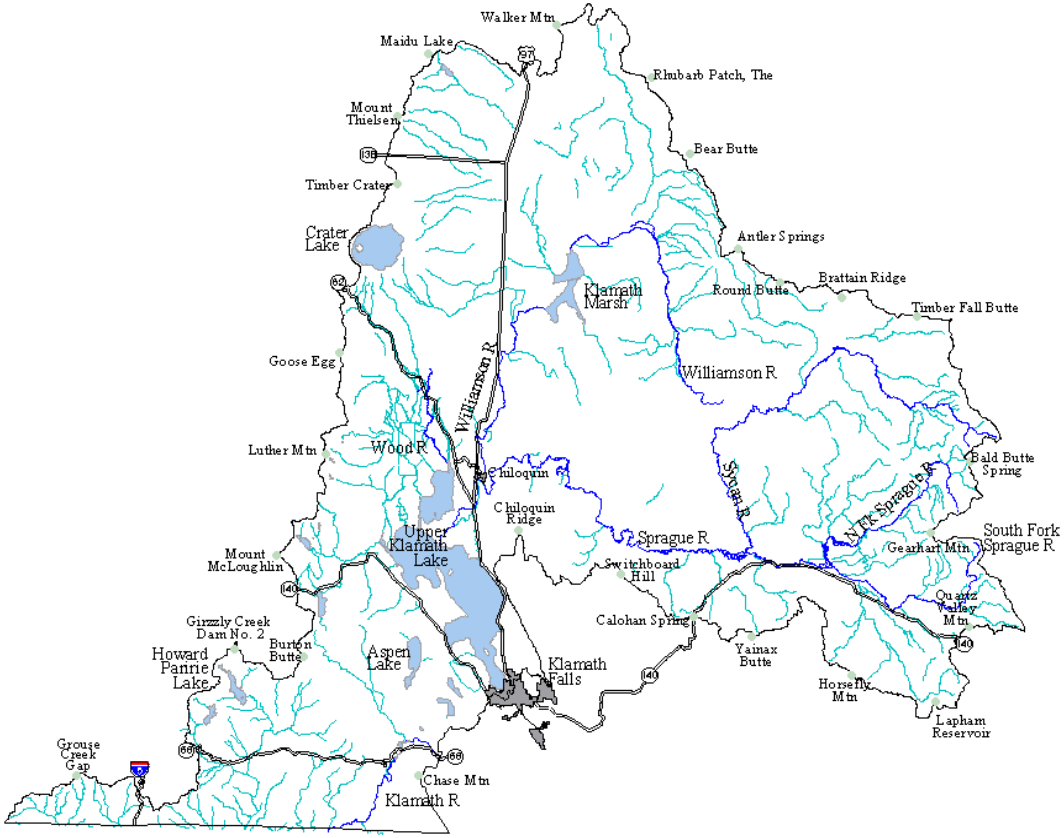
This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.

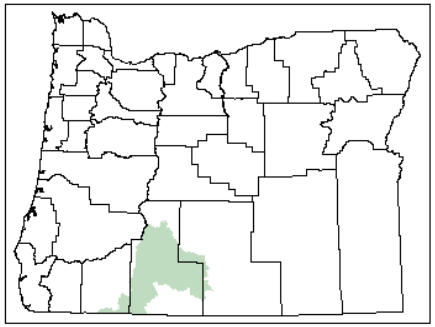
Prepared By: jcruser
Date Saved: 3/31/2016
Date Printed: 3/31/2016
Scale: 1:2,992,835
Projection: NAD 1983 Oregon Statewide Lambert Feet Intl
Path: V:\NRPA\WaterQuality\AgWQ_ManagementArea_Data\StatewideData\ByPlanner_Jan2016.mxd

0 20 40 80 120 160 Miles

Oregon Department of Agriculture
635 Capitol St. NE
Salem, OR 97301-2532

Klamath Headwaters
Agricultural Water Quality Management Area





5 0 5 10 15 20 Miles

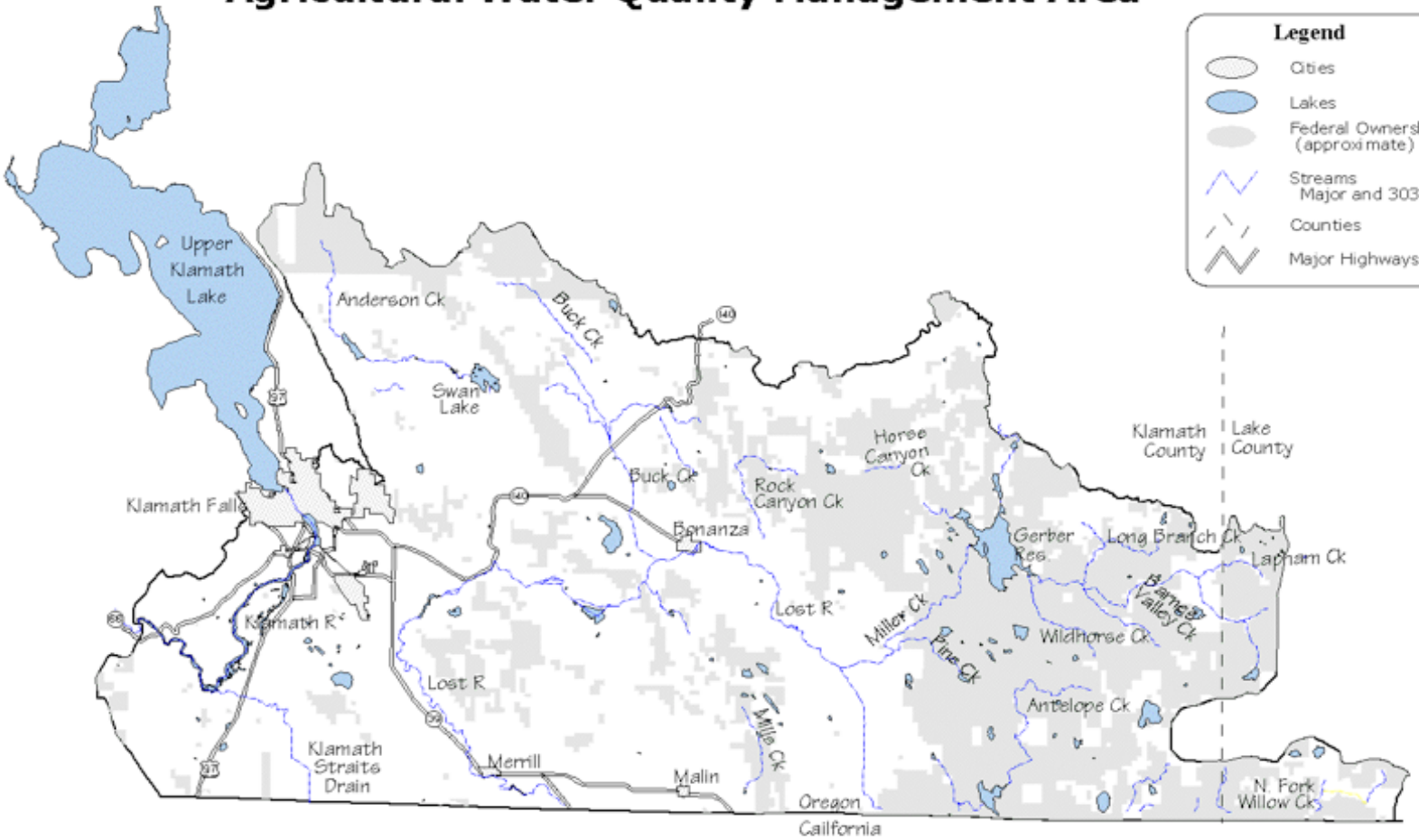
Scale 1:1,267,200
1 inch = 20 miles

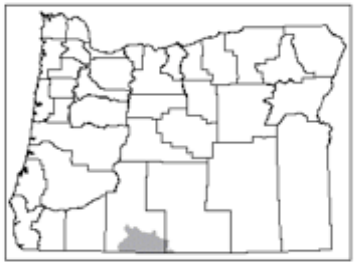
No warranty is made by the Oregon Department of Agriculture as to the accuracy, reliability, of completeness of this data. Spatial information may not meet National Map Accuracy Standards. Original data was compiled from various sources. This product may be updated without notification.
Contact: Natural Resources Division
Date: May 18, 2001
Request 250

N
W E
S

Oregon Department of Agriculture

Lost River Subbasin
Agricultural Water Quality Management Area





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Oregon Department of Agriculture

Natural Resources Division
January 25, 2001 Request 186

Klamath TMDLs

- Klamath Lake TMDLs : Approved April 7, 2002
- Upper Klamath Lake Drainage
  - Temperature
  - Dissolved Oxygen
  - pH
  - Chlorophyll-a
- Pollutant of concern is Phosphorous

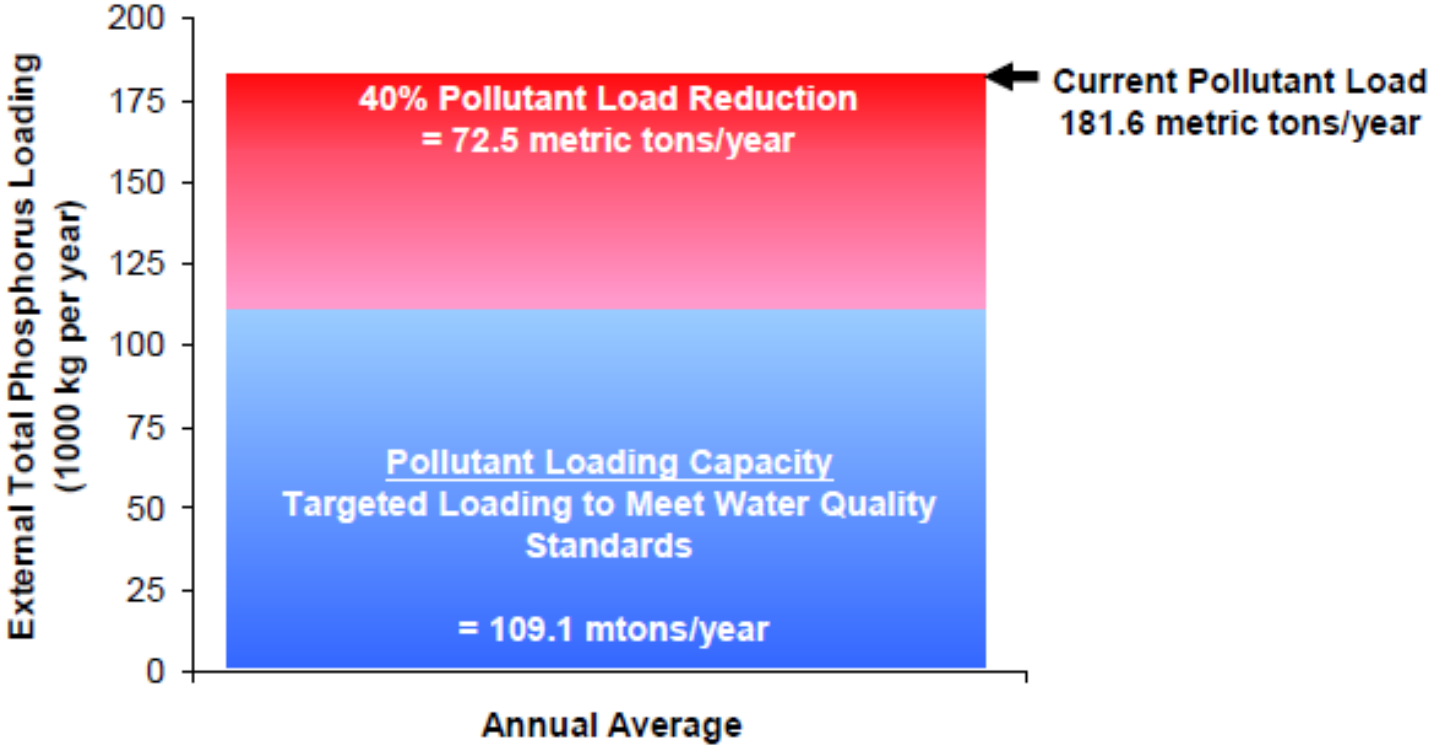


Figure 2-26. Loading Capacity for Upper Klamath and Agency Lakes

mary data
and information sources to ascertain the usability of the information.

Timeline

- Late 2016 & 2017: Running Y & Caledonia Farms
  - Compliance cases & monitoring
- March 2018: Klamath Tribes Water Quality data
  - Sucker die-off 2017
- 2001 Klamath Lake TMDL: pH, DO, Chlorophyll A
  - Phosphorous is main pollutant of concern
- March 2018: ODA Water Quality Program asked to work with all agricultural landowners around UKL to reduce phosphorous loading to the Lake and improve water quality.

Activity since March 2018

- Landowner Meetings (Spring 2018)
- Landowner contacts and site visits
- Running Y & Caledonia Farms: monitoring, pump shut off, solutions, all summer tailwater relayed to adjacent wetlands, continual adaptive management
- ODA and landowners working with all restoration orgs/staff in Klamath that are available to assist
- UKL AgWQ Technical Work Group: USFWS, NRCS, DEQ, Klamath Tribes, SWCD, KWP, TU, USGS, OWEB, ODFW, ODOT, OWRD
- ODA Monitoring Plan

Activity since March 2018

- **Water Quality & Quantity Monitoring**
  - began July 2018
  - Funding from ODA, DEQ, OWEB, OWRD

- **Ag Water Quality Farm Plans in place for most agricultural properties around the Lake**
  - **Improved water management, sediment/soil management, cattle BMPs**

Progress: Thanks for Letters of Support!

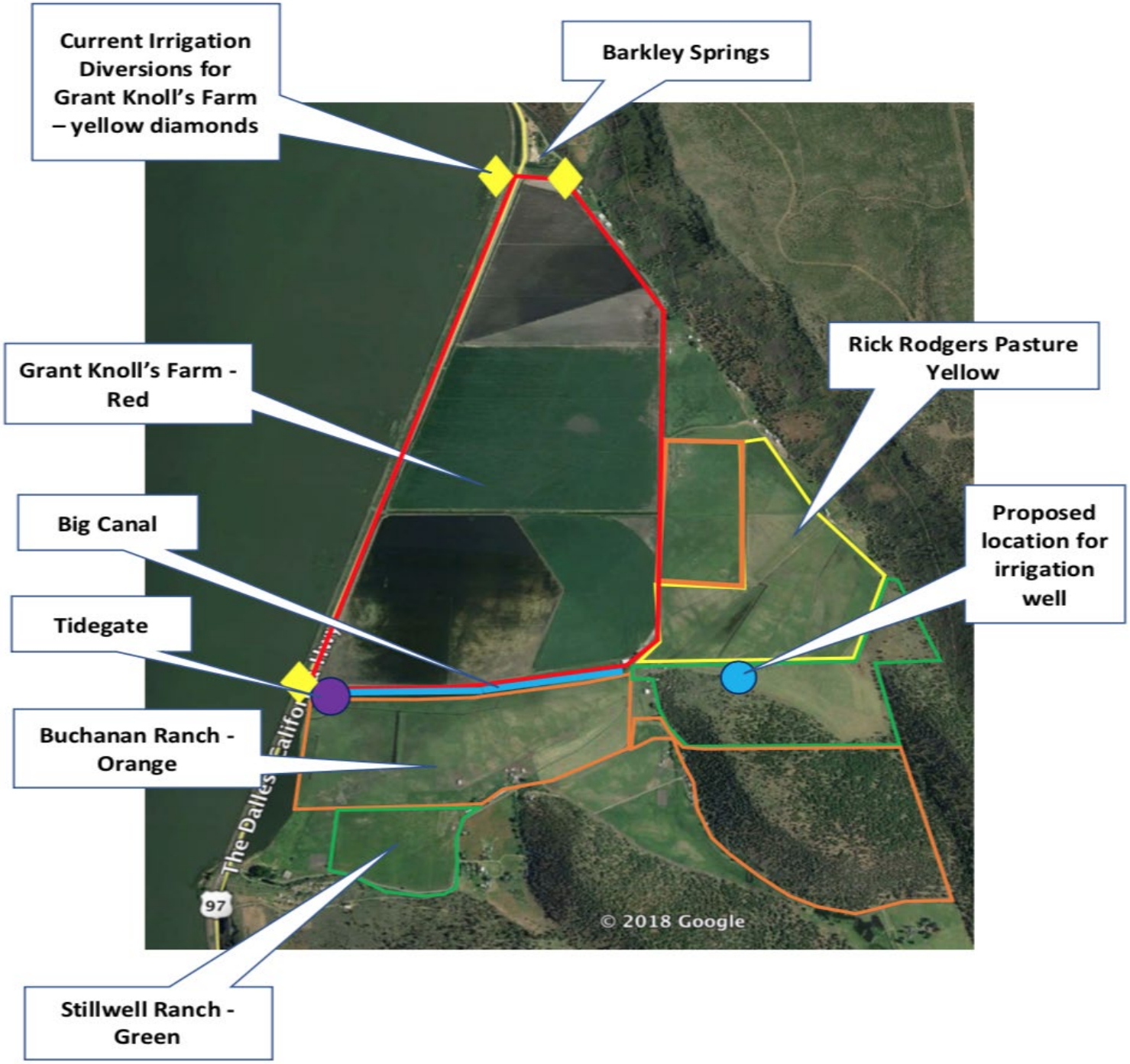
- **OWEB TA grants: $ available this week**
  - **Engineering funds: Running Y, Caledonia, Lower Algoma**
  - **Planning funds: Lakeside Farms**
- **NRCS CIS (Conservation Implementation Strategy): submitted last week**

Moving Forward

- **Seeking additional funding for implementation: OWEB, USFWS, other?**
- **Working with Ag Landowners & Klamath restoration partners to implement projects**
- **Funding approved by the Legislature for 2019-2021 ODA WQ Monitoring**

- Telling the story: Positive Ag stories. A lot of work has been done by agricultural landowners to improve water quality and habitat in the Klamath Basin. A lot of State and Federal funds have been invested. Lots of stories to tell to the media & public.
  - Sprague River Watershed
  - Upper Klamath Lake

DANGER
DO NOT REMOVE
UNDER PRESSURE


Current Irrigation Diversions for Grant Knoll's Farm – yellow diamonds
Barkley Springs
Grant Knoll's Farm - Red
Rick Rodgers Pasture Yellow
Big Canal
Proposed location for irrigation well
Tidegate
Buchanan Ranch - Orange
Stillwell Ranch - Green
The Dalles
97
© 2018 Google

Pre-Treatment/end of pipe Options

- Filters composed of Biochar + other media (Iron, Sand, Oyster Shells (Calcium))
- Delaney/Miedema Biochar Contractors
  - IM-11 grant
  - Potential for Biochar systems:
    - Forest thinning, hemp stalks/ag residues, juniper clearing Slash
      > Biochar > filters & soil amendments

Strategic Implementation Areas

- Upper Sprague (2018)
- Middle Sprague (2019)

Strategic Implementation Area (SIA)

<u>Goals</u>

- Improve Watershed Health – **Voluntary Conservation**
- Comply with Regulations
- Tell Agriculture's Story

Questions?

Beth Pietrzak
Water Quality Specialist
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epietrzak@oda.state.or.us

State of Oregon
Department of
Environmental
Quality

Water Quality Trading 101

Regional Solutions Team Advisory Committee Meeting

Klamath Falls, OR

October 30, 2019

Wade Peerman, Oregon DEQ

What is Water Quality Trading?

- Water Quality trading is ***voluntary***
- Trading allows one source to meet its regulatory obligations by using pollutant reductions created by another source
- Most common type of trade involves: point source (e.g NPDES permittees) trading with non-point sources (e.g. agricultural lands)

Benefits of Water Quality Trading

- Creates economic incentives for voluntary pollutant reductions
- Results in *additional* pollutant reductions than would otherwise be achieved without trading
- Ancillary environmental benefits
- Can be a less expensive, more environmentally-friendly compliance tool than traditional treatment methods

2015 Rulemaking

- Clarified State Authority
- Transparency
- Accountability
- Consistency

What do the rules do?

- Found at OAR 340-039
- Establish Eligibility
- Establish Common Definitions
- Specify Required Elements of a Trade
- Sideboards & Prohibitions

Permits with Water Quality Trading

- Clean Water Services (NWR)
- City of Medford (WR)
- Port of St Helens (NWR)

Areas were there is interest in Water Quality Trading

- City of Ashland (WR)
- MWMC (WR)
- Klamath Basin (ER)
- City of Molalla (NWR)
- ODFW Hatcheries (WR)
- Hells Canyon Complex Snake River (ER)
- Willamette Water Supply Project 401 WQ Certification (NWR)
- Others??? Let me know!

State of Oregon Department of Environmental Quality

Any Questions?

Oregon DEQ Water Quality Trading Website:

https://www.oregon.gov/deq/wq/wqpermits/Pages/Trading.aspx

Wade Peerman, DEQ Water Quality 503-229-5046

DEQ
State of Oregon
Department of
Environmental
Quality

TREE FOR ALL

PARTNERS FOR
WATERSHED HEALTH

https://youtu.be/HBgY4-aDf-k