LTPBR WORKSHOP

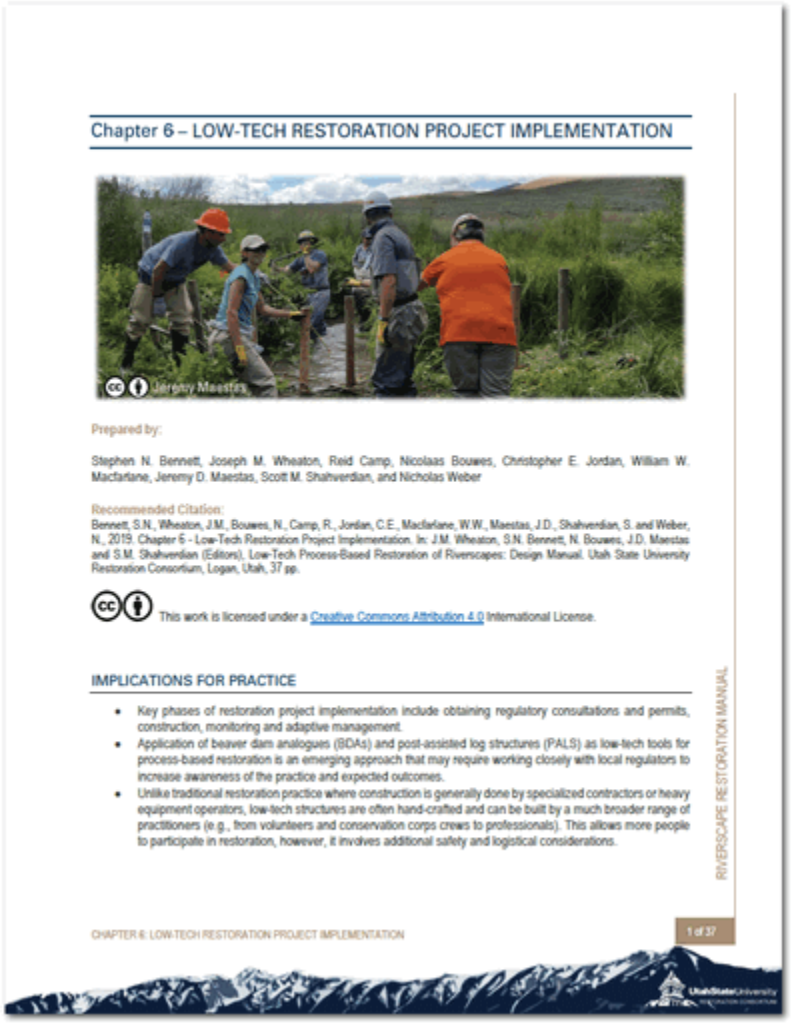
Low-Tech Restoration Consultation & Permitting

Process Based Restoration LOW TECH

WORKING LANDS FOR WILDLIFE

Utah State University RESTORATION CONSORTIUM

Design Manual References



Chapter 6 – LOW-TECH RESTORATION PROJECT IMPLEMENTATION

Prepared by:

Stephen N. Bennett, Joseph M. Wheaton, Reid Camp, Nicolaas Bouwes, Christopher E. Jordan, William W. Macfarlane, Jeremy D. Maestas, Scott M. Shahverdian, and Nicholas Weber

Recommended Citation:
Bennett, S.N., Wheaton, J.M., Bouwes, N., Camp, R., Jordan, C.E., Macfarlane, W.W., Maestas, J.D., Shahverdian, S. and Weber, N., 2019. Chapter 6 - Low-Tech Restoration Project Implementation. In: J.M. Wheaton, S.N. Bennett, N. Bouwes, J.D. Maestas and S.M. Shahverdian (Editors), Low-Tech Process-Based Restoration of Riverscapes: Design Manual. Utah State University Restoration Consortium, Logan, Utah, 37 pp.

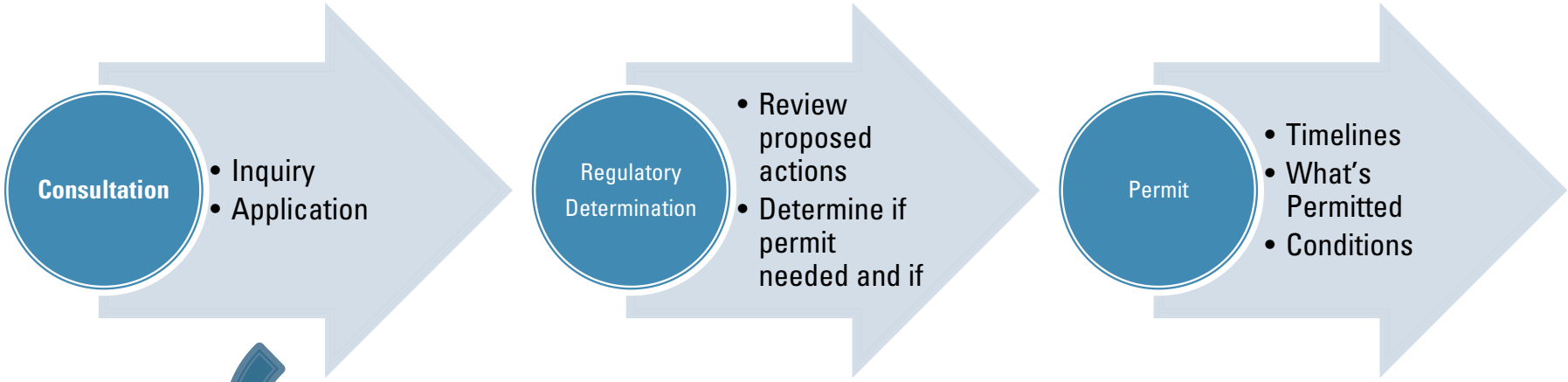
IMPLICATIONS FOR PRACTICE

- Key phases of restoration project implementation include obtaining regulatory consultations and permits, construction, monitoring and adaptive management.
- Application of beaver dam analogues (BDAs) and post-assisted log structures (PALS) as low-tech tools for process-based restoration is an emerging approach that may require working closely with local regulators to increase awareness of the practice and expected outcomes.
- Unlike traditional restoration practice where construction is generally done by specialized contractors or heavy equipment operators, low-tech structures are often hand-crafted and can be built by a much broader range of practitioners (e.g., from volunteers and conservation corps crews to professionals). This allows more people to participate in restoration, however, it involves additional safety and logistical considerations.

Chap 6: Bennett et al. (2019, pp. 243-245)

DOI: 10.13140/RG.2.2.25043.22567

What is a consultation? Vs. Permit?



"Thanks for notification, no permit is necessary."

- *If this is outcome, just get a paper trail of that… (whether triggered by inquiry or application)*
- *Let the regulator decide that every time*

Regulator responds to what you ask for… make sure you ask for right thing.

CONSULTATION AND PERMITTING

Low-tech structures (e.g., beaver dam analogues (BDAs), post-assisted log structures (PALS); see also Appendix 1 in Chapter 1 for many others: Shahverdian et al., 2019a) are different from a permitting standpoint than more traditional engineering-based structures (e.g., engineered log jams, J-hooks, cross veins, etc.), because they are not designed or constructed to be relatively permanent, but instead designed to promote processes. Most BDAs and PALS are designed and constructed to have a design life of <1 year, despite often having lifespans in excess of decades. This means they are not certified by an engineer to sustain a specific magnitude flood tied to a recurrence interval high-flow (e.g., 25, 50 or 100 year recurrence interval floods). Individual structures are meant to be dynamic wherein change is not only expected, but explicitly the design objective (e.g., may fill up with sediment, breach, or move; see Chapter 4: Shahverdian et al., 2019c). However, when constructed in large numbers, many structures are expected to persist for several years and the wood from structures that move is expected to accumulate on downstream structures (e.g., strength in numbers Restoration Principle 6, see Chapter 2: Wheaton et al., 2019). The design process for low-tech restoration is simple, primarily performed in the field, and we recommend that permits are sought for groups of structures called (see Chapter 5: Shahverdian et al., 2019b). Thus, when submitting a permit application practitioners are encouraged to describe the locations, goals and objectives of each complex (and overall project), building materials,

Chap 6: Bennett et al. (2019, pp. 243-245)

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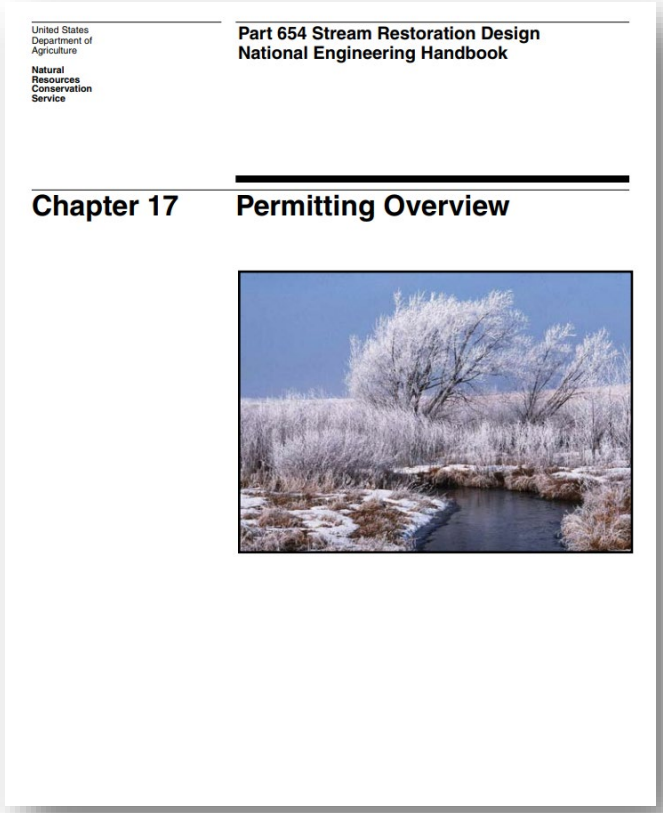
Why is permitting so variable from State to State?



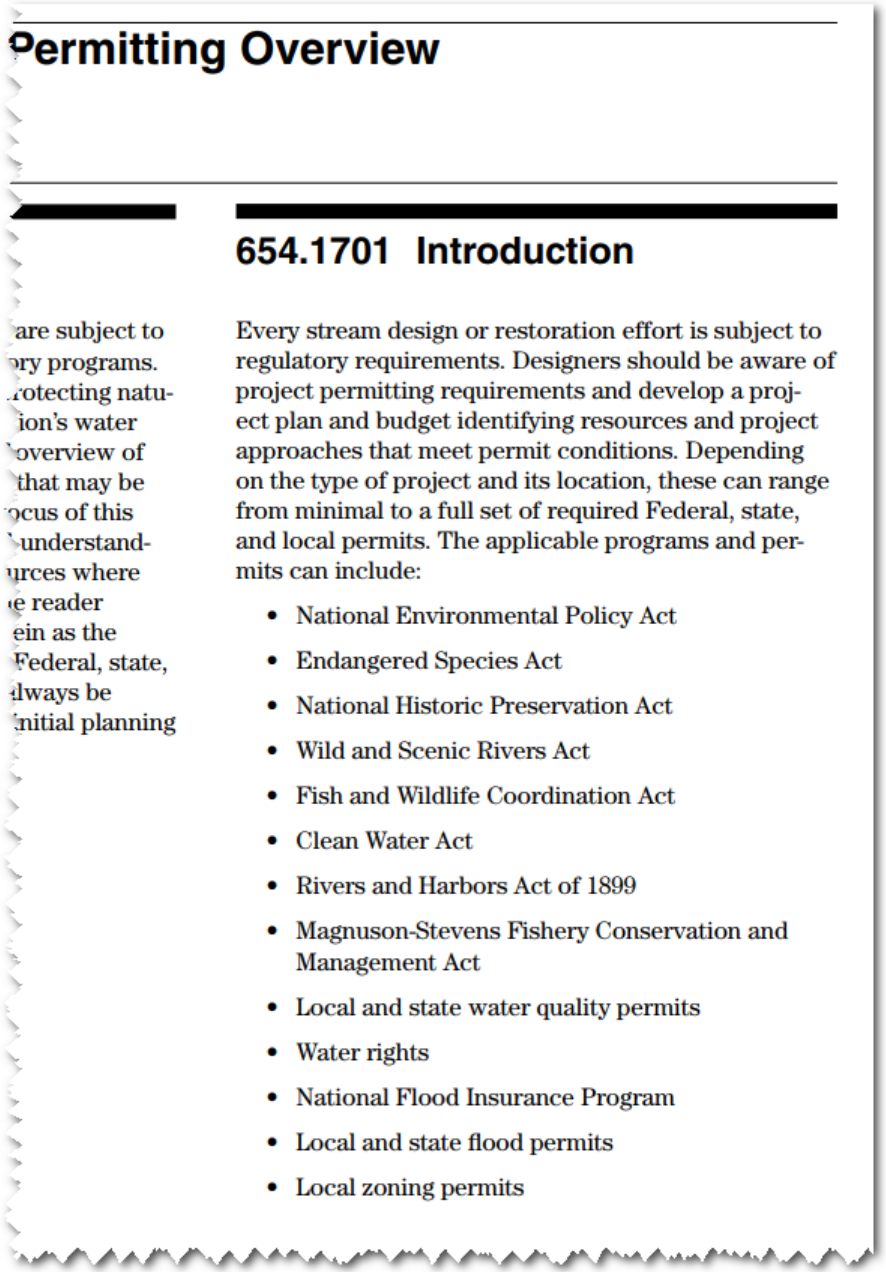
United States Department of Agriculture

Natural Resources Conservation Service

Part 654 Stream Restoration Design
National Engineering Handbook

Chapter 17 Permitting Overview

- Drivers are Acts, Statutes, Policies, Programs @ Federal, State & Local levels
- Interpretation of "new" practices under regulatory requirements not written for low-tech



Permitting Overview

654.1701 Introduction

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Every stream design or restoration effort is subject to regulatory requirements. Designers should be aware of project permitting requirements and develop a project plan and budget identifying resources and project approaches that meet permit conditions. Depending on the type of project and its location, these can range from minimal to a full set of required Federal, state, and local permits. The applicable programs and permits can include:

- National Environmental Policy Act
- Endangered Species Act
- National Historic Preservation Act
- Wild and Scenic Rivers Act
- Fish and Wildlife Coordination Act
- Clean Water Act
- Rivers and Harbors Act of 1899
- Magnuson-Stevens Fishery Conservation and Management Act
- Local and state water quality permits
- Water rights
- National Flood Insurance Program
- Local and state flood permits
- Local zoning permits

Non-Exhaustive List of Agencies to Consult With

Federal

- **U.S. Army Corps of Engineers (Corps)** – The Corps administers permits for Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act which commonly apply to instream restoration projects occurring in 'waters of the U.S.'
- **U.S. Fish and Wildlife Service (USFWS)** – USFWS regulate inland, and NOAA Fisheries regulate anadromous fishes under the Endangered Species Act (ESA). Consultation may be required where federally-protected species may be affected by project actions.
- **National Oceanic and Atmospheric Administration Fisheries Service (NOAA Fisheries)** - NOAA Fisheries, along with USFWS, administers the Endangered Species Act. Consultation may be required where federally-protected species may be affected by project actions.
- **National Environmental Policy Act** – If the project has a federal nexus (funding, participants, on federal land), then the proposed work must also be in compliance with the National Environmental Protection Act (NEPA). A federal agency will take the lead for evaluating the NEPA component.

State/Local

- **State Historic Preservation Office (SHPO)** – The SHPO manages and administers programs for the protection of the state's historic and cultural resources, in accordance with the National Historic Preservation Act. Most restoration projects require consultation due to ground-disturbing activities.
- **Department of Water Rights, Water Resources, or Engineers Office** – Depending upon the location, some states require consultation with the agency overseeing water rights when implementing instream restoration projects.
- **Department of Fish and Wildlife** - Depending upon the location, some states require consultation with the state fish and wildlife agency when implementing instream restoration projects. Many states establish 'work windows' that guide timing of project implementation to minimize adverse impacts to species of concern. Some states also have requirements related to fish passage and stream habitat management.
- **County and municipal governments** – Although rare, some local governments require stream alteration permits or other coordination for restoration work. Counties in some states require shoreline permits, though some states provide exemption for fish and wildlife habitat enhancements.
- **State Departments of Land or Ecology** - State Departments of Land or Ecology regulate more general physical and ecological impacts (not just water, or fish/wildlife) and may require permits for stream alteration.

Chap 6: Bennett et al. (2019, pp. 244)

DOI: 10.13140/RG.2.2.25043.22567

Recognize low-tech is NEW for many regulators

From: Pocket Guide: Wheaton et al. (2019, p 57)
DOI: 10.13140/RG.2.2.28222.13123/1
& Elaborated in Chap 6: Bennett et al. (2019, pp. 245)
DOI: 10.13140/RG.2.2.25043.22567

IMPLEMENTATION

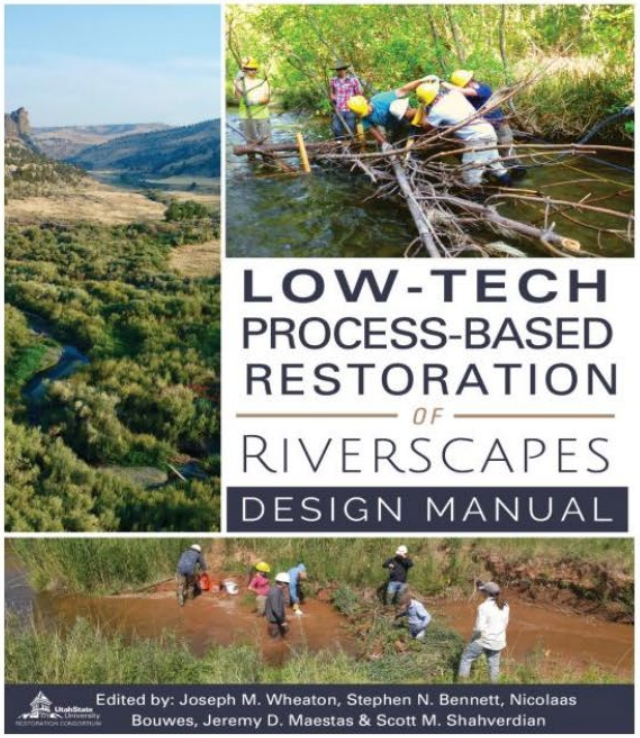
CONSULTATION & PERMITTING

Below are some tips for project planners to keep in mind when navigating regulatory consultations for low-tech restoration:

- Understand the intent of the governing regulations.
- Put yourself in the shoes of the regulator.
- Establish a rapport with your regulators and earn their trust.
- Communicate regularly and clearly.
- Be realistic about time frames.
- Ask to permit for complexes not structures.
- Even if permit is not required, let regulator make that decision.
- Seek permit(s) for staged implementation & maintenance.
- Attend local permitting workshops.

UtahStateUniversity
RESTORATION CONSORTIUM

The content in this Pocket Guide is sourced from the **Low-Tech Process-Based Restoration of Riverscapes: Design Manual**.



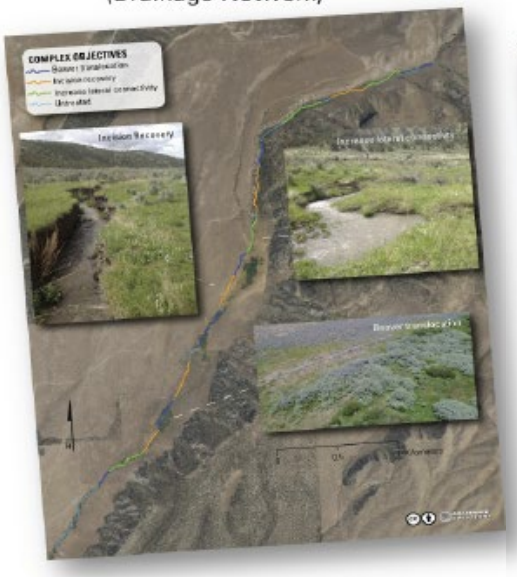
Full manual available at:
http://lowtechpbr.restoration.usu.edu
in print and free online

What of design to submit… What not to:

Provide enough for regulator to make informed decision,
But not so much detail that you don't have flexibility

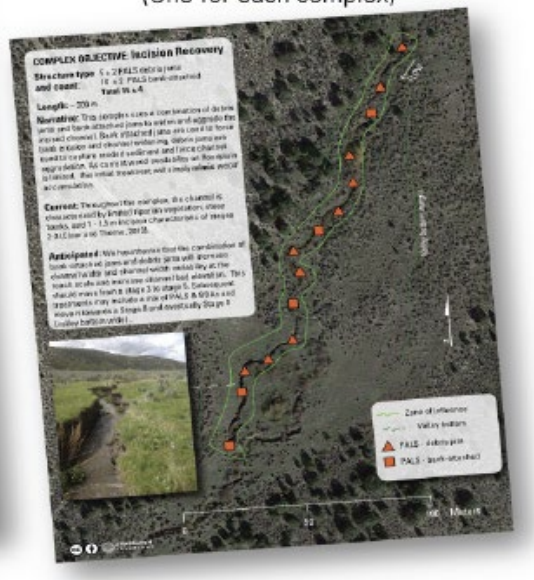
RECOMMENDED MINIMUM DESIGN PACKAGE

Project-Scale Map(s)
(Drainage Network)



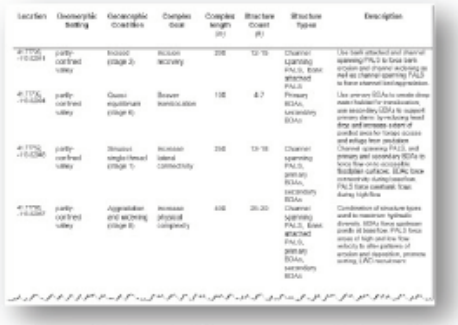
Shows complex locations on drainage network.

Complex-Scale Map(s)
(One for each complex)



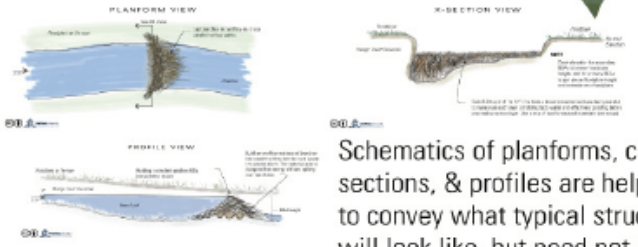
Shows structure locations within each complex, complexes zone of influence, structure types, & valley bottom extents.

Complex Design Tables
(Clear Complex Objectives & Hypotheses)



Note, structure design tables are possible but not always necessary as during construction not all structures are built exactly as designed, and flexibility is key (e.g. 12-15 structures specified).

Typical Structure Schematics

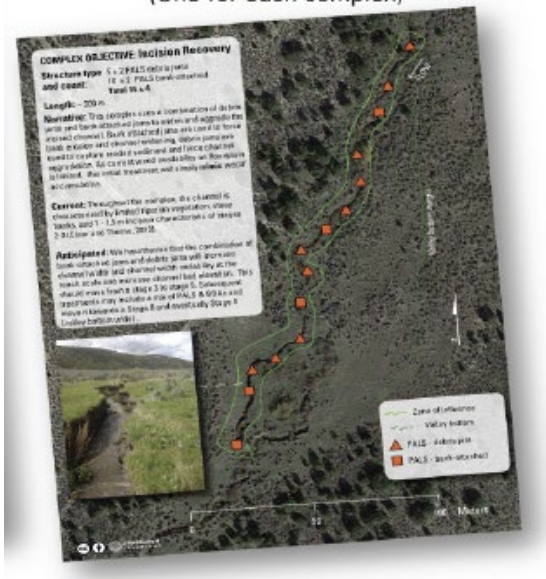


Schematics of planforms, cross-sections, & profiles are helpful to convey what typical structures will look like, but need not be followed rigidly.

From page 20 of Pocket Guide; Wheaton et al. (2019)
DOI: 10.13140/RG.2.2.28222.13123/1

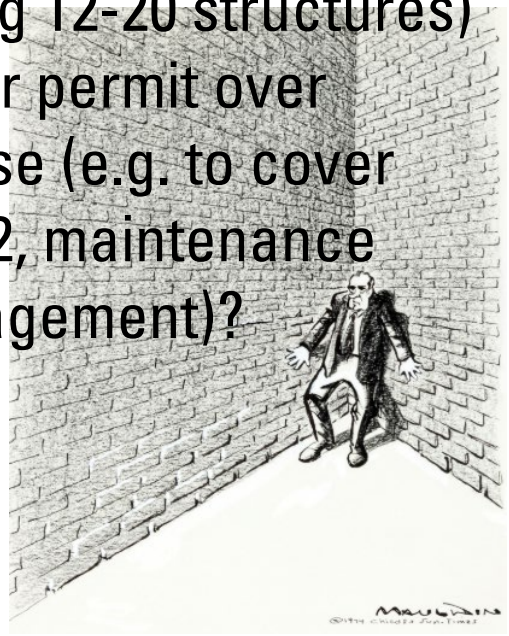
Can I ask for permit for just that?

Complex-Scale Map(s) ✔
(One for each complex)



Shows structure locations within each complex, complexes zone of influence, structure types, & valley bottom extents.

- Ask for permit for complex with ± count on number of structures in it (give you latitude)
  - Don't ask for permit for precise (i.e. 13 structures)
  - Ask for permit with range (e.g. 4 complexes totaling 12-20 structures)
- Is it possible to ask for permit over multiple years or phase (e.g. to cover pilot, phase 1, phase 2, maintenance and/or adaptive management)?



From page 20 of Pocket Guide; Wheaton et al. (2019)
DOI: 10.13140/RG.2.2.28222.13123/1

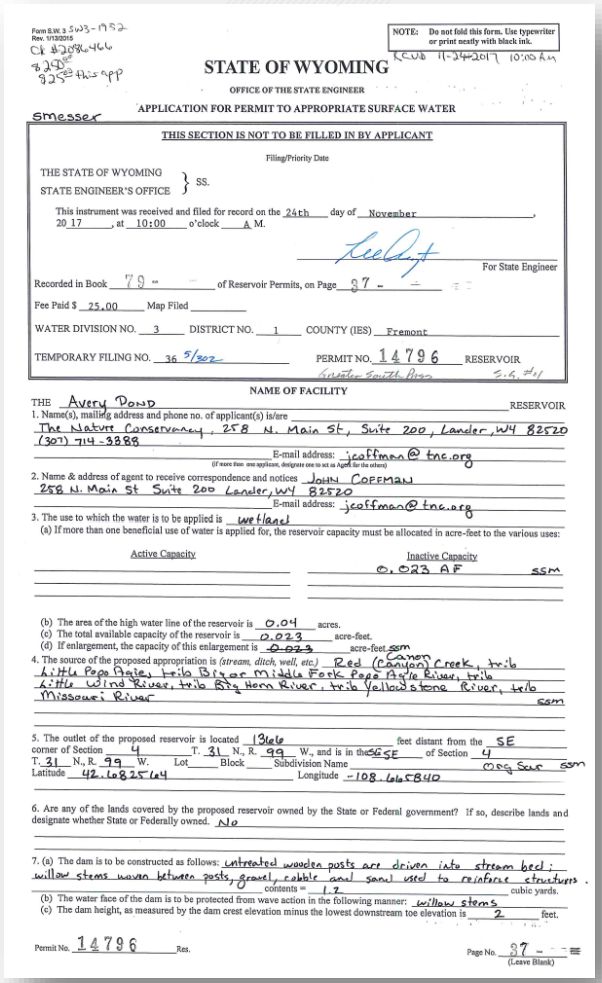
Water Rights… Rapidly Evolving

Don't be Afraid, Its New, But maturing to a process

2017

2018

2019



Form E.W. 3 5W3-1952
Rec. 1/13/2015
Ck #2098466
$25 this app

NOTE: Do not fold this form. Use typewriter or print neatly with black ink.
RCVD 11-24-2017 10:00 AM

STATE OF WYOMING

OFFICE OF THE STATE ENGINEER

APPLICATION FOR PERMIT TO APPROPRIATE SURFACE WATER

Smesser

THIS SECTION IS NOT TO BE FILLED IN BY APPLICANT

Filing/Priority Date

THE STATE OF WYOMING } SS.
STATE ENGINEER'S OFFICE }

This instrument was received and filed for record on the 24th day of November, 2017, at 10:00 o'clock A M.

For State Engineer

Recorded in Book 79 of Reservoir Permits, on Page 97

Fee Paid $ 25.00 Map Filed

WATER DIVISION NO. 3 DISTRICT NO. 1 COUNTY (IES) Fremont

TEMPORARY FILING NO. 36 5/302 PERMIT NO. 14796 RESERVOIR

Greater Smith Basin

NAME OF FACILITY

THE Avery Pond RESERVOIR

1. Name(s), mailing address and phone no. of applicant(s) is/are
The Nature Conservancy, 258 N. Main St, Suite 200, Lander, WY 82520
(307) 714-3888
E-mail address: jcoffman@tnc.org
(If more than one applicant, designate one to act as Agent for the others)

2. Name & address of agent to receive correspondence and notices JOHN COFFMAN
258 N. Main St Suite 200 Lander, WY 82520
E-mail address: jcoffman@tnc.org

3. The use to which the water is to be applied is wetland
(a) If more than one beneficial use of water is applied for, the reservoir capacity must be allocated in acre-feet to the various uses:

Active Capacity	Inactive Capacity
	0.023 AF ssm

(b) The area of the high water line of the reservoir is 0.04 acres.
(c) The total available capacity of the reservoir is 0.023 acre-feet.
(d) If enlargement, the capacity of this enlargement is 0.023 acre-feet ssm

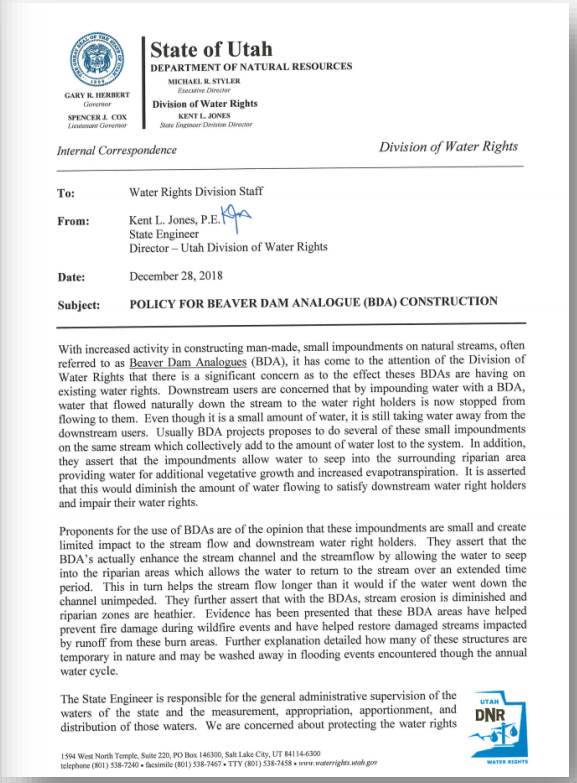
4. The source of the proposed appropriation is (stream, ditch, well, etc.) Red (Canyon) Creek, trib to Little Popo Agie, trib Big or Middle Fork Popo Agie River, trib to Little Wind River, trib Big Horn River, trib Yellowstone River, trib to Missouri River ssm

5. The outlet of the proposed reservoir is located 1360 feet distant from the SE corner of Section 4, T. 31 N., R. 99 W., and is in the SESE of Section 4, T. 31 N., R. 99 W. Lot Block Subdivision Name Hog Scar ssm
Latitude 42.6825164 Longitude -108.665840

6. Are any of the lands covered by the proposed reservoir owned by the State or Federal government? If so, describe lands and designate whether State or Federally owned. No

7. (a) The dam is to be constructed as follows: untreated wooden posts are driven into stream bed; willow stems woven between posts, gravel, cobble and sand used to reinforce structures. contents = 17 cubic yards.
(b) The water face of the dam is to be protected from wave action in the following manner: willow stems
(c) The dam height, as measured by the dam crest elevation minus the lowest downstream toe elevation is 2 feet.

Permit No. 14796 Res. Page No. 97 (Leave Blank)



GARY R. HERBERT
Governor
SPENCER J. COX
Lieutenant Governor

State of Utah
DEPARTMENT OF NATURAL RESOURCES
MICHAEL R. STYLER
Executive Director
Division of Water Rights
KENT L. JONES
State Engineer/Division Director

Internal Correspondence *Division of Water Rights*

To: Water Rights Division Staff

From: Kent L. Jones, P.E.
State Engineer
Director – Utah Division of Water Rights

Date: December 28, 2018

Subject: POLICY FOR BEAVER DAM ANALOGUE (BDA) CONSTRUCTION

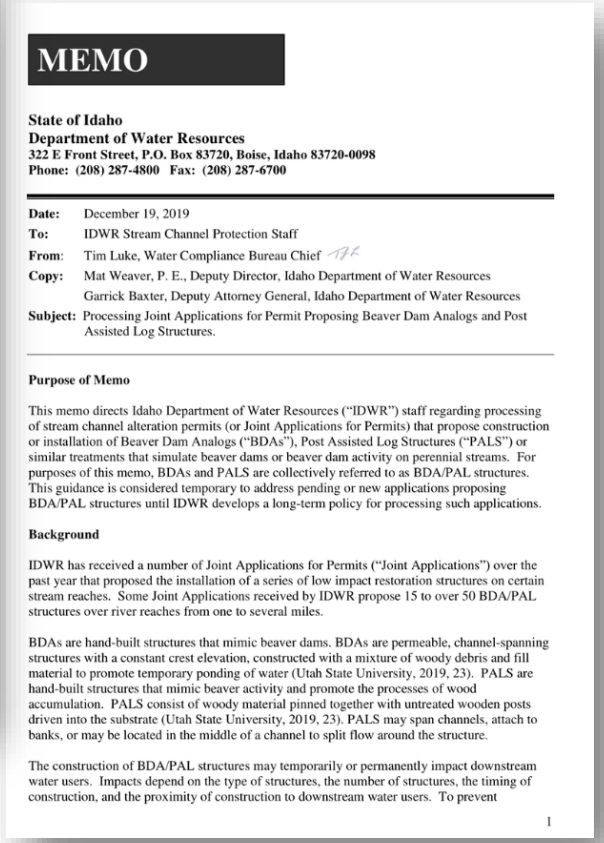
With increased activity in constructing man-made, small impoundments on natural streams, often referred to as Beaver Dam Analogues (BDA), it has come to the attention of the Division of Water Rights that there is a significant concern as to the effect theses BDAs are having on existing water rights. Downstream users are concerned that by impounding water with a BDA, water that flowed naturally down the stream to the water right holders is now stopped from flowing to them. Even though it is a small amount of water, it is still taking water away from the downstream users. Usually BDA projects proposes to do several of these small impoundments on the same stream which collectively add to the amount of water lost to the system. In addition, they assert that the impoundments allow water to seep into the surrounding riparian area providing water for additional vegetative growth and increased evapotranspiration. It is asserted that this would diminish the amount of water flowing to satisfy downstream water right holders and impair their water rights.

Proponents for the use of BDAs are of the opinion that these impoundments are small and create limited impact to the stream flow and downstream water right holders. They assert that the BDA's actually enhance the stream channel and the streamflow by allowing the water to seep into the riparian areas which allows the water to return to the stream over an extended time period. This in turn helps the stream flow longer than it would if the water went down the channel unimpeded. They further assert that with the BDAs, stream erosion is diminished and riparian zones are heathier. Evidence has been presented that these BDA areas have helped prevent fire damage during wildfire events and have helped restore damaged streams impacted by runoff from these burn areas. Further explanation detailed how many of these structures are temporary in nature and may be washed away in flooding events encountered though the annual water cycle.

The State Engineer is responsible for the general administrative supervision of the waters of the state and the measurement, appropriation, apportionment, and distribution of those waters. We are concerned about protecting the water rights

UTAH DNR WATER RIGHTS

1594 West North Temple, Suite 220, PO Box 146300, Salt Lake City, UT 84114-6300
telephone (801) 538-7240 • facsimile (801) 538-7467 • TTY (801) 538-7458 • www.waterrights.utah.gov



MEMO

State of Idaho
Department of Water Resources
322 E Front Street, P.O. Box 83720, Boise, Idaho 83720-0098
Phone: (208) 287-4800 Fax: (208) 287-6700

Date: December 19, 2019
To: IDWR Stream Channel Protection Staff
From: Tim Luke, Water Compliance Bureau Chief TJR
Copy: Mat Weaver, P. E., Deputy Director, Idaho Department of Water Resources
Garrick Baxter, Deputy Attorney General, Idaho Department of Water Resources
Subject: Processing Joint Applications for Permit Proposing Beaver Dam Analogs and Post Assisted Log Structures.

Purpose of Memo

This memo directs Idaho Department of Water Resources ("IDWR") staff regarding processing of stream channel alteration permits (or Joint Applications for Permits) that propose construction or installation of Beaver Dam Analogs ("BDAs"), Post Assisted Log Structures ("PALS") or similar treatments that simulate beaver dams or beaver dam activity on perennial streams. For purposes of this memo, BDAs and PALS are collectively referred to as BDA/PAL structures. This guidance is considered temporary to address pending or new applications proposing BDA/PAL structures until IDWR develops a long-term policy for processing such applications.

Background

IDWR has received a number of Joint Applications for Permits ("Joint Applications") over the past year that proposed the installation of a series of low impact restoration structures on certain stream reaches. Some Joint Applications received by IDWR propose 15 to over 50 BDA/PAL structures over river reaches from one to several miles.

BDAs are hand-built structures that mimic beaver dams. BDAs are permeable, channel-spanning structures with a constant crest elevation, constructed with a mixture of woody debris and fill material to promote temporary ponding of water (Utah State University, 2019, 23). PALS are hand-built structures that mimic beaver activity and promote the processes of wood accumulation. PALS consist of woody material pinned together with untreated wooden posts driven into the substrate (Utah State University, 2019, 23). PALS may span channels, attach to banks, or may be located in the middle of a channel to split flow around the structure.

The construction of BDA/PAL structures may temporarily or permanently impact downstream water users. Impacts depend on the type of structures, the number of structures, the timing of construction, and the proximity of construction to downstream water users. To prevent

1

Summary Guidance

From: Pocket Guide: Wheaton et al. (2019, p 57)
DOI: 10.13140/RG.2.2.28222.13123/1
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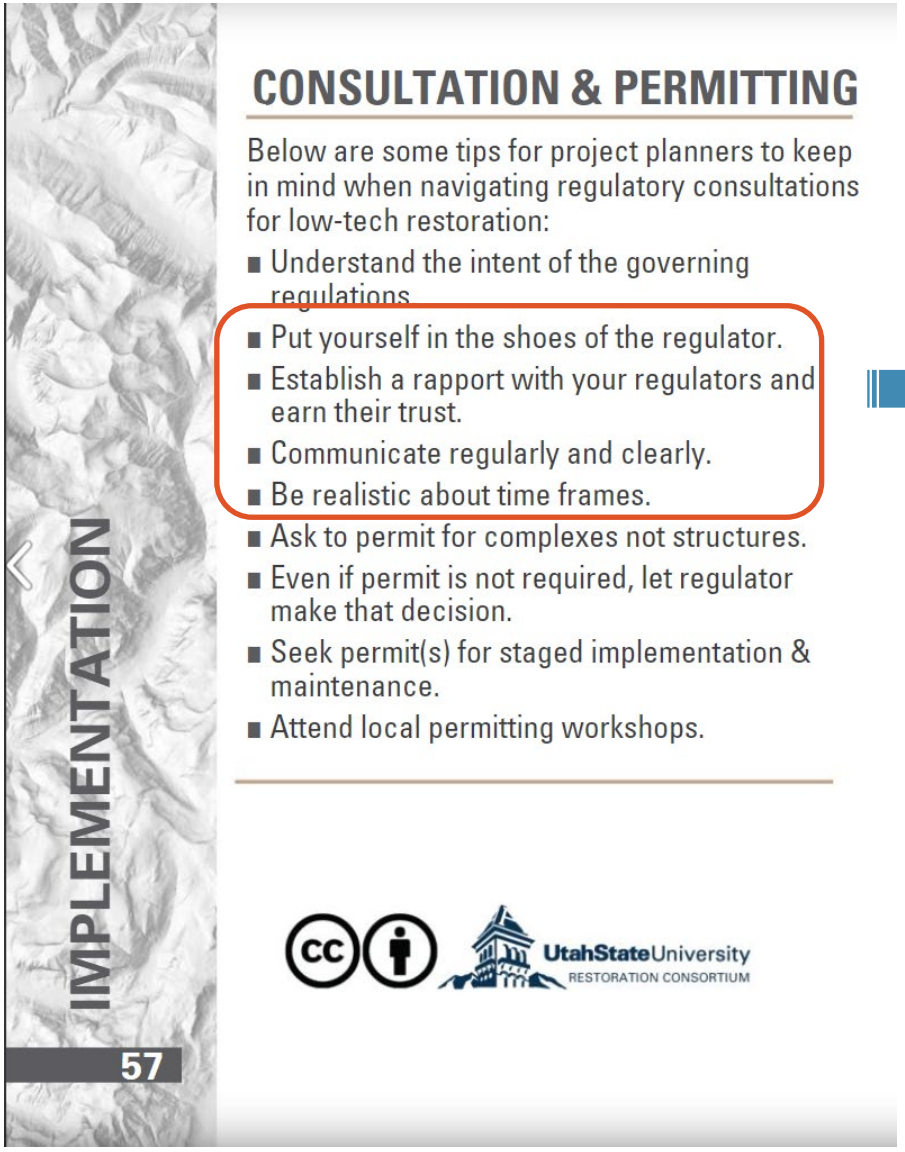

- Patience
- Trust
- Empathy
- Realistic Expectations