



Wyoming Nonpoint Source Program Best Management Practice Manuals

WACD BMP Workshop
October 2013

Jennifer Zygmunt
Nonpoint Source Program Coordinator
307-777-6080
jennifer.zygmunt@wyo.gov



Out with the Old...

- Updated every 5 years
- Previous versions before this update
 - Urban: 1999
 - Grazing: 1997
 - Cropland: 2000
 - Hydrologic Modifications: 1999
 - Silviculture: 2004

Old vs. New

- Old manuals
 - Inconsistent formatting
 - Very few or No visuals
- New manuals
 - Consistent formatting
 - Photos and diagrams
 - Updated, summarized information
 - Updated references
 - Most available on-line
 - Updated contacts for technical, financial assistance

PRACTICE # 30
Proper Grazing - Wildlife (Small Game and Nongame Animals)

OBJECTIVE: To provide for proper small game and nongame animal use of plant communities so that plant cover and community composition are maintained and erosion and sedimentation are not accelerated above acceptable levels for the receiving waters...

CONDITION WHERE PRACTICE APPLIES: Whenever small game and nongame animals occur on grazing land.

EXPLANATION: The maintenance of suitable habitat is critical to enhance and control distribution of small game and nongame animals. The numbers of all grazing animals should be maintained in balance with their habitat. Maintaining natural predator populations at reasonable levels will be beneficial in controlling small game and nongame animal populations.

CONCERNS: Often, the most common method of controlling small nongame animals is by poisoning. Poisons should only be used in accordance with label directions and with input from appropriate state and federal management agencies to ensure only the target species are being affected and that there are not potential impacts to surface or groundwater. Wildlife are the property of the State of Wyoming and are managed by the WAGD. Many wildlife management activities are restricted by law and require either permits or approval from the WAGD. The WAGD should be consulted before any wildlife management projects are undertaken. See Practice # 7 **Seed and Past Management**.

TECHNICAL SUPPORT: WCS, CD, WFD, BGR, USFS, WIC, WCD, WUD, The Wildlife Conservancy, National Audubon Society.

REFERENCES:

Anderson, J. M.; D. L. Francis, J. E. Welland. 2006. *Target Specificity as Influenced by Prescribed Grazing*. 1506 Ft. Collins, CO. 48-134. WFRS, Fort Collins, CO. p. 56-70.

Braun, C. E.; R. M. Elmore; R. M. Hoffman; V. E. Worthington; R. D. Snyder. 1994. "Livestock Grazing" (p. 30). *Wildlife and Management Analysis Guide - Planning Practices of WLD*. WLD Rep. No. 23. Colorado Division of Wildlife, Fort Collins, CO. 48 p.

Call, N. W. 1974. "Effects of Livestock Grazing" (p. 25) and "Livestock Management" (p. 30). In *NATLAL Rep/Transit and Management Recommendations for Sage Scrub*. Technical Note, USDI, BLM, Denver, CO. 57 p.

PRACTICE 34 - BEST MANAGEMENT PRACTICES FOR CONTROLLING OR PREVENTING SALT POLLUTION FROM CROPLAND, PASTURE, RAYLAND, AND ANIMAL WASTE

OBJECTIVE: To reduce or prevent salts from entering the surface and subsurface waters of the state.

CONDITION WHERE PRACTICE APPLIES: On cropland, pastureland, and hayland where salts are common, or have the potential to cause, erosion and soil level loading rate exceeds or approaches...

EXPLANATION: Depending on soil characteristics and chemistry, soil types, crop, pasture, method of irrigation, production, growth, and rainfall factors, inherent salt concentrations may be modified and groundwater regular or constant areas of surface runoff. The Best Management Practices may be developed to include but are not limited to the following practices: the number codes listed refer to the USDA Natural Resources Conservation Service's Handbook and Specifications number or the University of Wyoming's Publication number:

USDA SOURCE NUMBER	UNIVERSITY OF WYOMING PUBLICATION
Conservation Crop Rotation (22)	Conservation Cropland Conservation Practices for Grazing (248)
Cover and Green Manure (24)	Conservation Cropland Conservation Practices for Grazing (248)
Crop and Soil Rotation (25)	Conservation Cropland Conservation Practices for Grazing (248)
Flame Weeds (26)	Conservation Cropland Conservation Practices for Grazing (248)
Grassland Land Use (27)	Conservation Cropland Conservation Practices for Grazing (248)
Grassland Water Conservation (28)	Conservation Cropland Conservation Practices for Grazing (248)
Grassland Water Management (29)	Conservation Cropland Conservation Practices for Grazing (248)
Plant Bedding or Laying (31)	Conservation Cropland Conservation Practices for Grazing (248)
Plant Stand Management (32)	Conservation Cropland Conservation Practices for Grazing (248)
Plant Stand Management (33)	Conservation Cropland Conservation Practices for Grazing (248)
Plant Stand Management (34)	Conservation Cropland Conservation Practices for Grazing (248)
Plant Stand Management (35)	Conservation Cropland Conservation Practices for Grazing (248)
Plant Stand Management (36)	Conservation Cropland Conservation Practices for Grazing (248)
Plant Stand Management (37)	Conservation Cropland Conservation Practices for Grazing (248)
Plant Stand Management (38)	Conservation Cropland Conservation Practices for Grazing (248)
Plant Stand Management (39)	Conservation Cropland Conservation Practices for Grazing (248)
Plant Stand Management (40)	Conservation Cropland Conservation Practices for Grazing (248)
Plant Stand Management (41)	Conservation Cropland Conservation Practices for Grazing (248)
Plant Stand Management (42)	Conservation Cropland Conservation Practices for Grazing (248)
Plant Stand Management (43)	Conservation Cropland Conservation Practices for Grazing (248)
Plant Stand Management (44)	Conservation Cropland Conservation Practices for Grazing (248)
Plant Stand Management (45)	Conservation Cropland Conservation Practices for Grazing (248)
Plant Stand Management (46)	Conservation Cropland Conservation Practices for Grazing (248)
Plant Stand Management (47)	Conservation Cropland Conservation Practices for Grazing (248)
Plant Stand Management (48)	Conservation Cropland Conservation Practices for Grazing (248)
Plant Stand Management (49)	Conservation Cropland Conservation Practices for Grazing (248)
Plant Stand Management (50)	Conservation Cropland Conservation Practices for Grazing (248)
Plant Stand Management (51)	Conservation Cropland Conservation Practices for Grazing (248)
Plant Stand Management (52)	Conservation Cropland Conservation Practices for Grazing (248)
Plant Stand Management (53)	Conservation Cropland Conservation Practices for Grazing (248)
Plant Stand Management (54)	Conservation Cropland Conservation Practices for Grazing (248)
Plant Stand Management (55)	Conservation Cropland Conservation Practices for Grazing (248)
Plant Stand Management (56)	Conservation Cropland Conservation Practices for Grazing (248)
Plant Stand Management (57)	Conservation Cropland Conservation Practices for Grazing (248)
Plant Stand Management (58)	Conservation Cropland Conservation Practices for Grazing (248)
Plant Stand Management (59)	Conservation Cropland Conservation Practices for Grazing (248)
Plant Stand Management (60)	Conservation Cropland Conservation Practices for Grazing (248)
Plant Stand Management (61)	Conservation Cropland Conservation Practices for Grazing (248)
Plant Stand Management (62)	Conservation Cropland Conservation Practices for Grazing (248)
Plant Stand Management (63)	Conservation Cropland Conservation Practices for Grazing (248)
Plant Stand Management (64)	Conservation Cropland Conservation Practices for Grazing (248)
Plant Stand Management (65)	Conservation Cropland Conservation Practices for Grazing (248)
Plant Stand Management (66)	Conservation Cropland Conservation Practices for Grazing (248)
Plant Stand Management (67)	Conservation Cropland Conservation Practices for Grazing (248)
Plant Stand Management (68)	Conservation Cropland Conservation Practices for Grazing (248)
Plant Stand Management (69)	Conservation Cropland Conservation Practices for Grazing (248)
Plant Stand Management (70)	Conservation Cropland Conservation Practices for Grazing (248)
Plant Stand Management (71)	Conservation Cropland Conservation Practices for Grazing (248)
Plant Stand Management (72)	Conservation Cropland Conservation Practices for Grazing (248)
Plant Stand Management (73)	Conservation Cropland Conservation Practices for Grazing (248)
Plant Stand Management (74)	Conservation Cropland Conservation Practices for Grazing (248)
Plant Stand Management (75)	Conservation Cropland Conservation Practices for Grazing (248)
Plant Stand Management (76)	Conservation Cropland Conservation Practices for Grazing (248)
Plant Stand Management (77)	Conservation Cropland Conservation Practices for Grazing (248)
Plant Stand Management (78)	Conservation Cropland Conservation Practices for Grazing (248)
Plant Stand Management (79)	Conservation Cropland Conservation Practices for Grazing (248)
Plant Stand Management (80)	Conservation Cropland Conservation Practices for Grazing (248)
Plant Stand Management (81)	Conservation Cropland Conservation Practices for Grazing (248)
Plant Stand Management (82)	Conservation Cropland Conservation Practices for Grazing (248)
Plant Stand Management (83)	Conservation Cropland Conservation Practices for Grazing (248)
Plant Stand Management (84)	Conservation Cropland Conservation Practices for Grazing (248)
Plant Stand Management (85)	Conservation Cropland Conservation Practices for Grazing (248)
Plant Stand Management (86)	Conservation Cropland Conservation Practices for Grazing (248)
Plant Stand Management (87)	Conservation Cropland Conservation Practices for Grazing (248)
Plant Stand Management (88)	Conservation Cropland Conservation Practices for Grazing (248)
Plant Stand Management (89)	Conservation Cropland Conservation Practices for Grazing (248)
Plant Stand Management (90)	Conservation Cropland Conservation Practices for Grazing (248)
Plant Stand Management (91)	Conservation Cropland Conservation Practices for Grazing (248)
Plant Stand Management (92)	Conservation Cropland Conservation Practices for Grazing (248)
Plant Stand Management (93)	Conservation Cropland Conservation Practices for Grazing (248)
Plant Stand Management (94)	Conservation Cropland Conservation Practices for Grazing (248)
Plant Stand Management (95)	Conservation Cropland Conservation Practices for Grazing (248)
Plant Stand Management (96)	Conservation Cropland Conservation Practices for Grazing (248)
Plant Stand Management (97)	Conservation Cropland Conservation Practices for Grazing (248)
Plant Stand Management (98)	Conservation Cropland Conservation Practices for Grazing (248)
Plant Stand Management (99)	Conservation Cropland Conservation Practices for Grazing (248)
Plant Stand Management (100)	Conservation Cropland Conservation Practices for Grazing (248)

For more information, contact the Wyoming Department of Environmental Quality or the Wyoming State Engineer's Office via the internet or by phone.

CONCERNS: Practices should be implemented in accordance with appropriate technical specifications to ensure planned salt reduction benefits are realized. Action should be sought from appropriate technical specialists to identify the level of soil loading, source of salt, and level of control that may be accomplished.

319 Funding Best Management Practice Manual (BMP) - BMP11

BMP 11: Diversion Structures



References:

- [BMP 11 - Diversion Structures](#)
- [BMP 11 - Diversion Structures](#)
- [BMP 11 - Diversion Structures](#)
- [BMP 11 - Diversion Structures](#)
- [BMP 11 - Diversion Structures](#)
- [BMP 11 - Diversion Structures](#)
- [BMP 11 - Diversion Structures](#)
- [BMP 11 - Diversion Structures](#)
- [BMP 11 - Diversion Structures](#)
- [BMP 11 - Diversion Structures](#)

Description: Diversion structures are a permanent type of structure that typically divert water from a ditch or stream into a nearby pond or reservoir. Diversion structures are generally placed in a ditch or stream to divert water from a ditch or stream into a nearby pond or reservoir. Diversion structures are typically placed in a ditch or stream to divert water from a ditch or stream into a nearby pond or reservoir. Diversion structures are typically placed in a ditch or stream to divert water from a ditch or stream into a nearby pond or reservoir.

Criteria: Diversion structures have low head, are easy to install, and are applicable in all regions where soils and topography conditions are suitable. Diversion structures are typically placed in a ditch or stream to divert water from a ditch or stream into a nearby pond or reservoir. Diversion structures are typically placed in a ditch or stream to divert water from a ditch or stream into a nearby pond or reservoir.

Maintenance: Diversion structures require periodic inspection and maintenance. Frequent inspections should be performed when the diversion structure is first being installed, but the diversion structure should be inspected regularly. Diversion structures should be inspected regularly. Diversion structures should be inspected regularly. Diversion structures should be inspected regularly.

319 Funding Best Management Practice Manual (BMP) - BMP12

BMP 12: Ponds



References:

- [BMP 12 - Ponds](#)
- [BMP 12 - Ponds](#)
- [BMP 12 - Ponds](#)
- [BMP 12 - Ponds](#)
- [BMP 12 - Ponds](#)
- [BMP 12 - Ponds](#)
- [BMP 12 - Ponds](#)
- [BMP 12 - Ponds](#)
- [BMP 12 - Ponds](#)
- [BMP 12 - Ponds](#)

Description: Ponds are a type of structure that are typically constructed to store water for a variety of purposes. Ponds are typically constructed to store water for a variety of purposes. Ponds are typically constructed to store water for a variety of purposes. Ponds are typically constructed to store water for a variety of purposes.

Criteria: When constructing a pond, owners are responsible for meeting all necessary permits, including all state and federal permits. Ponds are typically constructed to store water for a variety of purposes. Ponds are typically constructed to store water for a variety of purposes. Ponds are typically constructed to store water for a variety of purposes.

Maintenance: Ponds require periodic inspection and maintenance. Frequent inspections should be performed when the pond is first being installed, but the pond should be inspected regularly. Ponds should be inspected regularly. Ponds should be inspected regularly. Ponds should be inspected regularly.

How to Use

- Documentation of eligible 319-funded BMPs
- Educational tool
- Find references for further information

How NOT to Use...

- Exhaustive references
- Design specifications
- Regulatory document



Urban Best Management Practice Manual

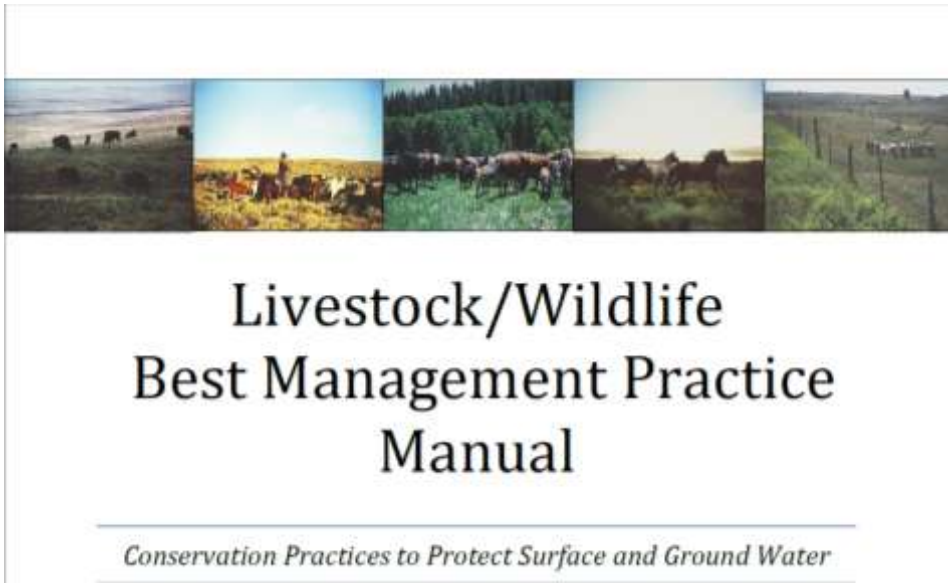
Conservation Practices to Protect Surface and Ground Water

Urban NPS Pollution

- Population centers
- Impervious area
- Infrastructure
- Regulations and permitting
- Sediment, bacteria, oil and grease, metals, pesticides and fertilizers

Urban BMP Manual

- Approved Spring 2013
- Highlights
 - WYPDES Permitting vs. 319 funds
 - Continued emphasis on working with local government
 - Construction BMPs are noted in the manual but not featured
 - Improved information about innovative BMPs, including green-infrastructure and low-impact development



Livestock/Wildlife NPS Pollution

- Livestock, Wildlife, and Wild Horses
- Grazing and feedlots
- Upland conditions
- Riparian conditions and bank stability
- Bacteria from runoff or direct defecation
- Structural and managerial practices

Livestock/Wildlife BMP Manual

- Approved Spring 2013
- Highlights
 - Title changed from “Grazing BMP Manual”
 - Updated general and specific references
 - Establishes that BMPs and conservation practices that are listed in USDA technical guides, manuals, or handbooks will be considered for Section 319 funding, even if not specifically listed in this manual
 - Updated AFO/CAFO Summary



Cropland Best Management Practice Manual

Conservation Practices to Protect Surface and Ground Water

Cropland NPS Pollution

- Nutrients
- Pesticides
- Sediment
- Bacteria
- Selenium
- Structural and Managerial Practices

Cropland BMP Manual

- Approved Spring 2013
- Highlights
 - Title changed from “Cropland, Pastureland, and Animal Waste BMP Manual”
 - Updated general and specific references
 - Establishes that BMPs and conservation practices that are listed in USDA technical guides, manuals, or handbooks will be considered for Section 319 funding, even if not specifically listed in this manual



Stream and Lake Shore Restoration Best Management Practice Manual

Conservation Practices to Protect Surface and Ground Water

Stream Restoration and NPS Pollution

- Hydrologic modification refers broadly to activities that alter the physical structure, form, or flow patterns of surface waters
- Hydrologic modification can also be indirect, such as when land-use activities adjacent to a stream cause erosion, altering the natural physical properties of the stream

Stream Restoration and NPS Pollution

- Public benefits of modifying stream channel vs. impacts to system
- Accelerated erosion vs. natural erosion
- Recognition that streams are dynamic systems
- Sediment, habitat, temperature

Stream Restoration BMP Manual

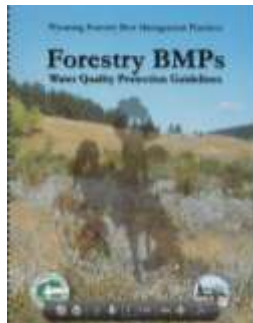
- Still in Draft Form
 - Public Notice Summer 2013
- Highlights
 - Title changed from “Hydromodification BMP Manual”
 - Includes BMPs to restore streams and lakeshores after systems have been modified
 - Plus specific BMP considerations for some activities
 - Sand and gravel dredging, utility line crossings, fish habitat structures...

Stream Restoration BMP Manual

- Highlights Continued
 - Includes both structural and vegetative/natural channel design BMPs, but strong emphasis on the latter
 - Reference to USDA conservation practices, technical guides
 - Importance of planning
 - Importance of understanding state, federal and local regulations
 - Importance of consulting with Game and Fish
 - Importance of seeking appropriate level of technical assistance by professional engineers/hydrologists
 - Importance of healthy riparian areas

Silviculture BMP Manual

- Timber harvesting, Forestry Management
- Will not be updated
 - Reference Wyoming State Forestry BMP Guide



BMP Manuals Emphasize:

- Choosing a BMP depends on many site-specific factors
 - Specific BMPs may or may not always be appropriate for a particular site or situation
- Thorough research, planning, and design should always go into the selection, implementation, and installation of any BMP
- BMPs are often not complete in themselves and should be used as part of an integrated management plan to improve and maintain natural resources, including soil, vegetation, and water resources
- Implementing or installing more than one BMP in a series can overcome the drawbacks of any single method while providing enhanced pollution prevention.

Questions to consider

- Is this the right BMP for the goal?
- How will the BMP affect other resource concerns?
- What are the goals of the land manager?
- What are operation and maintenance requirements?
- How will we know if the BMP is or isn't working?
- Is design and construction oversight by an engineer or other natural resource professional recommended or required?
- Are permits required?

Some Permit/Regulatory Considerations

- WYPDES
 - CAFOs, Stormwater Construction, Temporary Discharges from Construction Practices
- Temporary Turbidity Waivers
- Section 404 permit and 401 certification
- Surface Water Rights
- Ground Water Rights
- Pesticide Certification
- Open Burn and Smoke Management
- Private Fish Plant Application
- G&F Invasive Species Protocols

Information/Education

- Some considerations
 - Focused approach with clear outcomes, goals
 - Targeted audience
 - Evaluate what has or has not been effective in past
 - Some mechanism to evaluate effectiveness
 - No longer required as part of Section 319 restoration projects

Information/Education

- Some Tools
 - EPA Nonpoint Source Outreach Toolbox
 - <http://cfpub.epa.gov/npstbx/index.html>



Remember, you're not just fertilizing your lawn

Fertilize sparingly and carefully

Storm drains found in our streets and yards empty into our lakes and streams. So when we fertilize our lawns we could also be fertilizing our lakes and streams. While fertilizer is good for our lawns, it's bad for our water. Fertilizer that lakes and streams causes algae to grow. Algae can harm large animals and our children that fish need to survive. With 1.1 million homes in Southern Michigan, all of us need to be aware of the cumulative effects of our lawn care practices.

What can you do? Follow the simple tips on the back of this card for a healthier lawn that's cleaner and easier to maintain.

When nature calls, make sure you pick up.

Clean is after you. Dig every single time. Don't let your pet's waste pollute our water. Clean, healthy and safe water. For more information, visit www.cleanwaterworks.com or call 1-800-CLEAN-IA.

there's no drama 'til the septic system goes

Your septic system treats the water you use every day. But the most glamorous of fixtures, hot critical to the overall "health" of your home. Septic system failures are expensive to fix and can be a significant source of water contamination.

Protect your home investment and water quality here's how:

1. Have your septic system inspected every 2 to 3 years by a reputable septic tank service contractor. When necessary, have your tank pumped out.
2. Avoid food consumption and fix that clog. Never pour, dump or flush in your sink or drain field.
3. Protect the bacteria in your septic system. Don't add "septic salts," bleach and chemicals.
4. Check for signs of system failure areas to the yard that remain water during dry times patches of excessive grass or plant growth, or excessive plant growth along drainlines. If you see signs of failure, schedule an inspection and repair immediately.

Use the necessary drama. Take care of your septic system and it will take good care of you.

For more information on this topic, go to www.epa.gov

Information/Education

- Some Tools
 - “Using Social Indicators in Watershed Management”
 - Dr. Linda Prokopy, Associate Professor, Natural Resources Planning, Purdue University
 - Dr. Kenneth Genskow, Associate Professor, Department of Urban and Regional Planning, University of Wisconsin-Madison
 - Watershed Academy Webinar
 - <http://water.epa.gov/learn/training/wacademy/archives.cfm#w20130501>

And Finally...A Moment to Dwell on our Successes...

- Wyoming
 - 10 Success stories covering 13 stream segments



Restoration Success Stories



- Chugwater Creek
- Hunter Creek
- Muddy & McKinney Creeks
- Lower Muddy Creek (pending publication)
- North Fork Spread Creek
- Rock Creek
- Sage Creek
- Shell Creek
- Smiths Fork
- Whitelaw Creek (pending publication)



Where to Find

<http://water.epa.gov/polwaste/nps/success319/>

Some factors to success...

- Restoration can take a long time, often decades
- Local leadership
- Address multiple resource concerns
- Benefit to landowner
- Having an effective monitoring plan
- Strong source of technical assistance
- Multiple sources of financial assistance
 - Appendix E, NPS Management Plan

Thank You! Questions?

