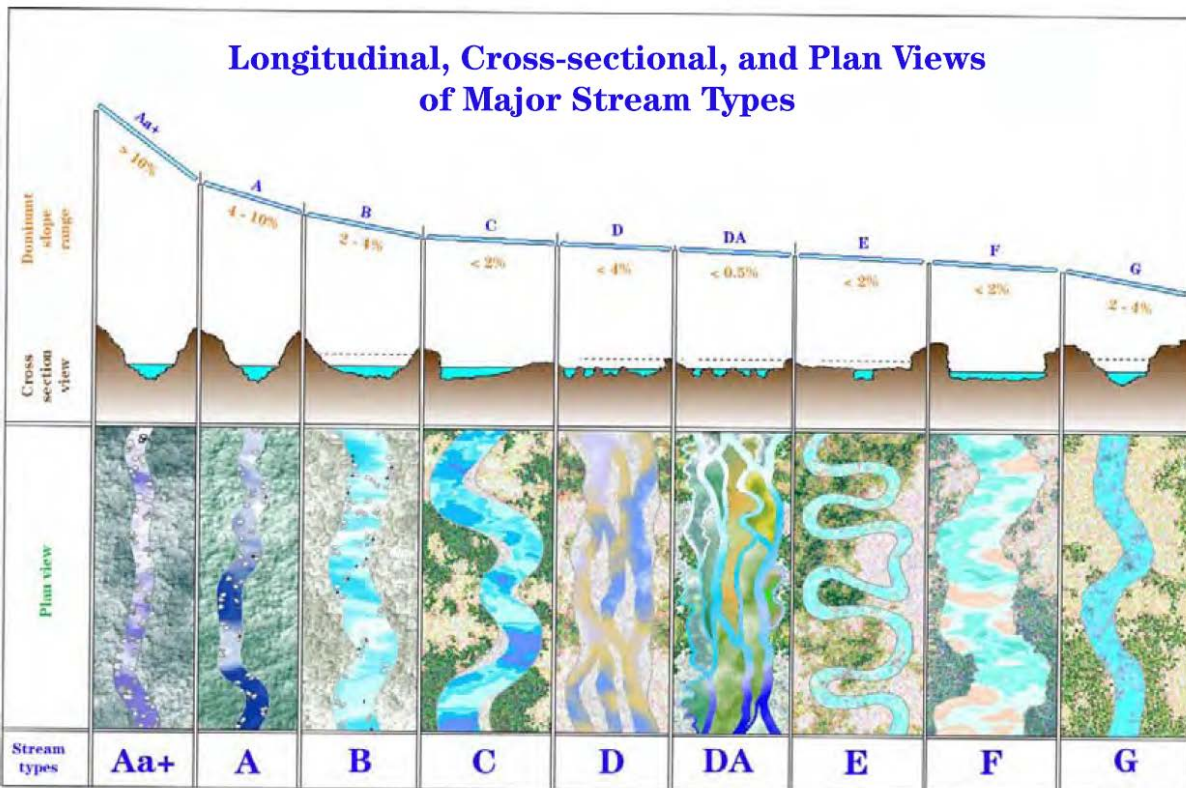


Kingfisher Bend Ranch habitat enhancement possibilities, June 2012

A. Bear River stream restoration

Several factors are likely playing a role in the Bear River becoming unstable and taking upon a wider, shallower form that is less beneficial for trout than was probably present 200 years ago. A stable river does not mean the river doesn't move, but the processes of gravel bar and pool formation are balanced. In pristine streams these processes are generally balanced. The Bear River at the Kingfisher Bend Ranch (and surrounding areas) had a stable form that "fit" the historic hydrology and vegetation of the area. However, now the conditions have changed and the river is transitioning to fit the new conditions. For example, man-made diversions and reservoirs can alter the timing and size of flood flows. Sometimes this results in the river not being able to deposit sediments (anything from silt to rocks) on the floodplain and/or erosion of the stream downward through the sediments that would normally make up the bed of the stream. Another example of changing conditions would be an increase of sediments into the river due to past or current heavy livestock grazing.

If today's conditions stay the same, the river will probably eventually become stable. However, this could take many decades to occur and even then the stable form may not be desirable for cutthroat trout. An alternative to waiting is to attempt to create a stable river reach given the existing hydrology, slope, and substrate of the river. Some of this work has already begun on the ranch.



Without having collected all the necessary data, I think the river on the KB Ranch would probably be classified as a "C" stream type (see above). It might have historically been an "E" stream type. Even though the river is currently a C, it is unstable and could still transition to an F on its way to becoming

stable. This would not be desirable. Any restoration that would be done would probably have the goal of creating a stable C stream type, with the potential to allow the stream to form itself into an E type over many years. This would probably involve rock J-hooks, cross-vanes, log revetments in the bank, and other similar type techniques designed to increase stream maximum depth, increase the stream's ability to access its floodplain, and decrease bank erosion.

These types of stream restoration projects could be done and would be beneficial all the way down the Bear River from the Utah line to Evanston. One school of thought would be that since no one has the funds to accomplish all this at this time, public funds should be used address other issues. Another school of thought is that we need to start somewhere, and that when we have a willing landowner and a project with potential to produce good results, we should proceed. I tend more towards the latter school of thought. However, the high cost of these types of projects means that we will want to get buy-in from other entities like Trout Unlimited, WY Game & Fish Dept, and NRCS to confirm we are on the right track and potentially serve as funding partners. I will work on this, but feel free to make contacts as well. I already talked to Nick Walrath of Trout Unlimited in Green River, WY and he was going to call you to share some info with you about the trout tracking study they are working on.

B. Wetland projects

Five potential wetland projects on the Ranch could be implemented fairly easily and cheaply. Our unofficial policy is that we try to find public funding to cover most of these costs, so the landowner contribution is small on these types of projects. The basic benefit to wildlife of these projects is the ability to hold more water for longer periods of time in these wetlands, which will be good for many waterfowl, shorebirds, and waterbirds.

Kingfisher Bend Ranch potential wetland projects

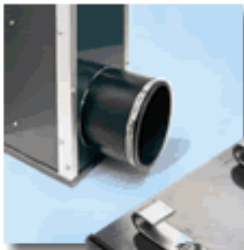


Our preferred water control structure for these types of projects:

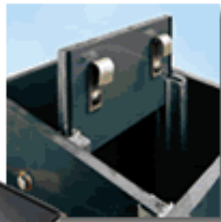
Agri Drain CORPORATION **Inline Water Level Control Structure™**

- Structures can be used to manage water level in a variety of applications including ponds, wetlands, manure management, drainage water management, and saturated buffers.
- Rugged 1/2" PVC structure with lockable top.
- Stainless steel screws and custom anodized aluminum corner extrusions are used for strength and durability.
- Stoplogs made of 1/2" PVC, in 5" & 7" heights for adjustability.
- Flexible couplers allow PVC, Corr. HDPE plastic pipe, or other materials to be easily attached. *(Please specify type of pipe when ordering)*
- Annual maintenance of stoplogs is recommended. Remove stoplogs and lubricate the o-ring on each board with white lithium grease. Ensure that there is no debris in the tracks or along the bottom of the structure. Replace your stoplogs after greasing.
- 5-Year Warranty on all standard structures.
- Customized or special orders will carry a 1-Year warranty on workmanship and material and have no return policy.
- Please allow up to 2 weeks for shipment.

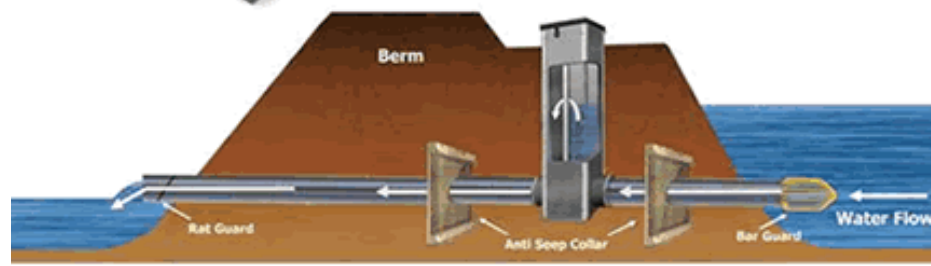
Flexible rubber connectors with heavy duty stainless steel clamps.



Rubber seal assures a tight fit to prevent leakage.



5" & 7" stoplogs for adjustability. Durable stainless steel lifting hooks.



Site A

This site appears to be an old, manmade drainage ditch designed to drain water out of the oxbow towards the river more quickly than would have occurred without the ditch. It was not running water on May 30, 2012, but I suspect it does at some times. Since this is not the only outlet for this oxbow, I recommend simply filling this ditch with dirt and not installing a water control structure. (This will actually provide a nice crossing over this ditch for ATVs or horses.) The other outlets for this oxbow further south also look like artificial ditches, but the beaver seem to be successfully damming them up.

Picture facing westward, up the drainage ditch



Picture facing southward, across the ditch in the area to be earthfilled



Site B

This oxbow wetland has been diked across and is used to convey irrigation water to the south and west. Refurbish the dike by adding about 0.5' of fill on top. One or two 2' tall water control structures would be installed in the ditches at the west end of the dike.

Picture facing eastward along dike with irrigation ditches in foreground



Picture facing westward along dike



Site C

Needs further surveying. Site is an old river oxbow that is capturing irrigation return water flowing north and west from the KB Ranch property. The annual flow of irrigation water into the oxbow has eroded a ditch (almost appearing like a natural stream) through the bottom of the oxbow. Proposed restoration would be to install a water control structure in the ditch with some minor diking also possible.

Picture facing eastward near location of potential water control structure



Site C overview showing old oxbow to be seasonally reflooded if restored



Site D

Irrigation water is held along this “border dike” which forces the water south and prevents it from flowing west to the river. The proposed project would be to install a water control structure at the ditch crest to allow the water elevation to be slightly raised before the water is forced to the south. A 2’ tall water control structure would be installed in the existing ditch, while the existing dike would be raised about 0.5’.

Northward facing view of Site D with potential water control structure location in ditch in foreground.



Eastward facing view of Site D



Site E

Similar project to Site D. Install 2' tall water control structure in ditch flowing out of the site to provide more water management flexibility. Raise existing dike about 1'.

Site E facing northward along dike, with water control structure location in the foreground.



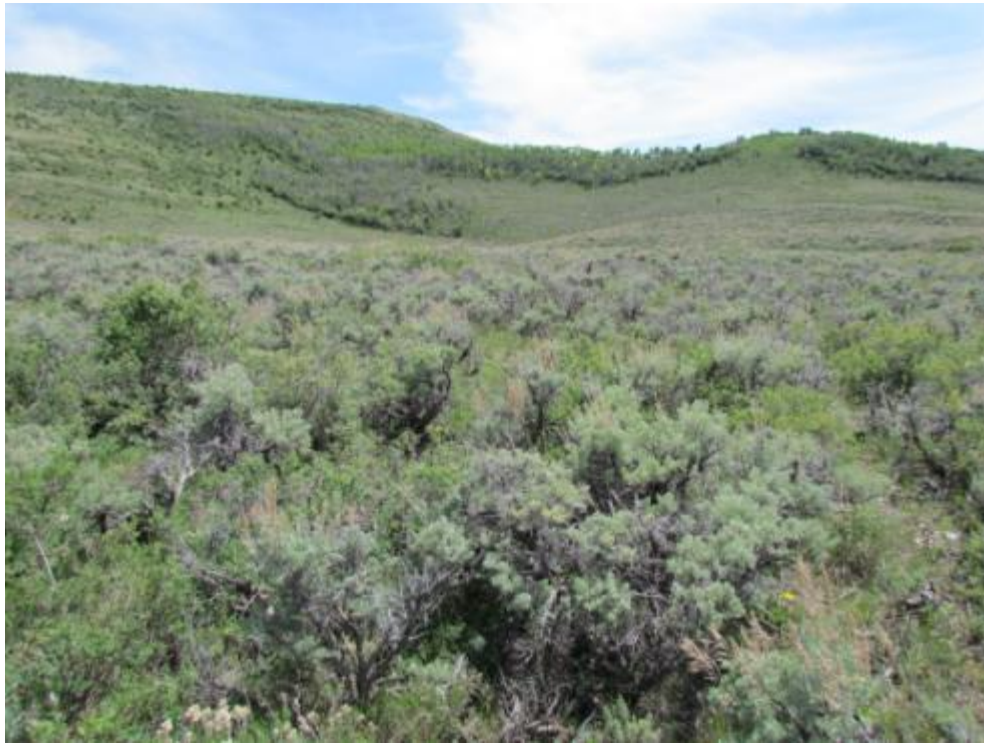
Southward facing photo of Site E, taken along dike.



C. Upland projects

There is quite a bit of potential on Sections 14 and 24 for vegetative treatments to reduce the cover of sagebrush with the goal of increasing grass, aspen, and forbs. From a sage grouse perspective, a sagebrush cover of 10-25% is usually ideal for nesting and raising chicks, which is one of the likely wildlife uses of this area. Our tendency is to visually overestimate sagebrush cover, but the Ranch certainly has some areas that could probably benefit from some additional treatments.

Picture of an area on Section 24 that exceeds 25% sagebrush cover.



One idea would be to mechanically treat (probably mow or use Lawson aerator) some of the sagebrush-aspen boundaries to encourage aspen, grass, and forbs to increase in these areas. This would benefit a wide range of wildlife and probably increase livestock forage production, too.

Aspen-sagebrush boundary that could be treated mechanically.



I would definitely want to consult with the Wyoming Game & Fish Department before going too far in planning any sagebrush treatments, as they would be an invaluable resource. NRCS funding could also be sought for sagebrush treatments. We (FWS) would be interested in pursuing some treatments if other experts agreed on the value and feasibility.

Although it may not be a fishery, Bull Creek is another area that could warrant some extra attention. Much of the historic willow habitat that is essential for a wide range of fish and wildlife species has been lost on Bull Creek. The reach of Bull Creek on the KB Ranch is clearly recovering and seems to be headed in the right direction. The sections of Bull Creek on the neighboring landowners would benefit even more from some grazing management improvements, but we cannot control that unless they are interested. That being said, it may be beneficial to further limit livestock grazing on the small reach of Bull Creek that passes through the KB Ranch to speed the recovery. Because it is in the corner of the pasture, this could be accomplished fairly easily without too much additional fence. It may not be necessary to fence it permanently, so electric fence and a solar charger could be an option to be pursued. If a separate pasture is created on Bull Creek, it might also make sense to treat the sagebrush in this pasture, which will allow the grass to further establish increase while the grazing is limited.

Bull Creek on the Kingfisher Bend Ranch.



Area near Bull Creek with sagebrush treatment potential.



WHERE DO WE GO FROM HERE?

If you have interest in pursuing any of these projects, this is what I would see as the next steps:

- a. For the wetland projects, just let me know if you have interest and I will figure out if I can set some money aside this year or if I will have to wait until next year.
- b. For the river and upland projects, the next step would be to get Trout Unlimited, WY Game & Fish, and NRCS out to gather their input and gauge potential interest in a cost-share.