Ranch Water Quality Planning Short Courses:

Napa River and Sonoma Creek Watersheds

Morgan Doran, David Lewis, Stephanie Larson and Michael Lennox
UC Cooperative Extension

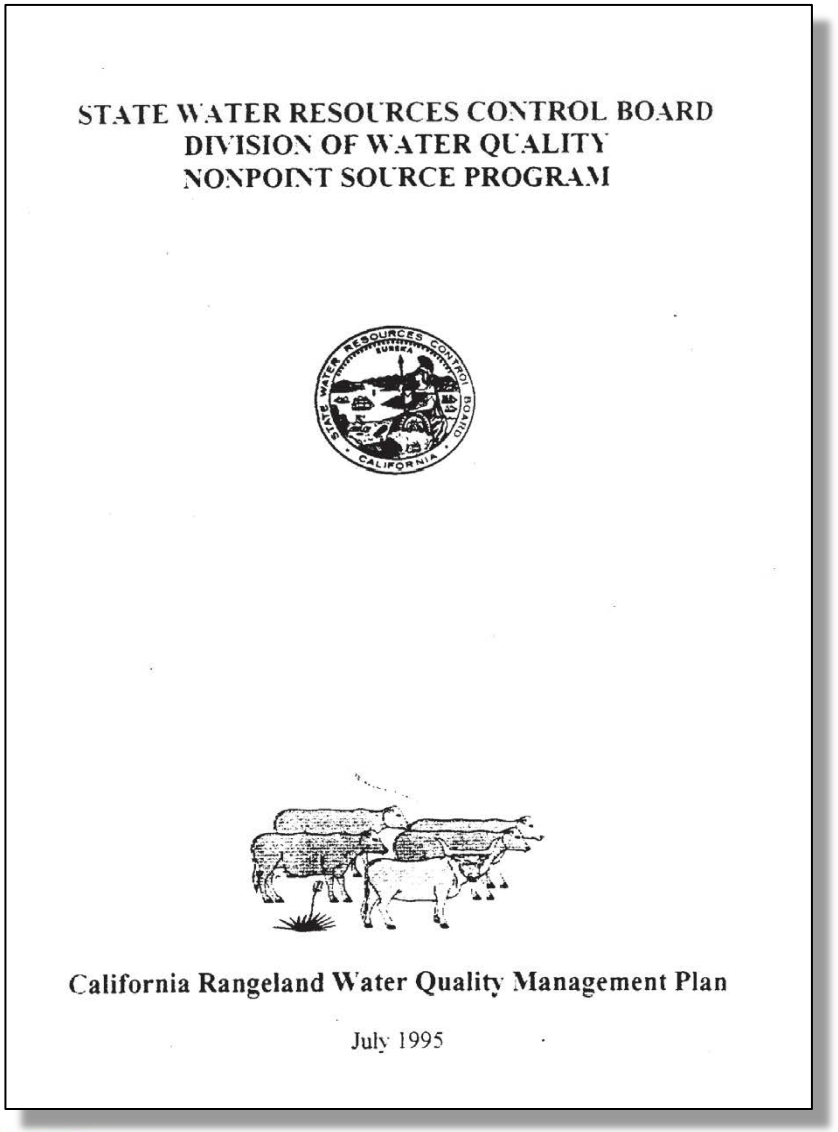
UC CE | University of California
Agriculture and Natural Resources | Cooperative Extension

RWQP Short Course Starting Point

RMAC & BOF

CARCD
UCCE
USDA-NRCS

Ranch Water Quality Planning
(RWQP) Short Course



SWRCB
Tiered Regulatory Approach

Non-Point Source Plan

Tier 1 Voluntary implementation of BMPs

Tier 2 Regulatory encouraged BMPs

Tier 3 Regulatory based BMPs

SWRCB Tiered Regulatory Approach

Non-Point Source Plan

Tier 1 Voluntary implementation of BMPs

Tier 2 Regulatory encouraged BMPs

Tier 3 Regulatory based BMPs

SWRCB NPS Pollution Control Program (2004)

Permitting Authorities / Options

Waste Discharge Requirements (Permits)

Conditional Waivers of WDR

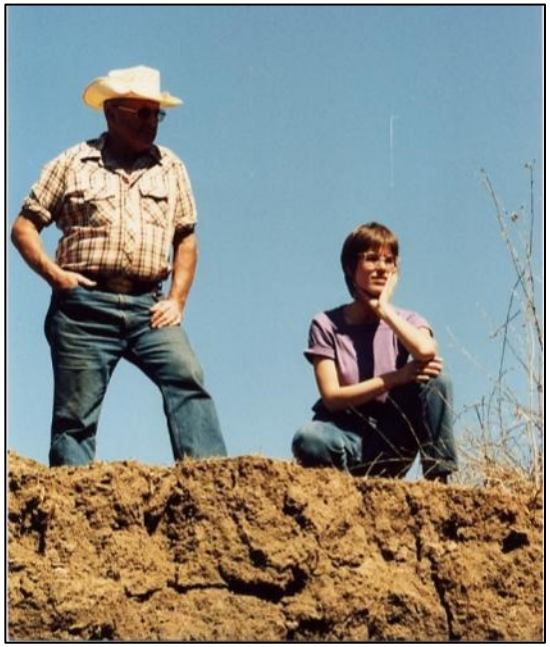
Basin Plan Prohibitions

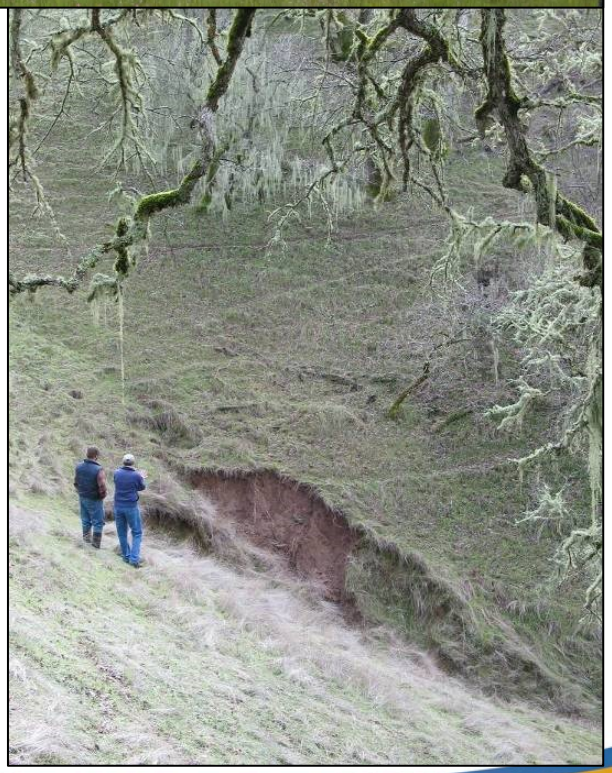
RWQP Short Course
Driving Factors

Regulatory Compliance

Address WQ Issues / Problems

Ranch Water Quality Science





Elements of RWQP
Short Course

PRIZE TIME

Elements of RWQP Short Course

Indoor Sessions

Overview of WQ Regulations, Compliance and Short Course

Ranch Water Quality Science

Ranch Goals

Field / Pasture Inventory

Self-Assessment

Ranch Water Quality Practices (BMPs)

Ranch Mapping

Elements of RWQP Short Course

Indoor Sessions

Overview of WQ Regulations, Compliance and Short Course

Ranch Water Quality Science

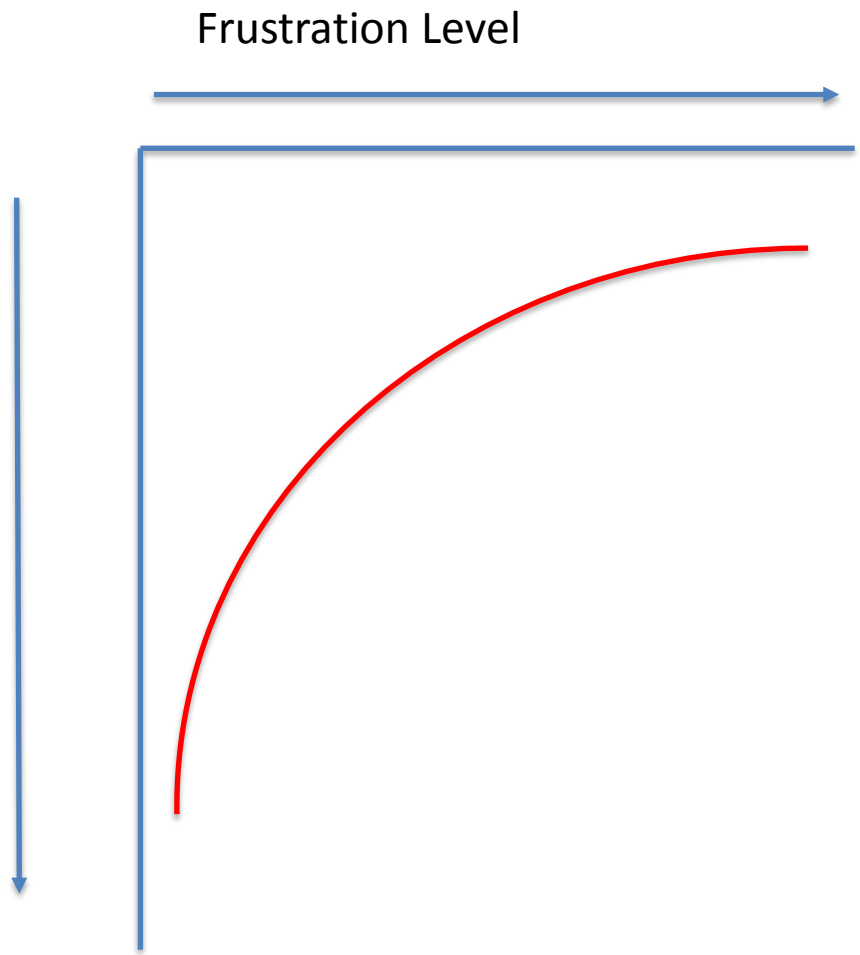
Ranch Goals

Field / Pasture Inventory

Self-Assessment

Ranch Water Quality Practices (BMPs)

Ranch Mapping



Elements of RWQP Short Course

<u>Outdoor Sessions</u>

Ranch Roads

Self-Assessment

Ranch Water Quality Practices (BMPs)

Soil Properties

Monitoring

Short Course Outcomes

PRIZE TIME

Short Course Outcomes

Completed RWQP

Short Course Outcomes

Completed RWQP

Understanding of:

- Regulatory / Compliance Process
- Ranch Water Quality Science
- Merging WQ and Ranch Goals
- Team of People and Agencies

Short Course Outcomes

Completed RWQP

Understanding of:

- Regulatory / Compliance Process
- Ranch Water Quality Science
- Merging WQ and Ranch Goals
- Team of People and Agencies

Education

- For Ranchers
- For Landowners
- For Regulators
- For Agencies

Short Course Outcomes

Completed RWQP

Understanding of:

- Regulatory / Compliance Process
- Ranch Water Quality Science
- Merging WQ and Ranch Goals
- Team of People and Agencies

Education

- For Ranchers
- For Landowners
- For Regulators
- For Agencies

Resources for Project Implementation

Photos courtesy of Marin RCD

Napa River and Sonoma Creek Conditional Waiver TMDL Programs

- 2012
- Conditional Waiver of WDR

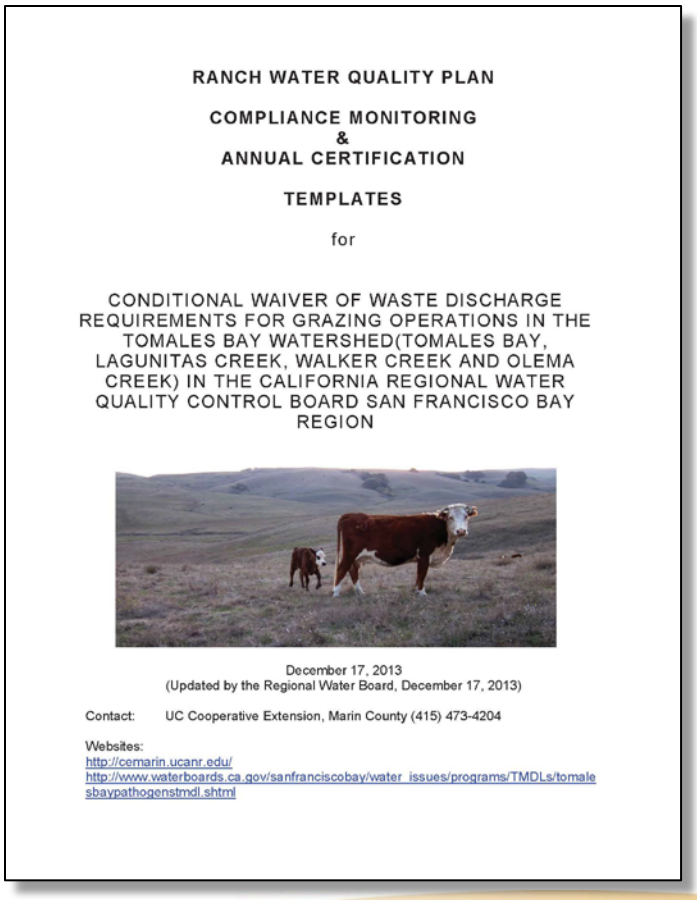
Napa River and Sonoma Creek Conditional Waiver TMDL Programs, 2012

- Elements of Compliance
  - Submit Notice of Intent (NOI) to comply
    - Name and Property Information
  - Completed RWQP
    - Must be available upon inspection
  - Submit Annual Certification
    - Updates on monitoring and projects

Napa River and Sonoma Creek Conditional Waiver TMDL Programs

- Elements of Compliance
  - Submit Notice of Intent (NOI) to comply
    - Name and Property Information
  - Completed RWQP
    - Must be available upon inspection
  - Submit Annual Certification
    - Updates on monitoring and projects
- Direct Reporting to SF Bay Regional Board

Napa River and Sonoma Creek Ranch Water Quality Plan Template



RANCH WATER QUALITY PLAN

COMPLIANCE MONITORING
&
ANNUAL CERTIFICATION

TEMPLATES

for

CONDITIONAL WAIVER OF WASTE DISCHARGE REQUIREMENTS FOR GRAZING OPERATIONS IN THE TOMALES BAY WATERSHED(TOMALES BAY, LAGUNITAS CREEK, WALKER CREEK AND OLEMA CREEK) IN THE CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD SAN FRANCISCO BAY REGION

December 17, 2013
(Updated by the Regional Water Board, December 17, 2013)

Contact: UC Cooperative Extension, Marin County (415) 473-4204

Websites:
http://cemarin.ucanr.edu/
http://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/TMDLs/tomalesbaypathogenstmdl.shtml

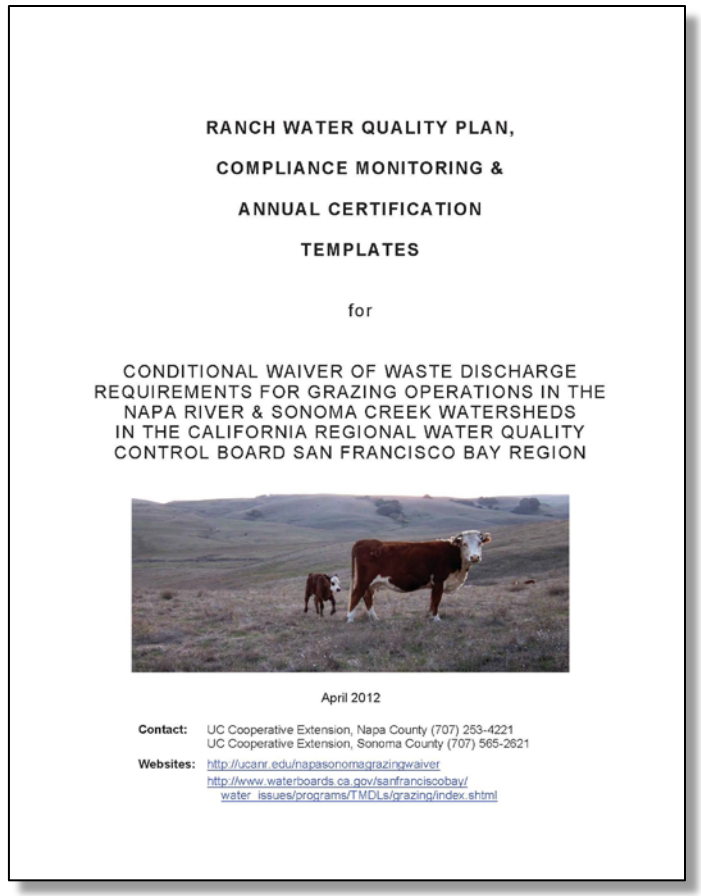
UCCE

NRCS

RCD

Regional Board

Farm Bureau



RANCH WATER QUALITY PLAN,

COMPLIANCE MONITORING &

ANNUAL CERTIFICATION

TEMPLATES

for

CONDITIONAL WAIVER OF WASTE DISCHARGE REQUIREMENTS FOR GRAZING OPERATIONS IN THE NAPA RIVER & SONOMA CREEK WATERSHEDS IN THE CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD SAN FRANCISCO BAY REGION

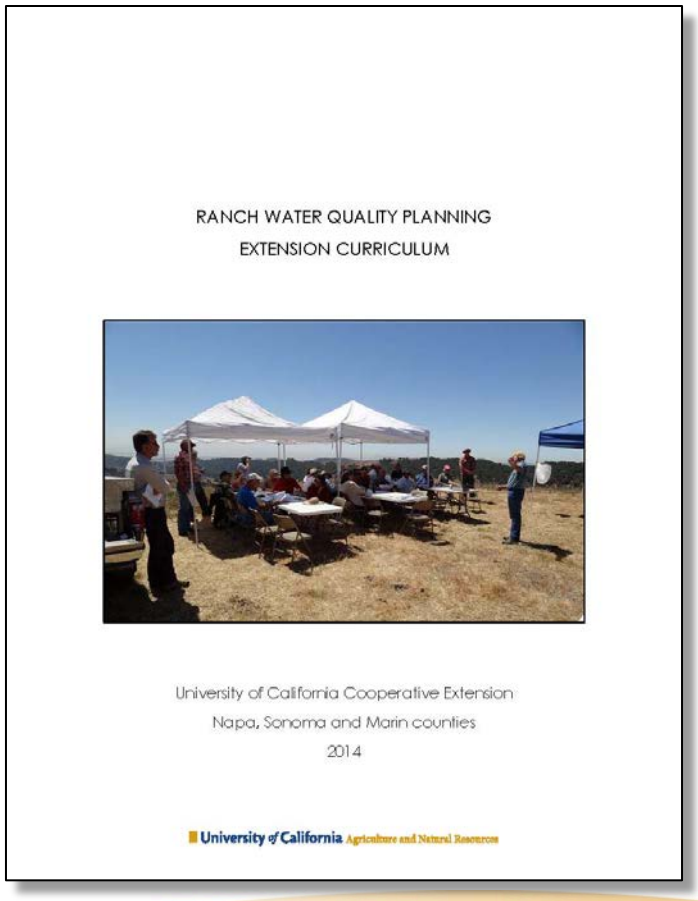
April 2012

Contact: UC Cooperative Extension, Napa County (707) 253-4221
UC Cooperative Extension, Sonoma County (707) 565-2621

Websites: http://ucanr.edu/napasonomagrazingwaiver
http://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/TMDLs/grazing/index.shtml

RWQP Upgrades

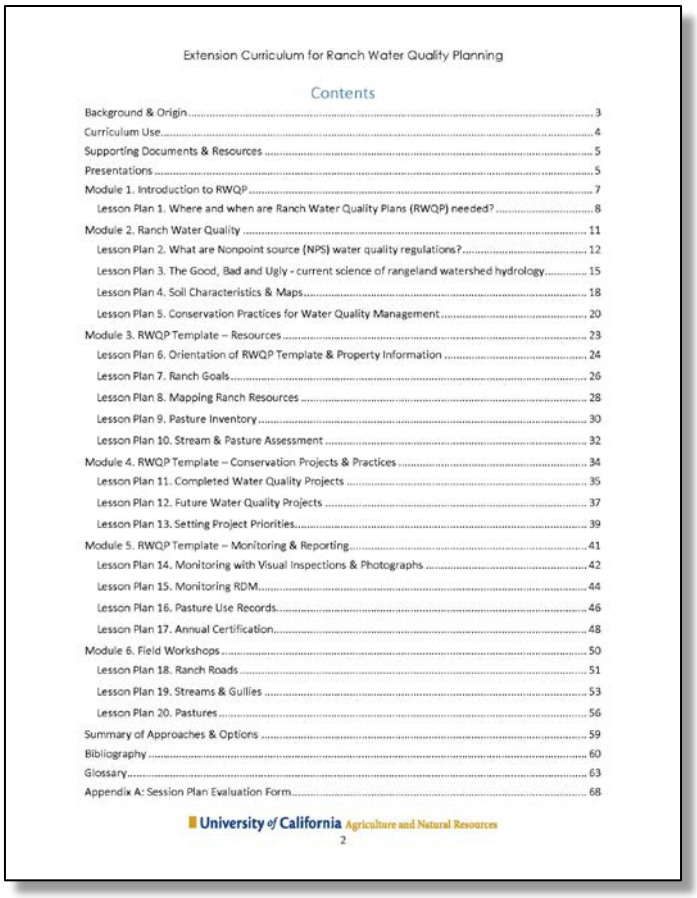
Short Course Curriculum Update



RANCH WATER QUALITY PLANNING
EXTENSION CURRICULUM

University of California Cooperative Extension
Napa, Sonoma and Marin counties
2014

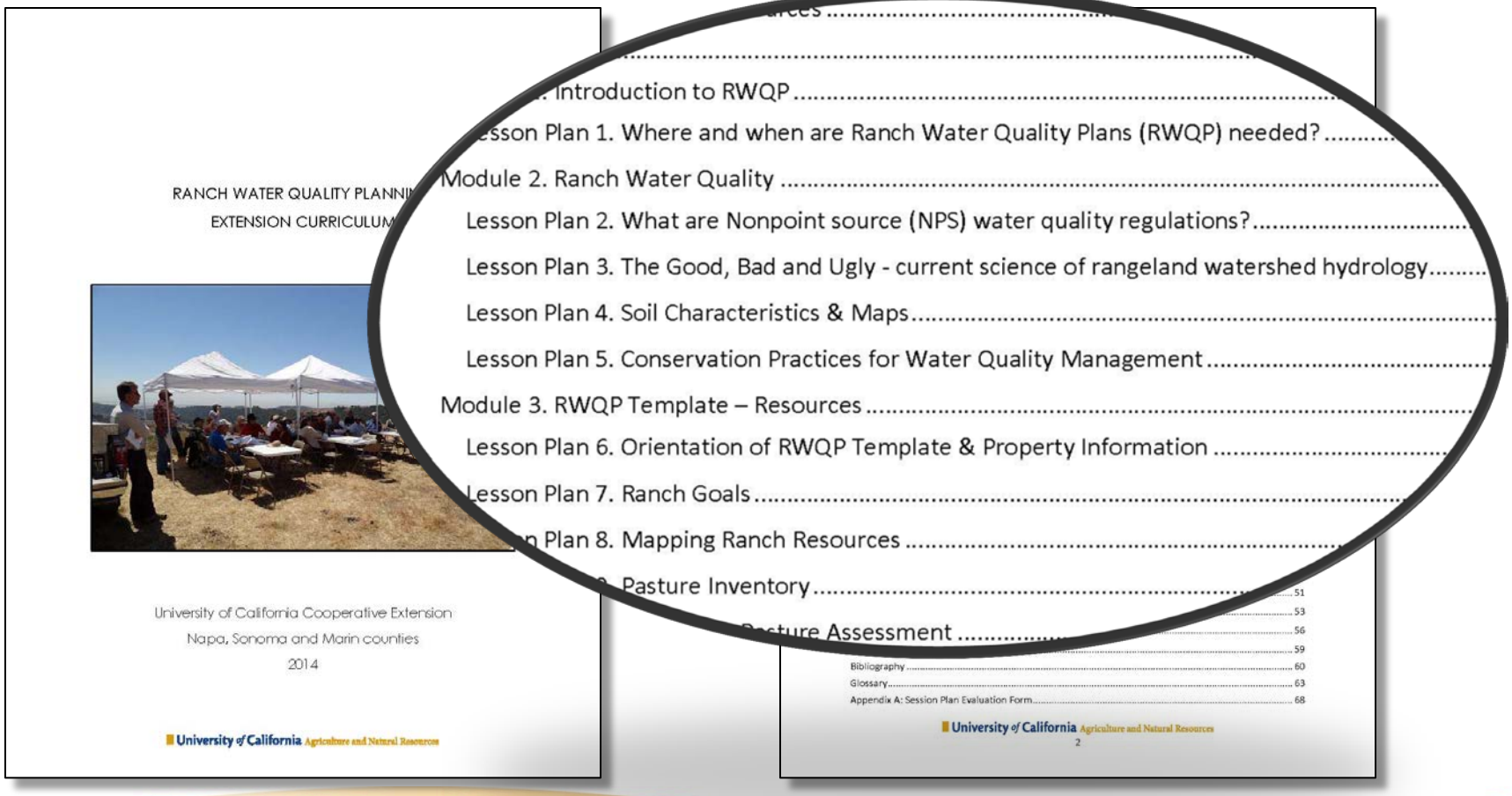
University of California Agriculture and Natural Resources



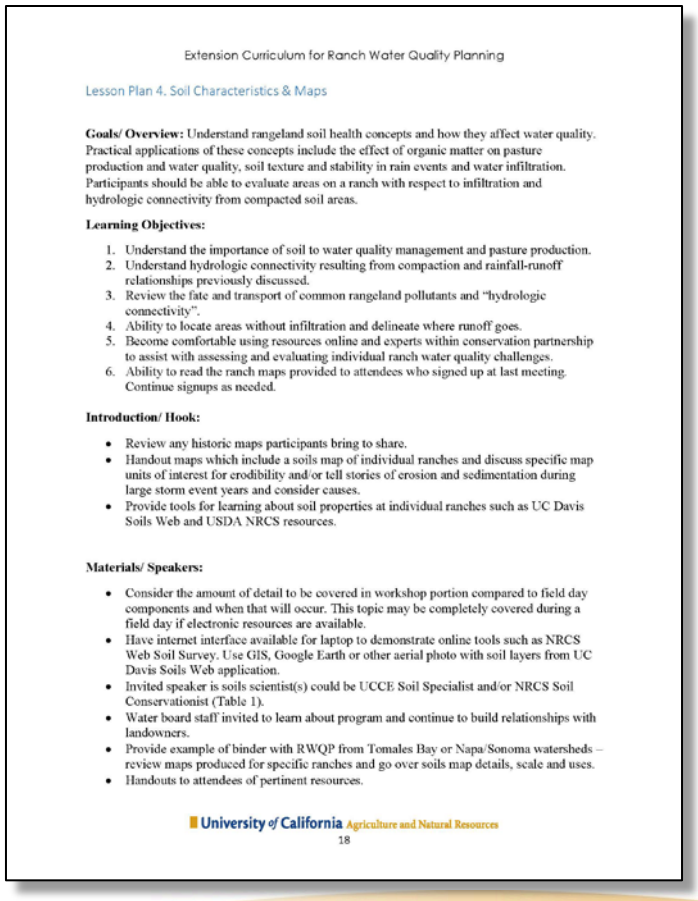
Extension Curriculum for Ranch Water Quality Planning

Contents

Short Course Curriculum Update



Short Course Curriculum Update



Extension Curriculum for Ranch Water Quality Planning

Lesson Plan 4. Soil Characteristics & Maps

Goals/ Overview: Understand rangeland soil health concepts and how they affect water quality. Practical applications of these concepts include the effect of organic matter on pasture production and water quality, soil texture and stability in rain events and water infiltration. Participants should be able to evaluate areas on a ranch with respect to infiltration and hydrologic connectivity from compacted soil areas.

Learning Objectives:

1. Understand the importance of soil to water quality management and pasture production.
2. Understand hydrologic connectivity resulting from compaction and rainfall-runoff relationships previously discussed.
3. Review the fate and transport of common rangeland pollutants and "hydrologic connectivity".
4. Ability to locate areas without infiltration and delineate where runoff goes.
5. Become comfortable using resources online and experts within conservation partnership to assist with assessing and evaluating individual ranch water quality challenges.
6. Ability to read the ranch maps provided to attendees who signed up at last meeting. Continue signups as needed.

Introduction/ Hook:

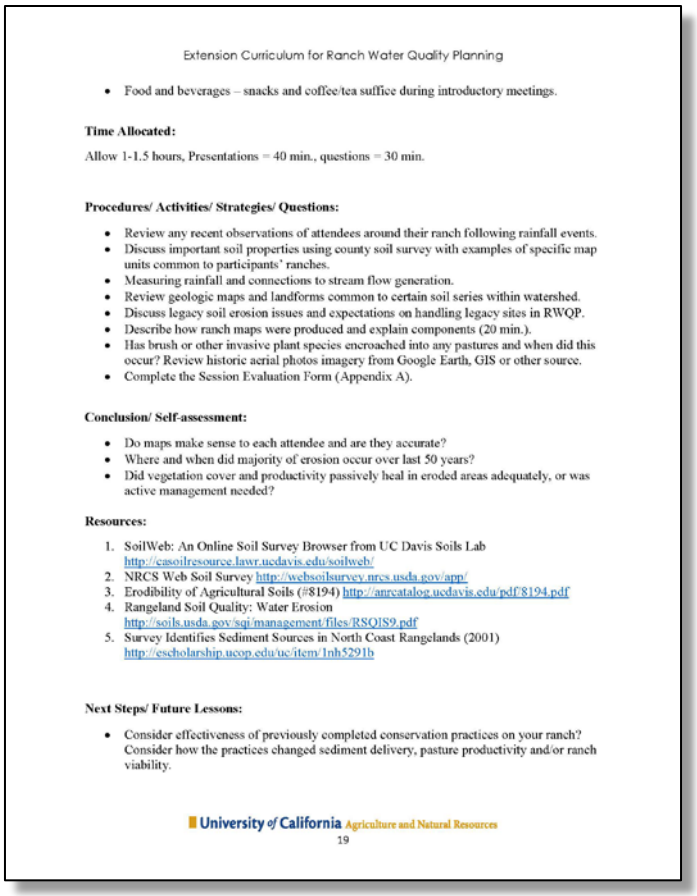
- Review any historic maps participants bring to share.
- Handout maps which include a soils map of individual ranches and discuss specific map units of interest for erodibility and/or tell stories of erosion and sedimentation during large storm event years and consider causes.
- Provide tools for learning about soil properties at individual ranches such as UC Davis Soils Web and USDA NRCS resources.

Materials/ Speakers:

- Consider the amount of detail to be covered in workshop portion compared to field day components and when that will occur. This topic may be completely covered during a field day if electronic resources are available.
- Have internet interface available for laptop to demonstrate online tools such as NRCS Web Soil Survey. Use GIS, Google Earth or other aerial photo with soil layers from UC Davis Soils Web application.
- Invited speaker is soils scientist(s) could be UCCE Soil Specialist and/or NRCS Soil Conservationist (Table 1).
- Water board staff invited to learn about program and continue to build relationships with landowners.
- Provide example of binder with RWQP from Tomales Bay or Napa/Sonoma watersheds – review maps produced for specific ranches and go over soils map details, scale and uses.
- Handouts to attendees of pertinent resources.

University of California Agriculture and Natural Resources

18



Extension Curriculum for Ranch Water Quality Planning

- Food and beverages – snacks and coffee/tea suffice during introductory meetings.

Time Allocated:

Allow 1-1.5 hours, Presentations = 40 min., questions = 30 min.

Procedures/ Activities/ Strategies/ Questions:

- Review any recent observations of attendees around their ranch following rainfall events.
- Discuss important soil properties using county soil survey with examples of specific map units common to participants' ranches.
- Measuring rainfall and connections to stream flow generation.
- Review geologic maps and landforms common to certain soil series within watershed.
- Discuss legacy soil erosion issues and expectations on handling legacy sites in RWQP.
- Describe how ranch maps were produced and explain components (20 min.).
- Has brush or other invasive plant species encroached into any pastures and when did this occur? Review historic aerial photos imagery from Google Earth, GIS or other source.
- Complete the Session Evaluation Form (Appendix A).

Conclusion/ Self-assessment:

- Do maps make sense to each attendee and are they accurate?
- Where and when did majority of erosion occur over last 50 years?
- Did vegetation cover and productivity passively heal in eroded areas adequately, or was active management needed?

Resources:

1. SoilWeb: An Online Soil Survey Browser from UC Davis Soils Lab http://casoilresource.lawr.ucdavis.edu/soilweb/
2. NRCS Web Soil Survey http://websoilsurvey.nrcs.usda.gov/app/
3. Erodibility of Agricultural Soils (#8194) http://anrcatalog.ucdavis.edu/pdf/8194.pdf
4. Rangeland Soil Quality: Water Erosion http://soils.usda.gov/sqi/management/files/RSQIS9.pdf
5. Survey Identifies Sediment Sources in North Coast Rangelands (2001) http://escholarship.ucop.edu/uc/item/1nh5291b

Next Steps/ Future Lessons:

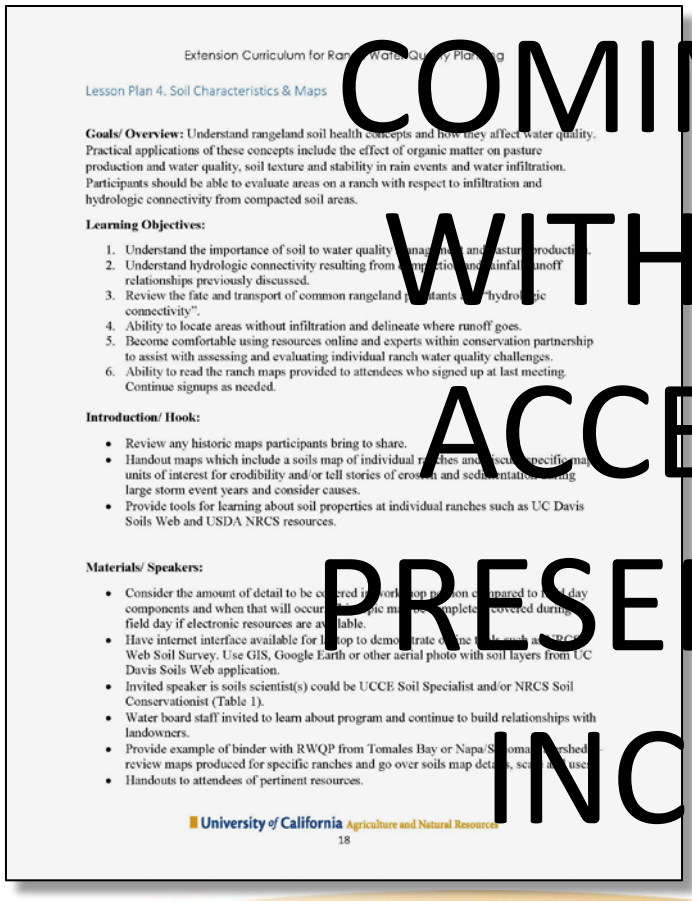
- Consider effectiveness of previously completed conservation practices on your ranch? Consider how the practices changed sediment delivery, pasture productivity and/or ranch viability.

University of California Agriculture and Natural Resources

19

UC CE | University of California Agriculture and Natural Resources | Cooperative Extension

Short Course Curriculum Update



Extension Curriculum for Ranch Water Quality Planning

Lesson Plan 4. Soil Characteristics & Maps

Goals/ Overview: Understand rangeland soil health concepts and how they affect water quality. Practical applications of these concepts include the effect of organic matter on pasture production and water quality, soil texture and stability in rain events and water infiltration. Participants should be able to evaluate areas on a ranch with respect to infiltration and hydrologic connectivity from compacted soil areas.

Learning Objectives:

1. Understand the importance of soil to water quality, management and pasture production.
2. Understand hydrologic connectivity resulting from compaction and rainfall runoff relationships previously discussed.
3. Review the fate and transport of common rangeland pollutants as "hydrologic connectivity".
4. Ability to locate areas without infiltration and delineate where runoff goes.
5. Become comfortable using resources online and experts within conservation partnership to assist with assessing and evaluating individual ranch water quality challenges.
6. Ability to read the ranch maps provided to attendees who signed up at last meeting. Continue signups as needed.

Introduction/ Hook:

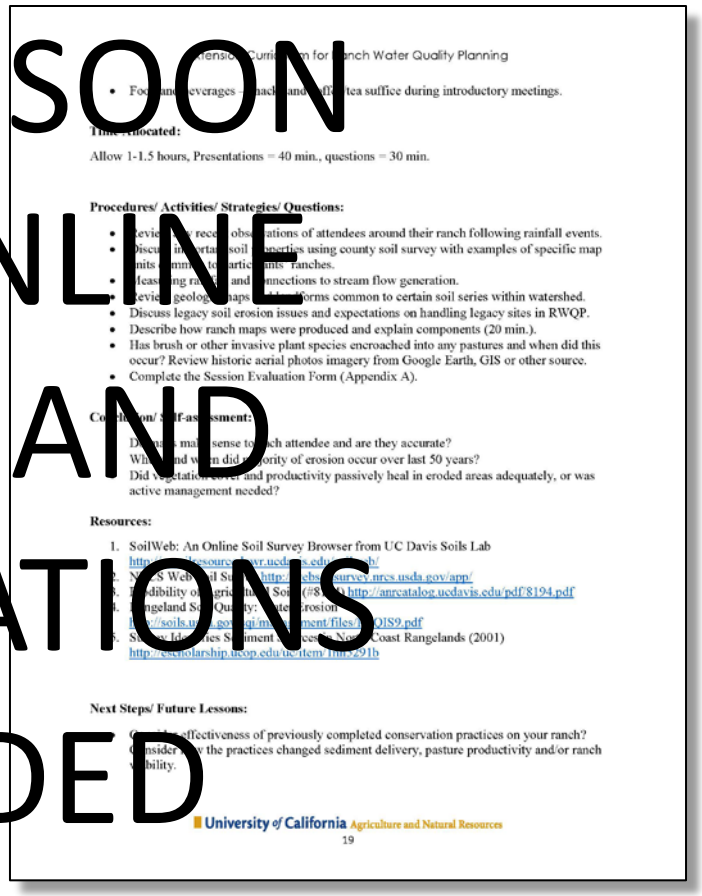
- Review any historic maps participants bring to share.
- Handout maps which include a soils map of individual ranches and discuss specific map units of interest for erodibility and/or tell stories of erosion and sedimentation during large storm event years and consider causes.
- Provide tools for learning about soil properties at individual ranches such as UC Davis Soils Web and USDA NRCS resources.

Materials/ Speakers:

- Consider the amount of detail to be covered in portion presentation compared to field day components and when that will occur. Specific maps completed/covered during field day if electronic resources are available.
- Have internet interface available for laptop to demonstrate online tools such as SDSU Web Soil Survey. Use GIS, Google Earth or other aerial photo with soil layers from UC Davis Soils Web application.
- Invited speaker is soils scientist(s) could be UCCE Soil Specialist and/or NRCS Soil Conservationist (Table 1).
- Water board staff invited to learn about program and continue to build relationships with landowners.
- Provide example of binder with RWQP from Tomales Bay or Napa/Sonoma watershed, review maps produced for specific ranches and go over soils map details, soils data used.
- Handouts to attendees of pertinent resources.

University of California Agriculture and Natural Resources

18



Extension Curriculum for Ranch Water Quality Planning

- Food and beverages. Ranch tour and coffee/tea suffice during introductory meetings.

Time Allocated:

Allow 1-1.5 hours, Presentations = 40 min., questions = 30 min.

Procedures/ Activities/ Strategies/ Questions:

- Review and record observations of attendees around their ranch following rainfall events.
- Discuss important soil properties using county soil survey with examples of specific map units common to participants' ranches.
- Discuss grazing and connections to stream flow generation.
- Review geology maps and landforms common to certain soil series within watershed.
- Discuss legacy soil erosion issues and expectations on handling legacy sites in RWQP.
- Describe how ranch maps were produced and explain components (20 min.).
- Has brush or other invasive plant species encroached into any pastures and when did this occur? Review historic aerial photos imagery from Google Earth, GIS or other source.
- Complete the Session Evaluation Form (Appendix A).

Conclusion/ Self-assessment:

Do maps make sense to each attendee and are they accurate?
When and when did majority of erosion occur over last 50 years?
Did vegetation recover and productivity passively heal in eroded areas adequately, or was active management needed?

Resources:

1. SoilWeb: An Online Soil Survey Browser from UC Davis Soils Lab
2. NRCS Web Soil Survey http://websoilsurvey.nrcs.usda.gov/app/
3. Erodibility of agricultural Soils (#8) http://anrcatalog.ucdavis.edu/pdf/8194.pdf
4. Rangeland Soil Quality: Water Erosion
5. http://soils.usda.gov/sqi/management/files/QIS9.pdf
6. Sediment Delivery Processes, North Coast Rangelands (2001) http://escholarship.ucop.edu/uc/item/1mh2591b

Next Steps/ Future Lessons:

- Consider effectiveness of previously completed conservation practices on your ranch?
- Consider how the practices changed sediment delivery, pasture productivity and/or ranch profitability.

University of California Agriculture and Natural Resources

19

COMING SOON WITH ONLINE ACCESS AND PRESENTATIONS INCLUDED

UC CE | University of California Agriculture and Natural Resources | Cooperative Extension

RWQP Short Course Summary

Collaborative

Adaptable

Current

Evolving

Accepted

It Works

Morgan Doran **mpdoran@ucanr.edu**

Napa River and Sonoma Creek RWQP Short Course and Curriculum Work
Supported by a Grant from the US EPA.

UC CE | University of California
Agriculture and Natural Resources | Cooperative Extension