2009 Smithsfork Allotment
Settlement Agreement Management Strategy

Introduction: This document is the result of the Kemmerer Field Office's (KFO's) efforts to comply with the September 17, 2009 Settlement Agreement between the Bureau of Land Management, the Smithsfork Grazing Association and Western Watersheds Project. This Settlement Agreement served to settle disputes and appeals resulting from the decision to implement the 2005 Smithsfork Allotment Management Plan. The decisions described in this document were made by the BLM following discussions between BLM personnel from both the Kemmerer Field Office and Rock Springs Field Office (BLM), as well as staff from Wyoming Game and Fish Department (WGFD) and US Fish and Wildlife Service (USFWS). Each item in the Settlement Agreement that directly addresses or affects riparian monitoring or objectives was discussed extensively while the other items are discussed very briefly. Each item will be addressed in sequence by first reciting the item verbatim (*in italics*) from the settlement agreement and then describing the actions taken or current plan to meet the item requirements.

Settlement Items:

Item 1: *Beginning in the 2010 grazing season, the prescribed pasture grazing rotation on the Smithsfork Allotment will proceed as follows:*

YEAR	*SPRING START*	*SUMMER 1*	*SUMMER 2*	*FALL END*
2010	*South*	*Muddy*	*North*	*(Split Herd) Huff/Smithsfork*
2011	*North*	*(Split Herd) Huff/Smithsfork*	*Muddy*	*South*
2012	*(Split Herd) South/Smithsfork*	*Muddy*	*North*	*Huff*
2013	*(Split Herd) Huff/Smithsfork*	*North*	*Muddy*	*South*

The above rotation includes approximately thirty days of grazing per pasture. The length of grazing in each pasture will depend upon forage conditions and use levels in accordance with the 2005 Smithsfork Allotment Management Plan (AMP) and a thirty day grazing period per pasture is not guaranteed. Split herd will be commensurate to the capacity of each pasture as identified by BLM. Split herd numbers and pasture schedule will be coordinated and confirmed prior to turn-on of each grazing season and will be provided to permittees at the pre-season grazing meeting.

Item 1 (Pasture Rotation Schedule) was fully incorporated into the Smithsfork grazing permits beginning in 2010 and will be evaluated at the end of each four-year rotation cycle (2013, 2017, etc.) for effectiveness and modified as necessary.

Item 2: *"If, at the end of any two consecutive years, any stream reach assessed by BLM, at currently established monitoring sites, experienced a downward trend score due to livestock grazing based on the end-of-year greenline assessment, all grazing permits on the Smithsfork Allotment will be further limited in season-of-use by fifteen percent (15%) in total time pro-rated over the grazing season between all pastures in the rotation. This sanction is intended to be temporary. Seasonal use levels shall be promptly reinstated, but in no event later than the start of the next grazing season, upon the following conditions:*

a. *All stream reaches previously assessed to be in a downward trend shall be assessed by BLM to experience an upward score for two consecutive years, based on the end-of-year greenline assessments (prior to 2012) or MIM (after 2012), and*
b. *All remaining stream reaches have maintained or improved trend score, based on end-of-year greenline assessment (prior to 2012) or MIM (after 2012)."*

Interpretation of the stream reach assessment language was required to match the terms of the Settlement Agreement with BLM-approved methods. Implementation of Item 2 is based on the following definitions and interpretations:

"Currently established monitoring sites" is defined as the 17 current Winward Greenline monitoring sites (Winward, 2000) that were established in 1996 by the Smithsfork Coordinated Resource Management Steering Committee as recommended by the Technical Review Team (TRT) which was made up of natural resource management professionals. In 1996, these locations were defined as "Key Monitoring Sites," which is synonymous with Designated Monitoring Areas (DMAs) as defined by Burton et al. (2001). In 2011, the full suite of Multiple Indicator Monitoring (MIM) procedures was collected on the DMAs. The MIM DMAs start at the downstream end of each greenline and extend upstream an additional 28 feet. This difference in length is primarily the result of the MIM procedure using Metric units and Winward procedure using Standard English units.

The "greenline" is defined by Winward (2000) as "the first perennial vegetation that forms a lineal grouping on the water's edge." Thus, it is a location along the stream where vegetation data is collected. Both Winward (2000) and Burton et al. (2011) include a procedure for sampling the composition of plants, rock, and wood on the greenline that is titled "Greenline Composition." It is important to note that MIM uses the greenline location as the consistent location for eight of the ten short and long term procedures the tool suite measures. Only substrate composition and residual pool depth are not specifically tied to the greenline as a meaningful anchor location.

To clarify the short-term (less than or equal to two years) requirements, the term "end-of-year greenline assessments" is interpreted to mean the Livestock Impact portion (stubble height and bank alteration) of MIM first conducted in 2010 and repeated in 2011, in combination with willow utilization, which has been measured at various locations in the allotment since 1993. Analysis of these data provides a quantitative measure of these short-term indicators for annual livestock impacts on that stream reach. While data from these short-term indicators provides clues to interpretation of long-terms trends, changes detected are only short-term indicators of variations in management and other factors. The changes detected in these short-term indicators will be used to make management decisions per Item 2 on interim years when Winward Greenline data or the full suite of MIM indicators is not collected.

Long-term "end–of-year greenline assessments" is interpreted to mean a complete analysis of the full suite of MIM and/or Winward Greenline data for each site on the years that full sets of data are collected. A complete analysis of all indicators will be used to make management decisions per Item 2 when full sets of data are available.

Therefore, the terms "trend" and "trend score" will be defined as either "short-term" or "long-term," depending upon data available each year from the "end-of-year greenline assessments." However, these data from these "short-term" measurements do not indicate trend in and of themselves. Short-term "trends" and "trend scores" will be based on changes in annual measurements of livestock impacts (stubble height, bank alteration and willow utilization). To define "short-term trend" and "trend scores" required by Item 2, the most recent data will be compared to the previous two (2) to four (4) years' readings. Only if the numbers display a consistent increase or decrease in the measured attribute would they qualify as either an upward or downward "trend." Long-term trend will be derived from periodic assessments of riparian conditions using Winward's Greenline protocols and/or derived from a complete analysis of the full suite of MIM indicators. Changes in the longer term indicators detected by Winward Greenline or MIM readings will also be considered, but may require a longer period of time to show an apparent change.

Item 3: *"Following the 2013 grazing season, the above rotation will be reviewed for continued feasibility under the following performance measures:*

a. *Grazing rotation facilitated effective and timely movement of cattle between pastures;*
b. *Grazing rotation facilitated continued riparian improvement; and*
c. *Grazing rotation provided for dispersal of livestock within pastures to meet upland standards."*

The "above rotation" mentioned in Item 3refers to the pasture rotation schedule outlined in Item 1.

3a. This criteria is to be judged on the basis of how quickly the cattle are moved from pasture to pasture and whether or not cattle are discovered in pastures either before or after the use period for that pasture in any given year.

3b. Winward greenlines outside the exclosures were last read in 2008 and will be read again during the 2013 field season as scheduled in the 2005 Allotment Management Plan (AMP). Greenline data from 2008 indicated that trends across the allotment were variable. Many appeared static or the trend was not apparent; others displayed a more clear upward or downward trend. Riparian conditions across the allotment will be fully evaluated at the end of the 2013 grazing season (per the 2009 Settlement Agreement). All valid available data from Winward Greenline and MIM assessments, as well as utilization measurements will be used in the analysis. The effectiveness of the rotation will be appraised based primarily on the overall evaluation of riparian conditions (long-term trends) across the allotment. Short-term indicators and on-the-ground practices by the permittees will also be carefully considered in evaluating the effectiveness of the rotation.

3c. This criteria will be judged on the basis of whether the cattle were observed to be dispersed across the landscape, or bunched along the riparian zones.

Item 4: *" At the end of any four-year rotation cycle evaluation, if seventy-five percent of the stream reaches assessed by BLM, at currently established monitoring sites, are at proper functioning condition (based on PFC assessment method) and all stream reaches maintained or improved trend score, based on the end-of-year greenline assessment and MIM monitoring data, and trend throughout the Allotment is improved, then*

the BLM shall reauthorize all of the AUMs represented by the eight percent (8%) voluntary non-use in Raymond Canyon. Further, if BLM determines that substantial progress towards conformance with Rangeland Health Standards has been made, but the full seventy-five percent (75%) of the stream reaches assessed have not reached PFC, BLM may consider reauthorization of a smaller percentage of the AUMs represented by the eight percent (8%) voluntary non-use if all stream reaches maintained or improved trend score, based on the end-of-year greenline assessment and MIM monitoring data. No use in authorized in Raymond Canyon except as provided in the 2005 AMP."

This evaluation will occur once both long-term and short-term indicators on the existing (and any future) DMAs show sufficient improvement to justify the expenditure of resources on conducting a PFC assessment of the Smithsfork Allotment's stream reaches. Once the effort is justified, the assessment will be conducted at the end of the current grazing cycle. Subsequent PFC assessments will be conducted as justified based on further improvements documented with Greenline and MIM data.

Item 5: *"Within one year of the effective date of this Settlement Agreement, BLM agrees to:*

a. *Identify and implement short-term (4 year) Bonneville Cutthroat Trout Habitat objectives for appropriate Bonneville Cutthroat Trout streams reaches as identified by the Wyoming Game and Fish Department in consultation with the BLM, USFWS and Wyoming Game and Fish Department biologists. These objectives will include appropriate pool to riffle ratios, shading and fine sediment levels; and*
b. *Identify and implement long-term (12 year) Bonneville Cutthroat Trout Habitat objectives for appropriate Bonneville Cutthroat Trout stream reaches as identified by the Wyoming Game and Fish Department in consultation with the BLM, USFWS, and Wyoming Game and Fish Department biologists. These objectives will include appropriate pool to riffle ratios, shading, fine sediment levels, temperature, trout standing crop (lbs./acre, and beaver ponds per mile."*

Because the discussion of Item 5 references riparian functioning conditions frequently, the following definitions according to Prichard, et al. (1998) are provided:

- Proper Functioning Condition (PFC) - Riparian-wetland areas are functioning properly (in/at PFC) when adequate vegetation, land form, or large woody debris is present to:
    - Dissipate stream energy associated with high waterflows, thereby reducing erosion and improving water quality;
    - Filter sediment, capture bedload and aid floodplain development;
    - Improve flood-water retention and ground-water recharge;
    - Develop root masses that stabilize streambanks against cutting action;
    - Develop diverse ponding and channel characteristics to provide the habitat and the water depth, duration and temperature necessary for fish production, waterfowl and other uses; and
    - Support greater biodiversity.

- Functional, At Risk (FAR) – Riparian-wetland areas that are in functional condition, but an existing soil, water or vegetation attribute makes them susceptible to degradation.

- Nonfunctional (NF) – Riparian-wetland areas that clearly are not providing adequate vegetation, landform or large wood debris to dissipate stream energy associated with high flows, and thus are not reducing erosion, improving water quality, etc.

The consensus of BLM, WGFD and USFWS personnel is that the indicators listed in Item 5 are not appropriate for short-term monitoring. Therefore, it was the professional judgment of the committee to defer to existing riparian greenline monitoring because riparian conditions need to improve before the indicators listed in Item 5 can be expected to change. The committee's consensus was that achieving a minimal state of PFC on all stream reaches that provide historic or currently occupied habitat for Bonneville Cutthroat Trout would be a preceding condition to the Item 5 indicators. The state of being in Proper Functioning Condition (PFC) is recognized as the minimum channel condition and riparian plant community necessary for the stream to be resilient enough to withstand average stream energies (up to 35 year storm events). Once the state of PFC is achieved and maintained, the stream habitat conditions (pool/riffle ratios, shading and fine sediment levels) needed for a viable Bonneville Cutthroat Trout population would be more easily met and sustained. Therefore, until the state of PFC is achieved, the primary emphasis of management and trend monitoring will be upon recovery of riparian plant communities. However, baseline data for these long-term indicators of BCT habitat conditions needs to be collected by the end of 2014 so these conditions can be evaluated in the future.

Stream channels within the allotment have been in a disturbed state for a prolonged period. Therefore, final long-term habitat goals cannot be predicted with a high level of confidence and need to be estimated. Continued disturbance and heavy use within the monitoring areas has delayed improvements that would have made predictions of future potential improvements and habitat conditions much easier. There was consensus between the BLM, WGFD and USFWS that the percent composition of desirable riparian species (such as sedges and willows) needs to increase at all DMAs within the allotment to document an upward trend towards meeting long-term habitat goals.

The Desired Plant Communities (DPC) defined in the 2005 AMP and in Appendix 1 of this document are intended to be interim objectives. Improvements predicted in Greenline and riparian plant communities are viewed as stepping-stones on the path to Potential Natural Community (PNC), which (in most cases) will optimize BCT Habitat, provide the greatest diversity for other wildlife and provide the most stable long-term conditions. Prichard et al. (1998) defined Potential Natural Community as "the highest ecological status a riparian-wetland area can attain given no political, social or economic constraints."

The current long-term goal agreed upon by the representatives from BLM, WGFD and USFWS for all Smithsfork streams after the physical state of PFC has been reached is to achieve PNC. This is consistent with Goals BR (Biological Resources): 2, 3, 4 & 5 as stated in the May, 2010 Record of Decision and Approved Kemmerer Resource Management Plan. This condition may be defined as having been met once trends in late seral riparian communities (usually dominated by sedges, willows, and other riparian shrubs) have shown no increase after several 5-year monitoring intervals, and monitoring has clearly documented that management during that time frame did not prevent further increases. Because all streams in this allotment either currently support sensitive BCT, or are considered part of their historical range, achievement

of PNC throughout the allotment may be necessary to optimize their habitat. However, should new information come to light showing that an ecological status between PFC and PNC is more advantageous for healthy BCT habitat, management may be adjusted to favor that state if all agency representatives agree.

The Desired Plant Communities (DPC) defined in the 2005 AMP and in Appendix 1 of this document are intended to be interim objectives with the long-term goal of achieving PNC. At this time, the ultimate plant community composition for a majority of the riparian areas in the Smithsfork Allotment cannot be defined in detail due to a lack of known reference reach information and other factors. Likewise, the exact amount of time needed to achieve PNC is unknown. However, Smithsfork streams in the poorest condition are likely to take multiple decades to progress from their current state to desired conditions. Those already at or near PFC are expected to move much more quickly toward PNC if managed properly.

Implementation of Item 5 will include enforcement of the 2005 AMP and 2009 Settlement Guidelines. This enforcement is expected to include, but is not limited to the following activities:

- Intensive monitoring of herbaceous and woody vegetation throughout the grazing season (see Item 6, below).
- Monitor Greenline stubble height. According to 2005 AMP, sedge species must be 5”+ in height at end of the grazing season.
- If or when riparian stubble height meets or drops below seasonal target numbers (set in AMP) in any Designated Monitoring Area (DMA), (streams or wet and moist meadows) the livestock shall be removed from those areas immediately.
- If or when average utilization of willows along the riparian corridor meets or exceeds 40% at representative DMAs in any one pasture, all cattle shall be removed from that pasture immediately. If the livestock are in the final pasture of that year’s rotation, the livestock will be removed from the allotment, and no further use of federal lands will occur that year.
- If AMP and Settlement annual management objectives are not met, apply appropriate Animal Unit Month (AUM) and time sanctions (see Item 4).
- Read all Winward Greenlines during 2013 field season and conduct a complete evaluation of the allotment as per the 2005 AMP. Implement management actions accordingly.
- As per the 2005 AMP, notify Permittees to move cattle when utilization levels are approaching established criteria (refer to item 6).
- Establish and maintain a long-term air and stream water temperature monitoring study on the Smithsfork allotment.
  (See http://www.blm.gov/wy/st/en/field_offices/Kemmerer/range.html for details.)

The MIM monitoring method provides both long-term and short-term data. MIM short-term indicators are: stubble height, woody species use and bank alteration. These data can complement the stubble height and willow use measurements done throughout the season prior to, or after, MIM measurements. Long-term MIM indicators are: greenline composition, woody species age and height class, bank stability and cover, greenline to greenline width, substrate composition and residual pool depth/frequency. The MIM Data

Analysis Module permits analysis of the data with statistical confidence intervals for all results, allowing managers to determine if 'significant' changes are occurring in either the short- or long-term indicators.

These data complement quantitative and qualitative data gathered from historic and future Winward Greenline and PFC evaluations. However, data from Winward Greenline and MIM methodologies are not entirely compatible because a Winward Greenline is one continuous plot, whereas a MIM DMA reading is composed of many small plots, each with its own quantitative dataset. MIM data is designed to be analyzed statistically with a smaller margin for error and reduce observer variability (Burton et al, 2011). Both methods depend heavily on proper training, the judgment of the observer, and strict adherence to protocols. MIM data is available from the 2010 and 2011 Livestock Impacts assessments and a full suite assessment performed in August and September of 2011. Therefore, the Kemmerer Field Office of the BLM now has baseline MIM data on all DMAs and can begin to detect changes in riparian conditions using this method.

Riparian vegetation is generally the first stream attribute to show recovery. Therefore, if the BLM and permittees manage the allotment for stewardship of the Riparian Plant Communities' natural stream potentials and compliance with the current utilization and residue standards, as well as reduced bank alteration, the riparian and channel conditions will continue to improve, resulting in improved BCT habitat (width-depth ratios, pool habitat, temperatures, etc.). Because vegetation is the base component that all others rely upon, the success of the permittees' stock riders in monitoring and limiting use levels by carefully controlling livestock is crucial.

If grazing use criteria (stubble height, woody use, and streambank alteration) are within the prescribed levels, measurable improvement in long term indicators still may take several years to achieve for a variety of reasons. Ervin Cowley (Range Management/Riparian Specialist, USDI, BLM (Ret.), Co-Developer of MIM) collected data on stream recovery in Idaho and used it in preparing materials for PFC training in Idaho (Cowley, 1997). A graph in Grazing Management Processes and Strategies for Riparian-Wetland Areas (TR 1737-20, 2006 edition) uses Cowley's data to illustrate that recovery from a non-functional state to PFC can be a lengthy process. It is important to note that the graph (summarized in the list below) is merely an illustration of the non-functioning streams Ervin Cowley collected his data on, and is not a definitive standard that applies to all streams.

- Herbaceous Vegetation 25-30 years
- Woody Vegetation 30-35 years
- Channel Morphology 35-40 years
- Water Quality 40 years

Smithsfork streams rated Functional, At Risk (FAR) in 2007, will recover more quickly than Non-Functional stream reaches if they are properly managed. Streams rated at the upper end of FAR could potentially recover in as few as 10 – 15 years. Streams rated towards the lower end of FAR are less stable and more vulnerable to streambank erosion caused by high-runoff events (such as the 2011 snow-melt or other high-intensity precipitation events). Streams near, at, or above the PFC threshold are more resilient, capable of withstanding the impacts of a high-runoff events, and will recover more quickly than those in more degraded conditions.

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Item 6*: " As per the 2005 AMP, the BLM will monitor stubble height, willow utilization and stream bank trample as needed to determine when Use Criteria/Pasture Move Indicators and bank trampling indicates livestock should be removed from a pasture. BLM will immediately notify permittees when pasture moves are required."*

The following monitoring was implemented in 2010 and 2011. Stubble height (on a 50-pace transect) and willow use (% current year's leaders bitten) were measured approximately one week before cattle grazing use started. This reading was recorded to document use by spring sheep pasture and trailing. Cattle use readings began about halfway through the calendar use period. Additional readings occurred on 5-7-day intervals until the use criteria were met, or the calendar move date was reached. The greenline stubble height and willow use were read again approximately 5-7 days after the livestock move window. A final reading was done after the sheep use in the fall. The pace method was used in 2010 because the MIM Livestock Use assessment was conducted before the sheep were removed. In 2011, the MIM assessment was done after the sheep were removed.

The 2005 AMP (USDI, BLM, 2005) includes a requirement that the end-of-season greenline stubble height not be lower than 5" and that willow use not exceed 40% of the current year's leaders. If these stipulations are not met for two successive years, then a temporary reduction of permitted AUMs by 10% is warranted. Reductions in AUMs may be restored after 75% of the stream reaches in the Smithsfork Allotment reach a state of PFC.

Monitoring requirements in Item 6 of the Settlement Agreement exceed those required in the 2005 AMP which does not include a requirement to monitor streambank trampling. Correspondence with Steven Smith of the National Riparian Service Team and Ervin Cowley suggests that there is no peer-reviewed science showing what an "acceptable" level of bank alteration may be, although 25% +/- 6% was suggested as a "starting point" (Smith, 2011 & Cowley, 2011). The consensus was that the true acceptable level of alteration for a given stream reach is discerned over years of monitoring bank alteration and the resulting changes to long term indicators.

Monitoring data for 2010-11 supported a 10% reduction in AUMs in the 2012 grazing season (in compliance with the 2005 AMP). The Kemmerer Field Office chose to seek clarification regarding the relationship between the 2009 Settlement Agreement requirements and the 2005 AMP requirements. It was determined that the Settlement Agreement and 2005 AMP are both in effect. This clarification was not made until after the 2012 grazing season was already underway. If the willow utilization criterion is exceeded again in 2012, a 10% reduction will apply.

Item 7: "*Within one (1) year of the effective date of this Settlement Agreement, BLM will begin utilizing the Multiple Indicator Monitoring (MIM) method* ***(Monitoring Stream Channels and Riparian Vegetation: Multiple Indicators, Interagency Technical Bulletin, Version 5.0, April 2008)*** *on the Smithsfork Allotment in addition to data collected on greenline transects and as appropriate on other key areas for short and long-term monitoring. BLM strongly recommends that the Smithsfork Grazing Association members also become educated and participate in use of this monitoring method."*

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The agreement became final on September 18, 2009. Due to training schedules and personnel availability, the BLM performed a Livestock Impact Assessment of most of the greenline monitoring sites on the DMAs outside of the livestock exclosures in the Smithsfork Allotment beginning in late September through early October, 2010.

Item 8: This item mandates that Western Watersheds Project contribute to a project to enhance BCT habitat. Therefore, it is outside the purview of this document.

Item 9: *"BLM will notify all parties to this agreement within a reasonable time (1 month) prior to conducting end-of-year monitoring to allow all parties to participate in the monitoring. Permittees agree to provide limited access to WWP to cross private lands within the Smithsfork Allotment solely and expressly for accompanying BLM and/or permittees during end-of-year monitoring. WWP agrees that no crossing of private lands within the Smithsfork Allotment outside of scheduled end-of-year monitoring will occur without prior written approval from the private landowner(s). A failure of WWP to comply with the requirements and restrictions as set forth herein shall entitle the permittees to revoke the limited access provided to WWP during end-of-year monitoring."*

In both 2010 and 2011, letters were sent out to all interested publics and permittees approximately one month prior to the scheduled start date of the end-of-year monitoring.

Item 10: ***The Appellants hereby agree to withdraw and dismiss, and by this Settlement Agreement hereby withdraw and dismiss with prejudice, their appeal in the above-captioned matter***.

The settlement ended the appeal process.

Item 11: *WWP hereby consents to the dismissal of the appeal.*

The appeal was dismissed.

Item 12: *The parties agree to bear their own costs and attorney's fees*.

The parties bore their own costs.

13: *The parties agree that this Settlement Agreement fully sets forth the entire agreement between the parties and supersedes any and all prior agreements or understandings, oral or written, between the parties. Any subsequent modifications to any of the terms of this Agreement must be written and executed by both parties.*

All parties to this appeal agreed to this condition by signing the document.

14: *Notwithstanding anything in this Settlement Agreement to the contrary, the terms and conditions set forth herein are not intended to remain binding on any party hereto subsequent to any formal revision or modification of the 2005 AMP by final decision, subject to the parties' rights of appeal as provided by laws or regulation, unless specifically incorporated therein.*

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This Settlement Agreement does not prevent or affect any future revisions of the 2005 AMP or future AMPs written by the BLM, so long as the NEPA process and 43 CFR are followed.

15: *This Settlement Agreement shall be binding upon the signatories' agents, devisees, assigns or successors in interests.*

The Settlement Agreement is considered binding upon all current and/or future Permittees on the Smithsfork Allotment as long as the agreement is in force.

16: *The parties agree that this Settlement Agreement will become effective on the date upon which the last signature is affixed to the document. The parties acknowledge and agree that, for convenience, this Settlement Agreement may be executed in counterpart originals. Taken together, these separately executed copies of the Agreement shall be deemed to be one original Agreement.*

The Settlement Agreement was signed with separate signature sheets and began affecting management planning immediately and actual practices on the Smithsfork Allotment at the beginning of the 2010 grazing season.

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Bibliography:

Burton, Timothy A., Smiths, Steven J., Cowley, Ervin R. 2011. Multiple Indicator Monitoring (MIM) of Stream Channels and Streamside Vegetation (TR 1737-23). Bureau of Land Management National Operations Center. Denver CO.

Cowley, Ervin. 1997. Idaho riparian proper functioning condition (PFC) assessment training material. Unpublished Data.

Cowley, Ervin. 2011. Email communications.

Prichard, Don, Anderson, John, Correll, Cindy, Fogg, Jim, Gebhardt, Karl, Krapf, Russ, Leonard, Steve, Mitchell, Brenda, Staats, Janice. 1998. A User Guide to Assessing Proper Functioning Condition and the Supporting Science for Lotic Areas (TR 1737-15), Bureau of Land Management, National Business Center, Denver CO

Smith, Steven J. 2011. Email Communications.

U.S. Department of the Interior, Bureau of Land Management. 2005. Allotment Management Plan, Smithsfork Allotment, Kemmerer Field Office. Kemmerer WY.

U.S. Department of the Interior, Bureau of Land Management. 2006. Grazing Management Processes and Strategies for Riparian-Wetland Areas (TR 1737-20). National Business Center. Denver, CO.

U.S. Department of the Interior, Bureau of Land Management. 2011. Record of Decision and Approved Kemmerer Resource Management Plan. Kemmerer Field Office Planning Area. Kemmerer WY.

Winward, Alma H. 2000. Monitoring the Vegetation in Riparian Areas (General Technical Report RMRS-GTR-47). U.S. Department of Agriculture, U.S. Forest Service. Rocky Mountain Research Station. Fort Collins, CO.

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Appendix 1: Quantitative/Qualitative Interim Objectives:

This section contains an analysis of the fourteen (14) riparian monitoring areas in the Smithsfork Allotment that are not in long-term exclosures. It lists the objectives for 2001 set in1996, the actual conditions measured in 2008 and the new objectives for 2013 and 2021. Additional projections for water width (scour line to scour line) objectives and width of greenline vegetation objectives are also presented. The objectives listed for each greenline for 2013 and 2021 are not intended to be ends in themselves, but merely waypoints to assess the effectiveness of management and measure progress on the way toward PNC. The actual 1996, 2001 and 2008 measurements for the three greenlines that are inside exclosures are also included.

BLM, WG&F and FWS recognize that many of the streams on the Smithsfork Allotment are in less than healthy condition and are therefore more easily damaged by both natural and livestock-caused impacts. With this in mind, the goals and objectives listed in the following pages are subject to change by the BLM if circumstances beyond the reasonable control of the permittees are determined to be the cause of the stream not meeting the objectives. (For example; absence of aquatic greenline vegetation due to a flood re-shaping the stream channel; or, absence of willows in many stream reaches where they are desired.) Though poor management may be the root cause for the streambank damage, there will not be recurring penalties due to the re-shaped section of streambank being expected to display the same vegetation as an undamaged portion. By the same token, proper livestock management should create circumstances on the greenline favorable to willow seed production, capture and eventual establishment on sites where potential for recovery exists. Until management practices have provided opportunities over several cycles of appropriate events the potential for willow recovery cannot be determined.

The existing stubble height and willow use standards will continue to be adhered to until the legal or management documents are replaced by new ones or released by the entities that imposed them.

Definitions of Terms

Sedge (Carex)/Juncus: Percent composition of the vegetative greenline community by Sedge (*Carex*) and *Juncus* (Rush) plants respectively.

X-Section Greenline Objectives: Each Winward Greenline (Winward, 2000) on the Smithsfork Allotment has three cross-section lines (upstream, downstream and middle) running at right angles to the stream floodplain (at the time they were established) where topographical and vegetation attributes and changes are monitored.

> Riparian Vegetation: The distance from the furthest (away from the water) limit of aquatic (riparian) vegetation on one side of the stream to the same limit on the opposite side of the stream.
>
> Water Width Max: The maximum width of perennial water flow in the stream channel. This can also be defined as the measurement from scour line to scour line.

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1. Coal Creek Outside-Exclosure

Greenline Objectives

A. Increase sedge composition (or cover) as measured by Winward Greenline from 54% to 75% by 2001 (1996 Sedge/Juncus Dominated 59.07%).
2008 Greenline summary- Carex/Juncus dominated communities were 42.70%). Upland communities were 30 - 34% and mesic forbs/grasses component was 26.97%.

New Objectives 2013 -Carex/Juncus = 65/5%, Upland = 20 %, and Mixed Mesic= 10 %

New Objectives 2021- Carex/Juncus = 80/5%, Upland = 10%, and Mixed Mesic= 5%

B. Increase Willow Composition from 0% to 10% by 2001.
2008 - 2011 end-of season surveys showed willow composition along the greenline is still 0%. However, some willows were noted growing just upstream of the DMA.

New Objective 2013- Trace (T)

New Objective 2021- 10%

Vegetation Cross Section Objectives

I. 2001 Objectives
   - **a.** X-Section 1-riparian vegetation from 12’ to 15’; water width max 5’
   - **b.** X Section 2-riparian vegetation from 6.5’ to 18’; water width max 5’
   - **c.** X Section 3-riparian vegetation from 8’ to 13’; water width max 8’

II. 2008 Actual
   - **a.** X-Section 1-riparian vegetation is 9’; water width max 6’
   - **b.** X Section 2-riparian vegetation is 20’; water width max 6’
   - **c.** X Section 3-riparian vegetation is 8’; water width max 9’

III. 2013 Objectives
   - **a.** X-Section 1-riparian vegetation 15’; water width max 5’
   - **b.** X Section 2-riparian vegetation 25’; water width max 5’
   - **c.** X Section 3-riparian vegetation 15’; water width max 8’

IV. 2021 Objectives
   - **a.** X-Section 1-riparian vegetation 28’; water width max 4’
   - **b.** X Section 2-riparian vegetation 25’; water width max 4’
   - **c.** X Section 3-riparian vegetation 23’; water width max 5’

2009 Smithsfork Allotment
Settlement Agreement Management Strategy

2. Lower Coal Creek

Greenline Objectives

A. Increase sedge component as measured by Winward Greenline from 52% to 70% by 2001 (Sedge/Juncus Revision 65.48%).
2008 Greenline summary- Carex/Juncus dominated community component was 72.99%. Upland community was 4.74% and mesic forbs/grass community was 0.73%.

New Objectives 2013 -Carex/Juncus = 60/<10_%, Upland = 0%, and Mixed= 0%, Willow 30%

New Objectives 2021- Carex/Juncus = 95/<05%, Upland = 0%, and Mixed= 0%, Willow 60%

B. 1996 Objectives: Increase Willow composition from 55 plants (belt) (0.5% of Greenline)) to 100 plants (belt) (or 10% of Greenline) by 2001. The objective set for 2001 was for 50% of these to be <3' tall, 45% to be 3' to 6' tall and 5% >6' tall.
2008 Greenline surveys showed willow (belt) component contained 163 plants for 21.53% of GL. Of these plants, 2 (1.2%) were seedlings, 93 (57.1%) were young (3-6'), and 68 (41.7%) were mature (>6').

New Objectives 2013 - 30% Willow-Dominated (sedge understory in 5/6 of willows). 160 Mature (6'+), 50 seedling (<3') & 50 young (3'-6') in belt transect.

New Objectives 2021- 60% of GL willow/willow-dominated. Carex/juncus understory on approximately 5/6. Want an increase in diversity of age classes and species composition in belt transect.

Vegetation Cross Section Objectives

I. 2001 Objectives
   - **a.** X-Section 1-riparian vegetation at least 18'; water width max 6'
   - **b.** X-Section 2-riparian vegetation from 17' to 25'; water width max 6'
   - **c.** X- Section 3-riparian vegetation from 25' to 39'; water width max 4'

II. 2008 Actual
   - **a.** X- Section 1-riparian vegetation is 32'; water width 5'
   - **b.** X- Section 2-riparian vegetation is 19'; water width 5'
   - **c.** X- Section 3-riparian vegetation is 22'; water width 6'

III. 2013 Objectives
   - **a.** X- Section 1-riparian vegetation 32'; water width max 5' (Sedges 5'+, Willow 12'+)
   - **b.** X- Section 2-riparian vegetation 40'; water width max 5'(Sedges 10'+,, Willow 12'+)
   - **c.** X- Section 3-riparian vegetation 34'; water width max 5'(Sedges 4'+ , Willows 10'+)

IV. 2021 Objectives
   - **a.** X- Section 1-riparian vegetation 32'; water width max 4' (Sedges 8'+, Willows 20'+)
   - **b.** X- Section 2-riparian vegetation 55'; (Including water) (Sedges 20'+, Willows 30'+)
   - **c.** X- Section 3-riparian vegetation 35'; water width max 4' (Sedges 5'+, Willow 20'+)

2009 Smithsfork Allotment
Settlement Agreement Management Strategy

3. Huff Creek Outside Exclosure

Greenline Objectives

A. Increase Sedge Component from 42% (1996) to 70% in 2001.
1996 - 2008 Greenline summary- Sedge-Juncus dominated was 56.56% in 1996 and 75.40% in 2008. 2008 upland community was 30.34% and mesic forbs/grasses were 26.97%.

New Objectives 2013 -Carex/Juncus = 70/15%, Upland =<5%, Mixed= 5%, Willow 5%

New Objectives 2021- Carex/Juncus = 80/10%, Upland =_T%, Mixed= T%, Willow 10%

B. 1996 Willow Community Objectives- Increase Willow composition from 0% of Greenline to 5% of Greenline by 2000. The alternative was to increase the belt transect count from 1 plant in 1996 to 25 plants in 2000. 2008 Greenline belt surveys showed 26 willow plants. Of these plants, 6 (23%) were seedlings, 11 (42%) were young, and 9 (35%) were mature.

New Objectives 2013- 20 Seedling, 20 Young, 20 Mature in belt transect.

New Objectives 2021- 20 Seedling, 20 Young, 60 Mature in belt transect.

Vegetation Cross Section Objectives

I. 2001 Objectives
   a. X-Section 1-riparian vegetation from 19 to 38.5’; water width max 6’.
   b. X-Section 2-riparian vegetation from 22’ to 28’; water width max 11’
   c. X- Section 3-riparian vegetation maintained at 15’; water width max 5’

II. 2008 Actual
   a. X- Section 1-riparian vegetation is 27’; water width 5’
   b. X- Section 2-riparian vegetation is 29’; water width 10’
   c. X- Section 3-riparian vegetation is 23.7’; water width 6’

III. 2013 Objectives
   a. X- Section 1-riparian vegetation 37’; water width max_4’ Sedges 12’+
   b. X- Section 2-riparian vegetation 40’; water width max 8’ Sedge 39’+
   c. X- Section 3-riparian vegetation 25’; water width max 5’

IV. 2021 Objectives
   a. X- Section 1-riparian vegetation 39’; water width max 4’ Sedges 15’+
   b. X- Section 2-riparian vegetation 47’ ; water width max 7’
   c. X- Section 3-riparian vegetation 26’; water width max 4’

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4. Upper Huff Creek

Greenline Objectives

A. Increase Sedge Component from 18% (1996) to 45% in 2001.
1996 - 2008 Greenline summary Sedge-Juncus Dominated was 35.21% in 1996 and 72.38% in 2008. 2008 upland community was 19.77% and mesic forbs/grasses were 5.52%.

New Objectives 2013 -Carex/Juncus = 70/15%, Upland = 5%, Mixed= 5%, Willow = 5%

New Objectives 2021- Carex/Juncus = 75/15%, Upland = T%, Mixed T%, Willows = 10%

B. 1996 Willow Community Objectives- Increase Willow composition from 0% of Greenline to 10% of Greenline by 2000. The alternative was to increase the belt transect count from 3 plant in 1996 to 50 plants in 2000. 2008 Greenline belt surveys showed 35 willow plants (8% of GL); 0 (0%) were seedlings, 16 (45.7%) were young, and 19 (54.3%) were mature.

New Objectives 2013- Belt – 60 willows (35 Mature, 12 young, 13 Seedling). Increase % Booth and Yellow, Increase structural Diversity

New Objectives 2021- 150 Willows in Belt, 80 Mature, 40 Young, 30 Seedlings, Increase species and structural Diversity

Vegetation Cross Section Objectives

I. 2001 Objectives
   - **a.** X-Section 1-riparian vegetation from 23 to 32.5'; cumulative water width max 8'.
   - **b.** X-Section 2-riparian vegetation from 14' to 25'; water width max 3'
   - **c.** X- Section 3-riparian vegetation from 2.5 to 7'; water width max 6'

II. 2008 Actual
   - **a.** X- Section 1-riparian vegetation is 31'; cumulative water width 6.5'
   - **b.** X- Section 2-riparian vegetation is 4'; mixed is 50' water width 3'
   - **c.** X- Section 3-riparian vegetation is 5'; water width 4'

III. 2013 Objectives
   - **a.** X- Section 1-riparian vegetation 33'; water width max 4'
   - **b.** X- Section 2-riparian vegetation 8'; water width max 3'
   - **c.** X- Section 3-riparian vegetation 7'; water width max 4'

IV. 2021 Objectives
   - **a.** X- Section 1-riparian vegetation 40'; water width max 3'
   - **b.** X- Section 2-riparian vegetation 12'; water width max 2.5'
   - **c.** X- Section 3-riparian vegetation 10'; water width max 5'

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5. Little Muddy (Out)

Greenline Objectives

A. Increase Sedge Component from 41% (1996) to 70% in 2001.
1996 - 2008 Greenline summary- Sedge community was 40.03% in 1996 and 53.51% in 2008. 2008 Upland was 42.70%; 2008 Mesic grass/forb - 3.78%.

New Objectives 2013 -Carex = 65%, Upland = 25% Mixed = 5%, Willow = 5%

New Objectives 2021- Carex= 75%, Upland = 10%, Mixed =5%, Willow = 10%

B. 1996 Willow Community Objectives- Increase willow composition from 0% of Greenline to 5% of Greenline by 2000. The alternative was to increase the belt transect count from 0 plants in 1996 to 25 plants in 2001. 2008 Greenline belt surveys showed 0 willow plants.

New Objectives 2013- 5% on Greenline (25 plants) in belt transect.

New Objectives 2021-10% on Greenline (50 plants) in belt transect.

Vegetation Cross Section Objectives

I. 2001 Objectives
   - **a.** X-Section 1-riparian vegetation from 0.5 to 9'; water width max 6'.
   - **b.** X-Section 2-riparian vegetation from 3' to 4'; water width max 4'
   - **c.** X- Section 3-riparian vegetation from 3 to 7.5'; water width max 6'

II. 2008 Actual
   - **a.** X- Section 1-riparian vegetation is 5'; water width 6'
   - **b.** X- Section 2-riparian vegetation is 3'; water width 3.4'
   - **c.** X- Section 3-riparian vegetation is 4'; water width 4'

III. 2013 Objectives
   - **a.** X- Section 1-riparian vegetation _10'; water width max_5'
   - **b.** X- Section 2-riparian vegetation _5'; water width max 3'
   - **c.** X- Section 3-riparian vegetation _5'; water width max3'

IV. 2021 Objectives
   - **a.** X- Section 1-riparian vegetation _10'; water width max 4'
   - **b.** X- Section 2-riparian vegetation _7'; water width max 2.5'
   - **c.** X- Section 3-riparian vegetation _8'; water width max 2.5'

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6. Upper Little Muddy

Greenline Objectives

A. Increase Sedge Component from 22% (1996) to 50% in 2001.
1996 - 2008 Greenline summary- Sedge/Juncus community was 33.70% in 1996 and 32.55% in 2008 - 2008 Upland was 66.51%; 2008 Mesic grass/forb – 0.94%.

New Objectives 2013 -Carex/Juncus = 45%, Upland =_45%, Mixed = T-5%, Willow = T-5%

New Objectives 2021- Carex/Juncus = 70%, Upland =20%, Mixed = 5%, Willow = 5%

B. 1996 Willow Community Objectives- Increase willow composition from 0% of Greenline to 5% of Greenline by 2000. The alternative was to increase the belt transect count from 0 plants in 1996 to 50 plants in 2000. 2008 Greenline belt surveys showed 0 willow plants.

New Objectives 2013- 25 individual plants in belt transect.

New Objectives 2021- 50 individual plants in belt transect.

Vegetation Cross Section Objectives

I. 2001 Objectives
   - **a.** X-Section 1-riparian vegetation from 1 to 9'; water width max 6'.
   - **b.** X-Section 2-riparian vegetation from 5.5' to 10'; water width max 4'
   - **c.** X- Section 3-riparian vegetation from 1' to 8'; water width max 5'

II. 2008 Actual
   - **a.** X- Section 1-riparian vegetation is 8'; water width 4'
   - **b.** X- Section 2-riparian vegetation is 8'; water width 4'
   - **c.** X- Section 3-riparian vegetation is 1'; water width 7'

III. 2013 Objectives
   - **a.** X- Section 1-riparian vegetation 11.5'; water width max 3'
   - **b.** X- Section 2-riparian vegetation 9'; water width max 4'
   - **c.** X- Section 3-riparian vegetation 3'; water width max 5'

IV. 2021 Objectives
   - **a.** X- Section 1-riparian vegetation 13'; water width max 2'
   - **b.** X- Section 2-riparian vegetation 11'; water width max 3'
   - **c.** X- Section 3-riparian vegetation 8'; water width max 3'

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7. Lower Stoner Creek

Greenline Objectives

A. Maintain Sedge Component at 80% in 2001.
1996 Sedge/Juncus Dominated- 86.04%; 89.96% in 2008.
2008 Upland was 8.11%; 2008; Mesic grass/forb – 1.93%.

New Objectives 2013- Carex/Juncus = 85/5%, Upland = T%, Mixed = 5%, Willow = 5%

New Objectives 2021- Carex/Juncus = 85/5%, Upland = T%, Mixed = T%, Willow = 10%

B. 1996 Willow Community Objectives- Increase willow composition from 0% of Greenline to 5% of Greenline by 2000. The alternative was to increase the belt transect count from 0 plants in 1996 to 25 plants in 2000. 2008 Greenline belt surveys showed 1 mature willow plant.

New Objectives 2013- 5% willows (25 plants) on Greenline in belt transect.

New Objectives 2021- 10% willows (50 plants) on Greenline in belt transect.

Vegetation Cross Section Objectives

I. 2001 Objectives
   - **a.** X-Section 1-riparian vegetation from 8 to10'; water width max 1'.
   - **b.** X-Section 2-riparian vegetation maintain at 19'; water width max 1'
   - **c.** X- Section 3-riparian vegetation from 8' to 13'; water width max 1'

II. 2008 Actual
   - **a.** X- Section 1-riparian vegetation is 9'; water width 1'
   - **b.** X- Section 2-riparian vegetation is 8'; water width 2'
   - **c.** X- Section 3-riparian vegetation is 10.8'; water width 1.7'

III. 2013 Objectives
   - **a.** X- Section 1-riparian vegetation 10'; water width max1'
   - **b.** X- Section 2-riparian vegetation 19'; water width max1'
   - **c.** X- Section 3-riparian vegetation 13'; water width max1'

IV. 2021 Objectives
   - **a.** X- Section 1-riparian vegetation 12'; water width max 1'
   - **b.** X- Section 2-riparian vegetation 22'; water width max 1'
   - **c.** X- Section 3-riparian vegetation 20'; water width max 1'

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8. North Corral Creek

Greenline Objectives

A. Increase Sedge Component from 75% (1996) to 85% in 2001.
1996 Sedge/Juncus Dominated- 75.07%; 21.32% in 2008. 2008 Upland was 47.73%, 2008 Mesic grass/forb – 31.25%.

New Objectives 2013 - Carex/Juncus = 50%, Upland =30%, Mixed = 15%, Willow = 5%

New Objectives 2021- Carex/Juncus = 75%, Upland = 10%, Mixed = 5%, Willow = 10%

B. 1996 Willow Community Objectives- Increase willow composition from 0% of Greenline to 5% of Greenline by 2000. The alternative was to increase the belt transect count from 0 plants in 1996 to 25 plants in 2001. 2008 Greenline belt surveys showed 0 willow plants.

New Objectives 2013- 5% willows (25 plants) in belt transect.

New Objectives 2021-10% willows (50 plants) in belt transect.

Vegetation Cross Section Objectives

I. 2001 Objectives
   - **a.** X-Section 1-riparian vegetation from 10 to 13'; water width max 1'.
   - **b.** X-Section 2-riparian vegetation from 2' to 5'; water width max 1'
   - **c.** X- Section 3-riparian vegetation from 2' to 5'; water width max 1'

II. 2008 Actual
   - **a.** X- Section 1-riparian vegetation is 4.7'; water width 0.6'
   - **b.** X- Section 2-riparian vegetation is 2.5'; water width 0.5
   - **c.** X- Section 3-riparian vegetation is 1.1'; water width 1.9'

III. 2013 Objectives
   - **a.** X- Section 1-riparian vegetation 11'; channel/water width max 0.5'
   - **b.** X- Section 2-riparian vegetation 3'; channel/water width max 0.5'
   - **c.** X- Section 3-riparian vegetation 5'; channel/water width max 0.5'

IV. 2021 Objectives
   - **a.** X- Section 1-riparian vegetation 18.5'; channel/water width max 0.5'
   - **b.** X- Section 2-riparian vegetation 3.5'; channel/water width max 0.5'
   - **c.** X- Section 3-riparian vegetation 2.5' ; channel/water width max 0.5'

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9. First Creek

Greenline Objectives

A. Increase Sedge Component from 22% (1996) to 60% in 2001.
1996 Sedge/Juncus Dominated- 11.10%; 33.91% in 2008. 2008 Upland was 41.30%; 2008 Mesic grass/forb – 24.78%.

New Objectives 2013 -Carex/Juncus = 55/5%, Upland = 20%, Mixed =15%, Willow = 5%

New Objectives 2021- Carex/Juncus = 65/5%, Upland =_10%, Mixed = 10%, Willow = 10%

B. 1996 Willow Community Objectives- Increase willow composition from 0% of Greenline to 5% of Greenline by 2000. The alternative was to increase the belt transect count from 0 plants in 1996 to 50 plants in 2000. 2008 Greenline belt surveys showed one mature willow plants.

New Objectives 2013 – 5% willows (25 plants) in belt transect.

New Objectives 2021 – 10% willows (50 plants) in belt transect.

Vegetation Cross Section Objectives

I. 2001 Objectives
   - **a.** X-Section 1-riparian vegetation from 1 to 7'; water width max 2'.
   - **b.** X-Section 2-riparian vegetation from 0' to 6'; water width max 3'
   - **c.** X- Section 3-riparian vegetation from 2.5' to 6'; water width max 2'

II. 2008 Actual
   - **a.** X- Section 1-riparian vegetation is 3.5'; water width 2.2'
   - **b.** X- Section 2-riparian vegetation is 4.7'; water width 1.6'
   - **c.** X- Section 3-riparian vegetation is 3'; water width 2.2'

III. 2013 Objectives
   - **a.** X- Section 1-riparian vegetation 4.5' ; water width max 1.5'
   - **b.** X- Section 2-riparian vegetation 6.5' ; water width max 1.5'
   - **c.** X- Section 3-riparian vegetation 5' ; water width max 1.5'

IV. 2021 Objectives
   - **a.** X- Section 1-riparian vegetation 5'; water width max 1'
   - **b.** X- Section 2-riparian vegetation 7'; water width max 1'
   - **c.** X- Section 3-riparian vegetation 10'; water width max 1'

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10. Mill Creek Federal

Greenline Objectives

A. Increase Sedge Component from 25% (1996) to 55% in 2001.
Grass/Forb – 29.02% in 2008.
1996 Sedge/Juncus-25.82%; 2008 Sedge/Juncus – 52.16. 2008 Upland was 18.82%.

New Objectives 2013 -Carex/Juncus = 65/T%, Upland = 15%, Mixed = 5%, Willow = 5%

New Objectives 2021- Carex/Juncus = 75/T%, Upland = 5%, Mixed = 10% Willows = 10%

B. 1996 Willow Community Objectives was to increase willow composition from 0% to 5% of Greenline by 2000. The alternative was to increase the belt transect count from 0 plants in 1996 to 40 plants in 2000. 2008 Greenline belt surveys showed six willow plants (one seedling, one young and three mature).

New Objectives 2013- 5% willows (25 plants) in belt transect.

New Actual2021- 10% willows (50 plants) in belt transect.

Vegetation Cross Section Objectives

I. 2001 Objectives
   - **a.** X-Section 1-riparian vegetation from 14 to 34'; water width max 6'.
   - **b.** X-Section 2-riparian vegetation from 7.5' to 32'; water width max 5'
   - **c.** X- Section 3-riparian vegetation from 12' to 38'; water width max 4'

II. 2008 Actual
   - **a.** X- Section 1-riparian vegetation is 9.2'; water width 2.3'
   - **b.** X- Section 2-riparian vegetation is 20.2'; water width 3.2'
   - **c.** X- Section 3-riparian vegetation is 6.4'; water width 3'

III. 2013 Objectives
   - **a.** X- Section 1-riparian vegetation 15'; water width max 2'
   - **b.** X- Section 2-riparian vegetation 25'; water width max 3'
   - **c.** X- Section 3-riparian vegetation 15'; water width max 2'

IV. 2021 Objectives
   - **a.** X- Section 1-riparian vegetation 22'; water width max 1.5'
   - **b.** X- Section 2-riparian vegetation 33'; water width max 2'
   - **c.** X- Section 3-riparian vegetation 28'; water width max 1.5'

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11. Mill Creek State

Greenline Objectives

A. Increase Sedge Component from 17% (1996) to 55% in 2001.
1996 – Carex/Juncus; 28.33%, (17/11) and 31.68% (27/4) in 2008. 2008 Upland was 51.98% and 16.34% mesic grass/forb.

New Objectives 2013 -Carex/Juncus = 45/5%, Upland = 35%, Mixed = 10%, Willows = 5%

New Objectives 2021- Carex/Juncus = 50/5%, Upland = 25%, Mixed = 5%, Willows = 15%

B. 1996 Willow Community Objectives- Increase willow composition from 0% of Greenline to 10% of Greenline by 2000. The alternative was to increase the belt transect count from 16 plants in 1996 to 50 plants in 2000. 2008 Greenline surveys showed 0% willows. However, 46 willow plants (seven seedling, 26 young and 13 mature) were present in the belt transects.

New Objectives 2013 - 5% of Greenline, 70 Plants in belt transect - Mixed age and species*

New Objectives 2021- 15% of Greenline, 140 Plants in belt transect - Mixed age and species *

Vegetation Cross Section Objectives

I. 2001 Objectives
   - **a.** X-Section 1-riparian vegetation from 9 to 18'; water width max 5'.
   - **b.** X-Section 2-riparian vegetation from 22' to 30'; water width max 5'
   - **c.** X- Section 3-riparian vegetation from 11' to 37'; water width max 5'

II. 2008 Actual
   - **a.** X- Section 1-riparian vegetation is 17.3'; cumulative water width 8.3'
   - **b.** X- Section 2-riparian vegetation is 19.2'; water width 7'
   - **c.** X- Section 3-riparian vegetation is 29.6'; water width 7'

III. 2013 Objectives
   - **a.** X- Section 1-riparian vegetation _20'; water width max5'
   - **b.** X- Section 2-riparian vegetation _25'; water width max 5'
   - **c.** X- Section 3-riparian vegetation _35'; water width max 5'

IV. 2021 Objectives
   - **a.** X- Section 1-riparian vegetation 30'; water width max 3.5'
   - **b.** X- Section 2-riparian vegetation 35'; water width max 3.5'
   - **c.** X- Section 3-riparian vegetation 45'; water width max 3.5'

*This greenline had a major portion of its channel move as a result of the 2011 spring runoff. As a result, it is very possible that these objectives will be unmet due to circumstances beyond the permittee's' control.

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12. Muddy Creek

Greenline Objectives

A. Increase Sedge Component from 10% (1996) to 40% in 2001.
1996 – Carex/Juncus; 27.08% (10/17) and 17.58% (15/3) in 2008. 2008 Upland was 44.53% and 17.58% mesic grass/forb

New Objectives 2013 -Carex/Juncus = 40/5%, Upland = 25%, Mixed = 20%, Willow = 10%

New Objectives 2021- Carex/Juncus = 60/5%, Upland = 10%, Mixed = 5%, Willows = 20%

B. 1996 Willow Community Objectives- Increase willow composition from 0% of Greenline to 5% of Greenline by 2000. The alternative was to increase the belt transect count from three plants in 1996 to 25 plants in 2000. 2008 Greenline belt surveys showed 18 willow plants (0 seedlings, 17 young and 1 mature).

New Objectives 2013- 10% of Greenline, 50 Plants in belt transect - Mixed age and species

New Objectives 2021- 20% of Greenline, 100 Plants in belt transect - Mixed age and species

Vegetation Cross Section Objectives

I. 2001 Objectives
   - **a.** X-Section 1-riparian vegetation from 6’ to 11’; water width max 7’.
   - **b.** X-Section 2-riparian vegetation from 2’ to 11’; water width max 6’
   - **c.** X- Section 3-riparian vegetation from 5’ to 10’; water width max 7’

II. 2008 Actual
   - **a.** X- Section 1-riparian vegetation is 8.9’; water width 8.5’
   - **b.** X- Section 2-riparian vegetation is 18.3’; water width 4.9’
   - **c.** X- Section 3-riparian vegetation is 8.5’; water width 10’

III. 2013 Objectives
   - **a.** X- Section 1-riparian vegetation 10’; water width max 7’
   - **b.** X- Section 2-riparian vegetation 20’; water width max 5’
   - **c.** X- Section 3-riparian vegetation _10’; water width max 7’

IV. 2021 Objectives
   - **a.** X- Section 1-riparian vegetation 12’; water width max 6’
   - **b.** X- Section 2-riparian vegetation 21’; water width max 4’
   - **c.** X- Section 3-riparian vegetation 13’; water width max 5.5’

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13. Lower Raymond Canyon

Greenline Objectives

A. Increase Sedge Component from 0% (1996) to 20% in 2001.
1996 - 2008 Greenline summary- combined Wetland Early and Late (communities dominated by sedges) was 6.75% in 1996 and 18.52% in 2008. This would seem to indicate that the sedge component likely experienced a corresponding increasing condition.

New Objectives 2013 - Combined WE &WL = 30+%,

New Objectives 2021- Combined WE &WL = 50+%

B. 1996 Willow Community Objectives- Increase willow composition from 7% of Greenline to 20% of Greenline by 2000. The alternative was to increase the belt transect count from 64 plants in 1996 to 180 plants in 2000. 2008 Greenline belt surveys noted that there were too many willow plants to make an accurate count, or even an estimate. 2009 end-of-season monitoring observations indicated that the benches above the incised creek were 'coated with willows' from one canyon wall to the other.

New Objectives 2013- Willow and other shrub species diversity increases.

New Objectives 2021- Willow and other shrub species diversity increases.

Vegetation Cross Section Objectives

I. 2001 Objectives
a. X-Section 1-riparian vegetation from 0' to 9'; water width max 4'.
b. X-Section 2-riparian vegetation from 2' to 35'; water width max 8'
c. X- Section 3-riparian vegetation from 0' to 2'; water width max 7'

II. 2008 Actual
a. X- Section 1-riparian vegetation is 5.5'; water width 5'
b. X- Section 2-riparian vegetation is 21'; water width 8.6'
c. X- Section 3-riparian vegetation is 9.2'; water width 7.8'

III. 2013 Objectives
a. X- Section 1-riparian vegetation 7'; water width max 4'
b. X- Section 2-riparian vegetation 23'; water width max 7'
c. X- Section 3-riparian vegetation 12'; water width max 6'

IV. 2021 Objectives
a. X- Section 1-riparian vegetation 9'; water width max 4'
b. X- Section 2-riparian vegetation 25'; water width max 5.5'
c. X- Section 3-riparian vegetation 14'; water width max 5'

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14. South Fork Raymond Canyon

Greenline Objectives

A. Increase Sedge Component from 2% (1996) to 30% in 2001.
1996 - 2008 Greenline summary- combined Wetland Early and Late (communities dominated by sedges) was 1.22% in 1996 and 33.78% in 2008. This would seem to indicate that the sedge component likely experienced a corresponding increasing condition.

New Objectives 2013 - Combined WE &WL = 50+%,

New Objectives 2021- Combined WE &WL = 70+%

B. 1996 Willow Community Objectives- Increase willow composition from 0% of Greenline to 5% of Greenline by 2000. The alternative was to increase the belt transect count from 0 plants in 1996 to 50 plants in 2000. 2008 Greenline belt surveys showed noted that there were 35 willow plants (0 seedlings, 25 young and 10 mature

New Objectives 2013- 70 willow plants in belt transect, approximately 30% in seedling category.

New Objectives 2021- 150 willow plants in belt transect, approximately 40% in seedling category.

Vegetation Cross Section Objectives

I. 2001 Objectives
- **a.** X-Section 1-riparian vegetation from 0’ to 8’; water width max 5’.
- **b.** X-Section 2-riparian vegetation from 0’ to 6.5’; water width max 11’
- **c.** X-Section 3-riparian vegetation from 4’ to 13’; water width max 6’

II. 2008 Actual
- **a.** X- Section 1-riparian vegetation is 3.4’; water width 4’
- **b.** X- Section 2-riparian vegetation is 9.9’; water width 5.9’
- **c.** X- Section 3-riparian vegetation is 8.8’; water width 7.0’

III. 2013 Objectives
- **a.** X- Section 1-riparian vegetation 7’; water width max 4’
- **b.** X- Section 2-riparian vegetation 12’; water width max 5’
- **c.** X- Section 3-riparian vegetation 12’; water width max 6’

IV. 2021 Objectives
- **a.** X- Section 1-riparian vegetation 8’; water width max 3.5’
- **b.** X- Section 2-riparian vegetation 16’; water width max 4’
- **c.** X- Section 3-riparian vegetation 16’; water width max 5’

15. Coal Creek (Inside Exclosure)

Greenline Measurements

A. 1996 – 2008 Greenline summary - combined Wetland Early and Late (communities dominated by sedges) was 78.97% in 1996, 81.98% in 2001 and 82.70% in 2008.

B. 1996 - 2008 Willow summary – two young, nine mature and five decadent willows were observed in 1996; three young willows were observed in 2001, though none were in the belt transect. In 2008, no willows were recorded.

Vegetation Cross Section Objectives

I. 1996 Observations

- **a.** X-Section 1-riparian vegetation was 13'; water width max 5'.
- **b.** X-Section 2-riparian vegetation was 15'; water width max 5'
- **c.** X-Section 3-riparian vegetation was 27'; water width max 5'

II. 2001Observations

- **a.** X- Section 1-riparian vegetation was 13'; water width 5'
- **b.** X- Section 2-riparian vegetation was 16'; water width 6'
- **c.** X- Section 3-riparian vegetation was 21'; water width 4'

V. 2008 Observations

- **a.** X- Section 1-riparian vegetation 11'; water width max 5'
- **b.** X- Section 2-riparian vegetation 28'; water width max 5'
- **c.** X- Section 3-riparian vegetation 22'; water width max 3'

16. Lower Little Muddy Creek (Inside Exclosure)

Greenline Measurements

A. 1996 – 2008 Greenline summary - combined Wetland Early and Late (communities dominated by sedges) was 76.19% in 1996, 88.81% in 2001 and 88.11% in 2008.

B. 1996 - 2008 Willow summary – One young, 0 mature and 0 decadent willows were observed in 1996; one young willow was observed in 2001. In 2008, three young willows and one sprout were recorded.

Vegetation Cross Section Objectives

I. 1996 Observations

- **a.** X-Section 1-riparian vegetation was 2'; water width 6'.
- **b.** X-Section 2-riparian vegetation was 3'; water width 5'
- **c.** X-Section 3-riparian vegetation was 11.5'; water width 4.5'

II. 2001Observations

- **a.** X- Section 1-riparian vegetation was 6'; water width 3'
- **b.** X- Section 2-riparian vegetation was 7'; water width 4'
- **c.** X- Section 3-riparian vegetation was 15'; water width 3'

III. 2008 Observations

- **a.** X- Section 1-riparian vegetation 7.3'; water width max 5'
- **b.** X- Section 2-riparian vegetation 12'; water width max 4'
- **c.** X- Section 3-riparian vegetation 6'; water width max 3.5'

17. Huff Creek (Inside Exclosure)

Greenline Measurements

A. 1996 – 2008 Greenline summary - combined Wetland Early and Late (communities dominated by sedges) was 85.52% in 1996; 84.13% in 2001 and 90.78% in 2008.

B. 1996 - 2008 Willow summary – No willows were observed in 1996; One young willow was observed in 2001. In 2008, no willow observations were recorded

Vegetation Cross Section Objectives

I. 1996 Observations

- **a.** X-Section 1-riparian vegetation was 4'; water width 4.5'.
- **b.** X-Section 2-riparian vegetation was 17'; water width 5'
- **c.** X-Section 3-riparian vegetation was 12'; water width 3.5'

II. 2001Observations

- **a.** X- Section 1-riparian vegetation was 7'; water width 3'
- **b.** X- Section 2-riparian vegetation was 11'; water width 4'
- **c.** X- Section 3-riparian vegetation was 14'; water width 4'

III. 2008 Observations

- **a.** X- Section 1-riparian vegetation 10.5; water width max 5'
- **b.** X- Section 2-riparian vegetation 16.5'; water width max 4'
- **c.** X- Section 3-riparian vegetation 11.4'; water width max 4'