

Aquatic, Riparian, and Groundwater

(The following is from Norbeck Society comments to the BHNF Plan Assessment, 2022.)

From the assessment:

“Aquatic, riparian and groundwater-dependent ecosystems are some of the most productive and biologically diverse lands on BKF and provide living conditions for a greater variety of aquatic and terrestrial wildlife than any other habitat type.”

“The Final Environmental Assessment and Record of Decision for BKF Phase 2 Amendment to 1997 Land and Resource Management Plan (LRMP) suggests that riparian conditions have improved across BKF in response to ongoing efforts to implement best management practices, reduce sediment delivery from roads, exclude livestock, and re-plant woody shrubs.”

Norbeck Society isn't sure what a “suggestion” of improvement is since it's not necessarily objective and not Best Available Science. However, it is what was used to write the 1997 LRMP, FEIS and Record of Decision. Norbeck Society and other public are expecting better support for development of the next BKF Forest Plan/LRMP.

What Norbeck Society wanted to see in this assessment are conclusions about aquatic, riparian and groundwater-dependent conditions today across BKF, based on actions implemented and monitoring completed since the Phase 2 Amendment/1997 Land and Resource Management was enacted. This should be followed by Needs for Change identified to achieve goals not yet met and new goals. Conclusions on current condition from Best Available Science are not provided in the Aquatic, Riparian, and Groundwater-Dependent Ecosystems Assessment.

As in many other assessments, descriptions of the resources involved, and their values are fairly detailed. However, analysis and conclusions evaluating actions/activities taken during the life of the last Forest Plan/Amendment and end results are not provided. How can BKF move forward with management if BKF and the public don't know what condition water resources are in right now, the result of management actions taken in the last 25 years?

Norbeck Society sees here what appears to be a trend in many assessments: BKF Standards and Guidelines from the last Forest Plan are presented with no analysis of change on the ground over time. The lack of detail suggests that Standards and Guidelines may have been implemented, in some pattern across the BKF, with unknown results. Or perhaps there are no results because Standards and Guidelines were not implemented. If BKF doesn't share results or has no results, how is the public to evaluate and make comments? What we fear is that this Assessment format is used when there are no monitoring data or information to report on past actions. Consequently, there is no scientific background to frame future actions that ideally are progressively better tailored over time to produce necessary and desirable improvements.

To be specific, the assessment references the last BKF published **annual** monitoring report dated **2015** as its most recent source of monitoring data/information. That is also Norbeck Society (and other members of the public) last reference point for BKF monitoring data/information. Is it

true there is no scientific data/information from the last seven years? If so, we really have nothing but a very fuzzy idea of the conditions of Aquatic, Riparian, and Groundwater-Dependent Ecosystems on BKF.

An important topic to Norbeck Society is restoration of aquatic/riparian/groundwater-dependent systems. The best BKF can report in this assessment is documentation in 2015 of 625 acres of riparian habitat restored or enhanced from 2003 to 2012. No information is provided for the 10 years from 2012 to the present day. Norbeck Society must conclude that no restoration was achieved. Is it a credible result that on the BKF landscape of over a million acres, over 25 years of time, only 625 acres of riparian habitat have been restored or enhanced? Norbeck Society finds this extremely inadequate. It highlights unequivocally that BKF management has put an extremely low priority on one of the most important natural resources on the Forest - water. As a result, BKF has no idea on present conditions or where to manage from here other than a scattershot approach. Some management actions taken may help improve water resources condition, others will not.

Norbeck Society finds it interesting that the restoration toolbox as described in the assessment includes primarily three tools: increasing persistent beaver activity, constructing enclosures in riparian areas to restrict livestock and wildlife, and planting of willows. Even this simple, low-tech, low-cost set of tools was only implemented on 625 acres. We also note that the Rangeland Management Assessment makes no mention of (that is, gives no recognition to) negative impacts of livestock in riparian areas and elsewhere. As Norbeck Society provided in comments on the Rangeland Assessment, rangeland management must cross-reference interactions/impacts to BKF resources identified in other assessments, come forward to take responsibility for impacts of their activities, and become a leader in BKF restoration efforts.

This assessment acknowledges some important data gaps for consideration and highlights needs for monitoring. Norbeck Society notes especially the following:

- 1) “High-profile data gaps include wildfire hazard, groundwater source areas, and burn severity predictive models to understand relative threats to riparian and aquatic systems. The overall status of rare aquatic, riparian, and groundwater ecosystems is poorly understood, which is primarily due to the lack of multi-year watershed scale monitoring.”
- 2) “A group of watershed studies of regionally significant systems would help to understand the state and trends of aquatic and riparian systems, as well as the influence of watershed-scale processes on receiving bodies of water.”
- 3) “There is a need for mapping vegetation and ecosystems discussed in this assessment.”
- 4) “Inventory, classification and assessment of riparian systems according to Rosgen stream classification methods.”

Norbeck Society believes BKF should not gather data limited to protocols with hydrological emphasis like the Rosgen stream classification. The Rosgen stream classification hasn't

worked well to meaningfully classify and monitor change over time for small streams like those that are a majority of the streams in the Black Hills. Consider using protocols like the BLM/USFS Multiple Indicator Monitoring of Streambanks and Streamside Vegetation, which can inform vegetation and ecosystem mapping, stream morphology, sediment load and condition

monitoring that would benefit multiple management activities from rangeland management to off-highway vehicle use to timber management.

Norbeck Society agrees with the following **Needs for Change** identified in the assessment:

1) Mining and Grazing (put cross-reference in Rangeland Management Assessment and identify as Need for Change)

Grazing pressures from native ungulates and domestic livestock are prevalent throughout the Forest. Norbeck Society experience on BKF is that 9 out 10 degraded conditions observed from grazing pressure in riparian areas are caused by livestock.

2) Road crossings, Water diversions

There is need for broadscale assessment and improvement of road-stream crossings.

3) Post-Fire Direct and Indirect Effects

Uncharacteristic fire events are becoming more prevalent. Evaluations of impacts to watersheds require detailed evaluation and analysis. Evaluation of the current and future state of disturbance regimes are needed.

4) Climate change

Climate change in the Black Hills is predicted to be warmer and drier than current summers. Water quantity, water quality, seasonality of precipitation, and more will all be impacted. There is need to determine management change to conserve all BKF natural resources intertwined with water.

5) Aquatic habitat

Investigate opportunities to remove instream barriers at road stream crossings to promote stream connectivity over a range of flows and conditions.

6) Wetland restoration

Protect, restore, and reconnect degraded wetlands adjacent to or connected stream systems for improved stability and to improve favorable water flows, habitat quality and water quality.

A fresh idea would be to frame BKF planning by valued BKF natural resources and look at impacts from all management activities in a given planning area. This would emphasize the priority of natural resources over management activities (multiple uses), as outlined in the Multiple Use Sustained Yield Act of 1960. It would enhance understanding of the big picture of interactions, causes and effects of resource condition, especially degradation. This approach would be 180 degrees different than past and current approaches where BKF frames its planning around activities such as timber harvest, livestock grazing OHV use, etc. Each activity does its separate determination of impacts to water resources (and others) on the same parcels of ground without adding them all together. To Norbeck Society, projects today appear to be insulated from additive impacts discussions in project planning and documents.

Norbeck Society looks forward to BKF making commitments in the Revised Forest Plan to manage water resources as the critical and irreplaceable features and ecosystem components that they are. The current condition of aquatic, riparian and groundwater dependent is not presented in this assessment. While management steps generally expected to improve water resources are outlined, it's time to move into a future of objective, Best Available Science monitoring of water conditions across BKF, followed by targeted actions for improvements, and effectiveness monitoring. While Norbeck Society regularly sees words to this effect sprinkled throughout BKF management project documents, we rarely see indication that it actually occurs. What will it take to make the next BKF Forest Plan and the management projects that flow from it different?

Additional Comments:

Need for change: Add acknowledgement of ecological function and safeguards for retention of the hydro-buffering qualities of non-vascular plants, particularly pleurocarpous bryophytes like *Hylocomium splendens*, *Rhytidium rugosum*, and *Pleurozium schreberi*. These hold and slow water on steeper slopes, modulating flows to prevent scouring of vegetation below. These plants also extend the period of higher humidity after a rain.

Need for change: Beaver in riparian areas slow and spread out water, creating habitat for more diverse species of plant and wildlife. Forest plan revision needs to accommodate beaveraccommodating clauses.

Mining should be included as a risk factor in many of the subsets under aquatic ecosystems due to the possibility of contamination and the need for large quantities of water for some mining operations.