Sauer Wetland Mitigation Plan

"Compensatory Mitigation for Losses of Aquatic Resources"

May 2013

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1. Baseline Information -

a. Landowner -

Ray Sauer Farms Inc., Ray Sauer
945 E 2100 N
Terreton, ID 83450

Additional participant -

Hank Carpenter
1839 E. Young Lane
Grace, ID 83241

b. Location –

1. Coordinates, Public Land Survey System, Hydrologic Unit Code -

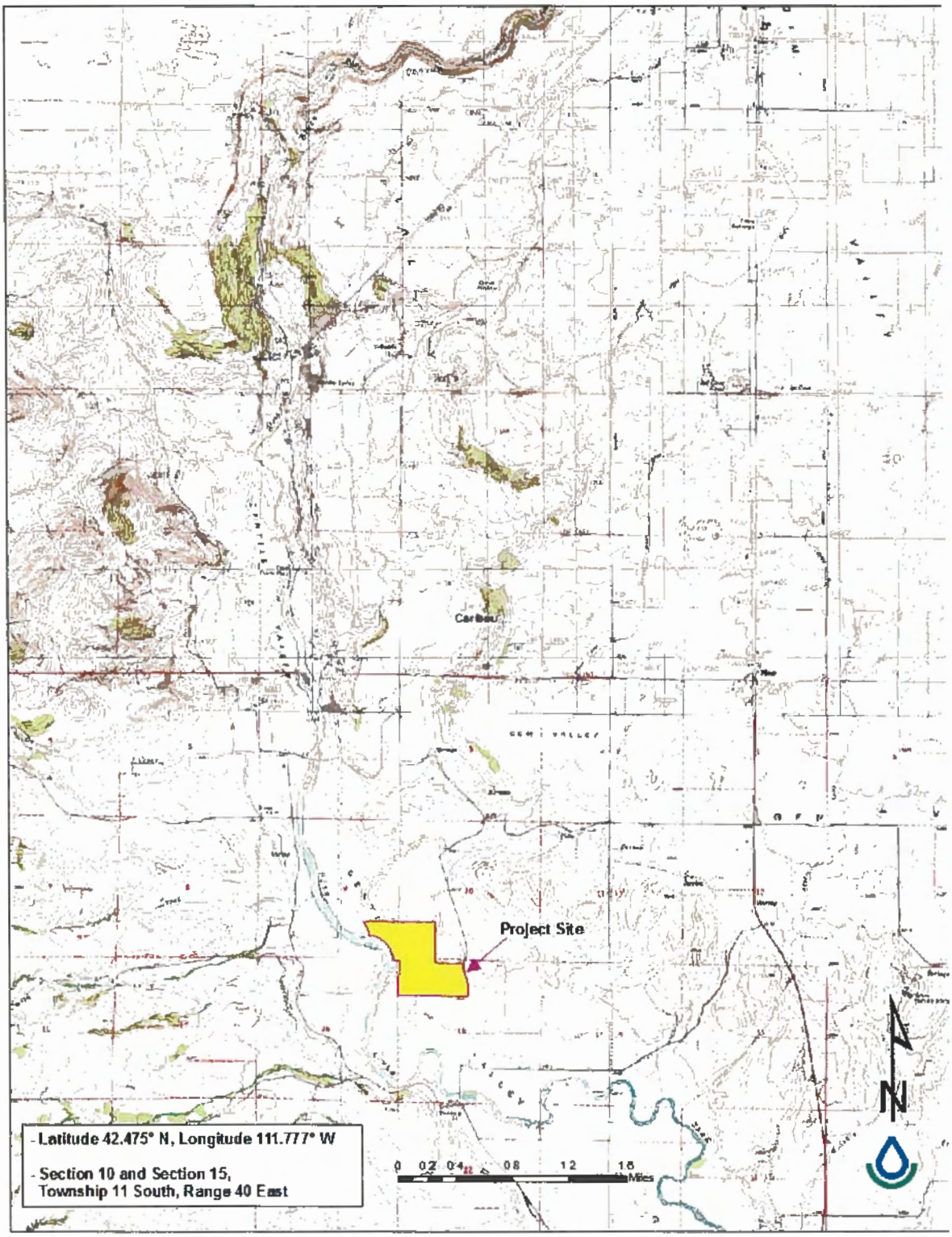
Impact Site-
- 2.8 acres wetlands along Falls Creek channel
- latitude 42.475° N, longitude 111.777° W to lat. 42.473° N, long. 111.7769° W
- SW ¼, SW ¼ Section 10 and NW ¼, NW ¼ Section 15, Township 11 South, Range 40 East
- HUC10-1601020212

Reference Site-
- Wetlands along Falls Creek channel below Impact Site to Bear River
- latitude 42.472° N, longitude 111.780° W to lat. 42.472° N, long. 111.777° W
- NW ¼, NW ¼ Section 15, Township 11 South, Range 40 East
- HUC10-1601020212

Mitigation Site-
- Adjacent and south of Reference Site
- latitude 42.472° N, longitude 111.780° W to lat. 42.473° N, long. 111.777° W
- NW ¼, NW ¼ Section 15, Township 11 South, Range 40 East
- HUC10-1601020212

2. Maps

Vicinity Map



Aerial Orthophotography 2011

c. Watershed

1. Impairment-

Falls Creek is not identified as a named creek in Idaho Department of Environmental Quality Final 305(b) Integrated Report, although it is identified as not supporting state water quality standards for Categories 4a, 4b, 4c, and 5 (IDEQ 2010). Falls Creek is within the Deep Creek (HUC 16010202) portion of the Bear River Subbasin. TMDLs were developed for Depp Creek for total phosphorus and total suspended solids. The Bear River is a 2010 303(d) Listed Stream whose beneficial uses includes cold water aquatic life, salmonid spawning, and contact recreation. Potential sources of pollutants in the Bear River Basin include agriculture, livestock grazing, changes in the natural hydrograph (e.g., water diversion), degraded stream channels and banks, roads, mining, recreation, mass wasting (e.g., landslides), and wastewater treatment plants (IDEQ 2006).

2. Land uses-

The Falls Creek watershed drainage is 22.2 square miles with 13% of the watershed identified as forested, 4.3% as urban, and 0.2% as impervious (USGS 2013). Aerial photo interpretation estimates rangeland at 25% of the watershed, with the remaining majority of the land in agricultural production as cropland, hayland, or pastureland.

Topographic maps show the upper reaches of the watershed are intersected by several old large irrigation waterways including East branch Canal, Bench Canal, Niter Canal, Brown Ditch, and Hubbard Ditch. These waterways likely have a significant impact on the actual surface water drainage patterns by diverting intersected flows to agricultural fields outside of the watershed.

3. Landscape connectivity-

Surface water connectivity exists in the lower perhaps sixteenth of the watershed between the Falls Creek springs which comprise the majority of the Falls Creek flows and the Bear River. However, flows from Falls Creek springs are significantly impacted by agricultural use with flows diverted for hay, pasture, and livestock. Some areas have been impounded and many stretches straightened, realigned, or deepened to improve water movement and use efficiencies. Land and water management varies in the area, but buffers are not extensive in width or prevalence; livestock often have direct access to the creek and land is often farmed to the edge. Herbicide and nutrient use on adjacent lands would be expected.

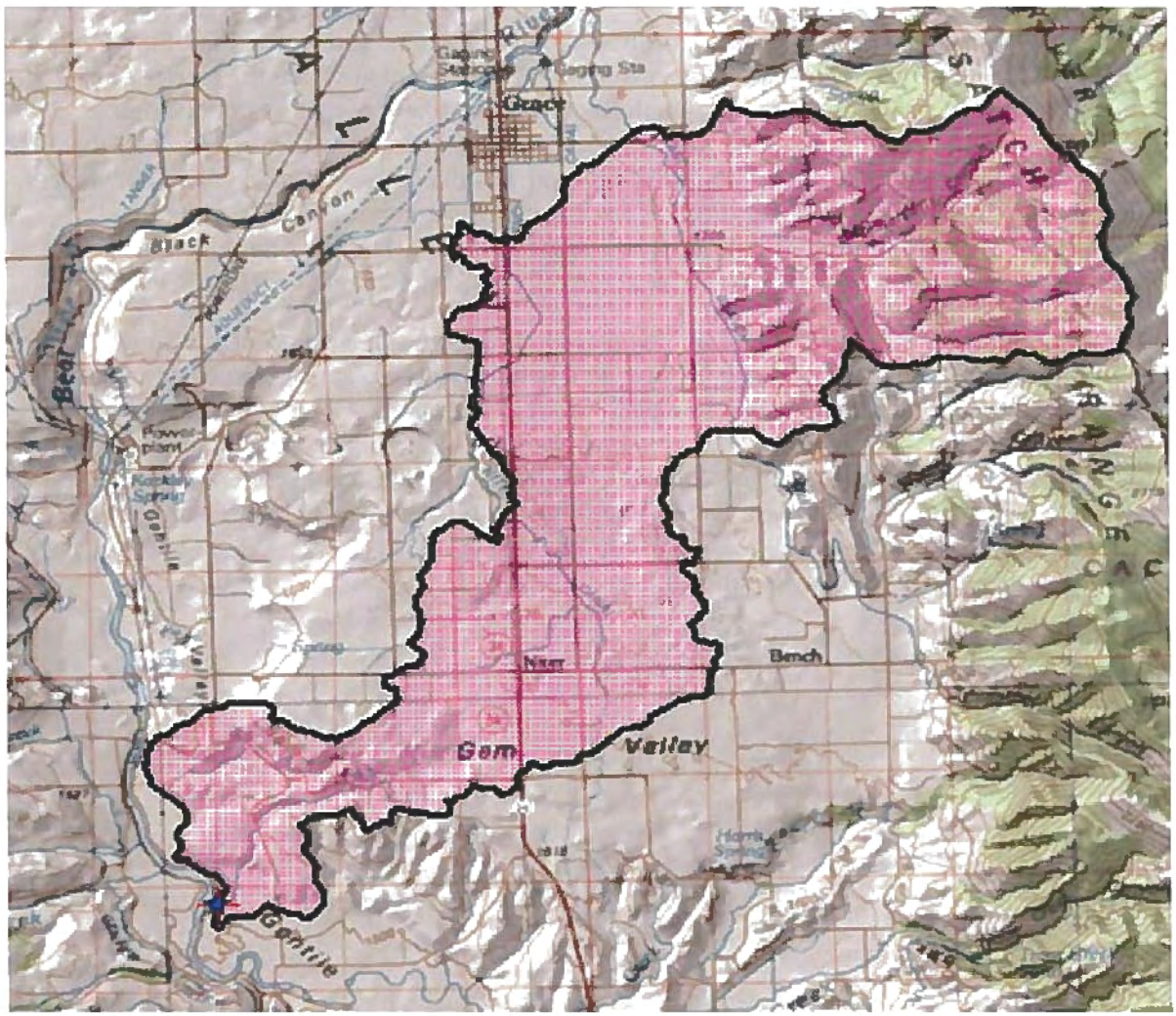
The creek retains some amount of connectivity with the Bear River. Since the site is on a terrace of the Bear River, it would be expected to involve hyporheic flow recharge. However, the state of the Bear River banks have created at least a partial disconnect from the floodplain.

4. Relation to Impact Site-

The land uses near, water management of, and impacts on Falls Creek are similar to other small creeks feeding into the Bear River.

The Impact Site includes approximately a sixth of the small creek resource in the lower portion of the watershed. However, the site lies between the upper reaches and the confluence with the Bear River. As such, flows through the area are heavily dependent upon upstream water use. In water short years, when irrigation water demand is the greatest, it is likely much of the Impact Area is dry, as evidenced in some historic aerial photos.

5. Watershed map-



Watershed map derived through http://streamstats.usgs.gov/idaho.html.

d. Historic and current land use-

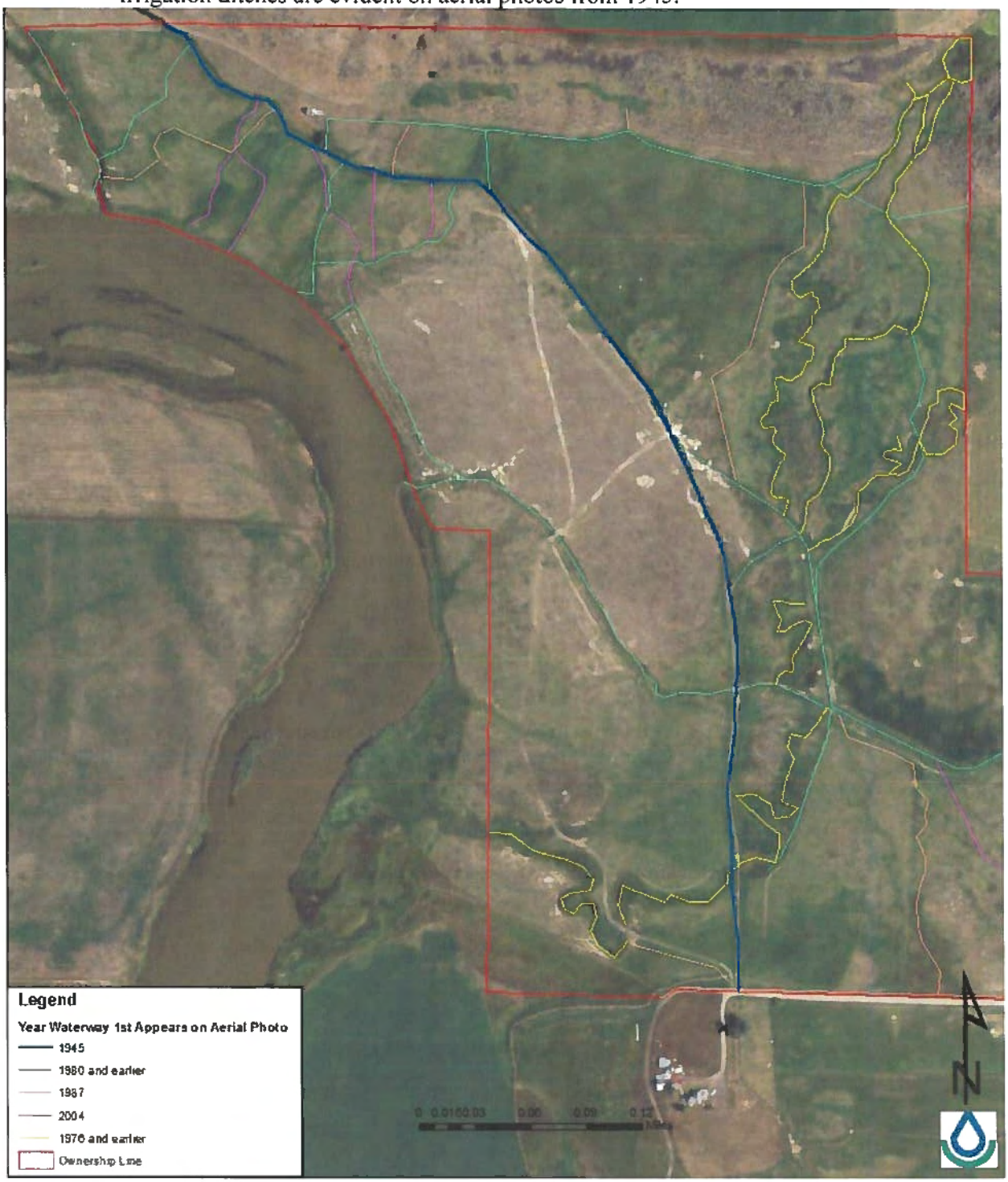
Impact Site- Land is currently and was historically used as agricultural field for grass hay and pasture. Manipulation of water on the land is apparent in aerial photos from 1945 through to the present day. Manipulations include creating ditches along the base of the hill slope, creating a small impoundment on Falls Creek, creating and removing feeder ditches within the fields, straightening and realigned portions of the creek, and deepening the creek and ditch channels to improve water flows. No aerial photos showed evidence of any annually tilled crop, although some areas were likely planted to improve pasture forage and yields. Based on the Reference Site, aerial photos, and the resources, it would be expected that the impact site would have previously been considered a Farmed Wetland Pasture enhanced with irrigation flows.

Reference Site- This portion of the Fall Creek channel is downstream of the Impact Site. Given the location, the area remained the point at which the creek and irrigation ditches flowed together. As such, it likely remains saturated and inundated for longer periods of time. Aerial photos show the area is wider than the parts within the Impact Site. Vegetation was likely less effected given the wetness. The area was and is utilized as livestock pasture and is considered a Farmed Wetland Pasture enhanced with irrigation flows. From the Reference Site, Falls Creek flowed and spread over about a five acre area along the Bear River.

Mitigation Site- Proposed approximately three acre site is adjacent and south of the Reference Site. In some historic aerial photos, the site appears greener; apparently wetter with more vegetation that it currently supports. Given the irrigation manipulations on the adjacent lands, the area has likely also been manipulated over the decades. The site could better enhance the Falls Creek Reference Site as well as the site along the Bear River. The site was and continues to be used as pasture.

See Appendix 1 for site photos.

Ditch History- The site has been altered to facilitate irrigation for many decades. Irrigation ditches are evident on aerial photos from 1945.



e. Wetland and stream resources-

Impact Site- Site is on silty alluvium of a Bear River terrace. 2.8 acres along 8,000 linear feet of Fall Creek channel, within an agricultural field utilized for grass hay and pasture. Given the onsite Reference Site and upstream use of Fall Creek, the channel had very likely been manipulated prior to 1985 and over the decades to deliver irrigation water.

Reference Site- Site is on silty alluvium of a Bear River terrace. The downstream portion of the Fall Creek channel, within an agricultural field utilized for pasture.

Mitigation Site- Site is on silty alluvium of a Bear River terrace. Site includes approximately 3 acres adjacent to Reference site and additional palustrine emergent shallow water area and 500 feet from the Bear River. Currently, no wetland or stream resources present.

f. Wetland and stream classification-

1. Sites-

Impact Site-
- Cowardin/Rosgen- Not applicable, area currently leveled.
- NRCS Wetland Label- Converted Wetland

Reference Site-
- Cowardin- Palustrine Emergent 1 to 2df
- Rosgen- C6
- Schumm, Harvey, & Watson- Class I
- NRCS Wetland Label- Farmed Wetland Pasture

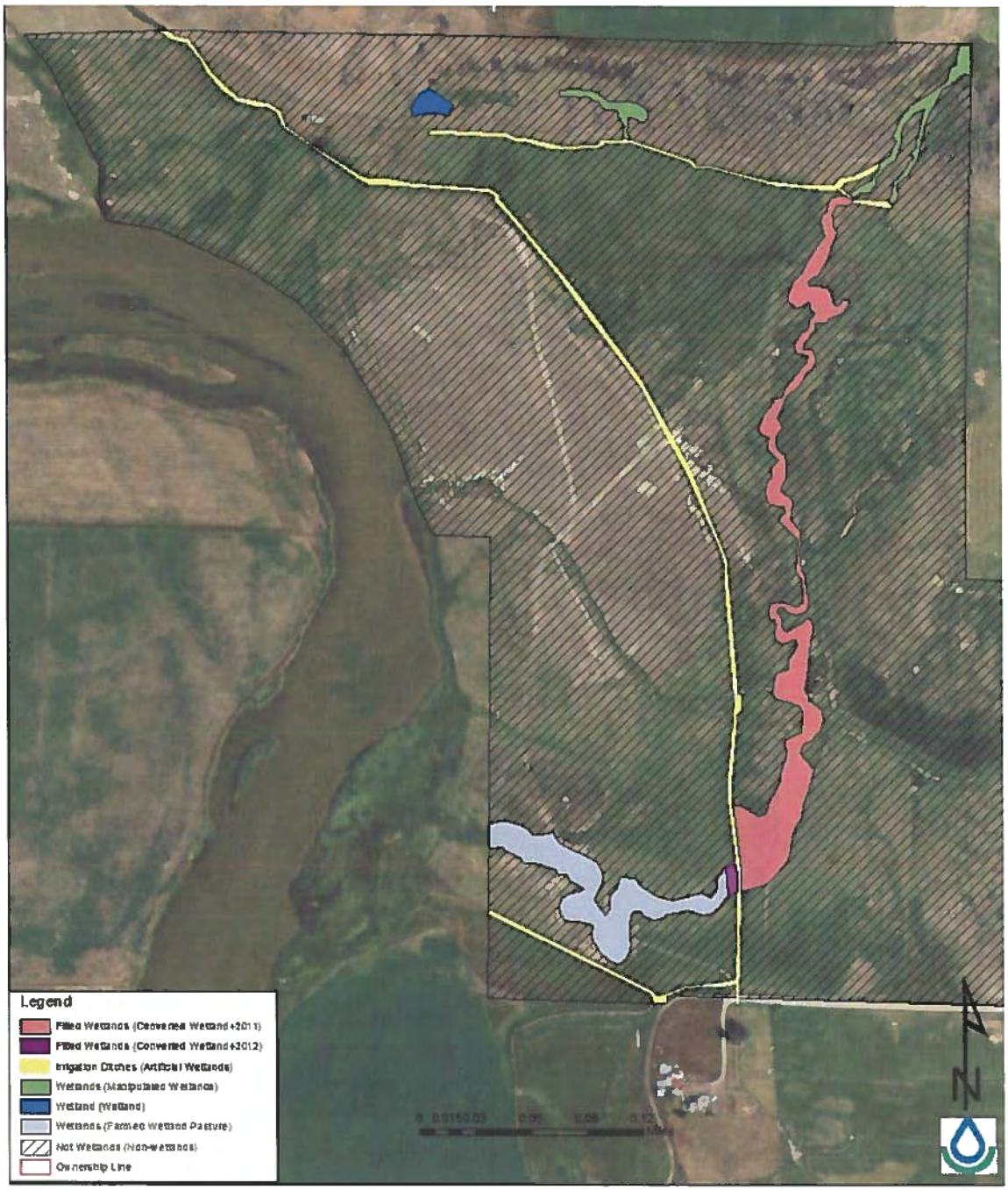
Mitigation Site-
Existing- Not applicable, adjacent non-wetland site.
As proposed-
- Cowardin- Palustrine Emergent 1
- NRCS Wetland Label- Mitigated Wetland

2. Maps

National Wetlands Inventory

Data from USFWS National Wetlands Inventory.

Wetland Delineation



Wetland delineation completed by NRCS June 2012. See Appendix 2 for Wetland Delineation Data Sheets. Method following ACOE Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region. Wetland labels following USDA National Food Security Act Manual Fifth Edition, Part 514- Wetland Determination and Labels and NRCS Circular No. 6, Part 527, Appendix- CPA-Food Security Act Wetland Identification Procedures.

g. Soils

1. Offsite data-
   Impact, Reference, and Mitigation Sites all within soil map unit Thatcherflats Silt Loam- 835A. The soil series consists of very deep, moderately well drained soils formed in silty alluvium on stream terraces. Thatcherflats soils are used for non-irrigated and irrigated pasture. This soils map unit is hydrologic group D, but not considered hydric, although it may contain hydric inclusions. See Appendix 4 for USDA NRCS Soils Series Description and Appendix 5 for USDA NRCS Soils Map Unit Description.

2. Onsite data-

   See Appendix 2 for Wetland Delineation data sheets with sampling point soils descriptions. Given the amount of soil moved in the filling and land leveling activities within the Impact Site, the soils are considered significantly disturbed.

3. Map

   Soils Map- USDA-NRCS Caribou County, Idaho Draft Soils Survey

b. Hydrology

1. Drainage area-

Impact Site- Effective area, approximately 1,200 acres

Reference Site- Site is downstream of Impact Site. Additional waterways, originating from springs, flow together and through this area. Estimated drainage is 2,800 acres.

Mitigation Site- Site is downstream of Impact Site. Additional waterways, originating from springs, flow together and some would be directed through the area. Estimated drainage is 2,800 acres.

2. Streamflow-

Given the effects of the upper watershed as discussed under "Watershed- Land use" and the estimated error of 50 to 92%, USGS monthly and annual streamflow statistics provides no reliable or usable data on stream flows to the Impact, Reference, or Mitigation Sites. (See Appendix 6.)

Data for the spring(s) providing the flows to the Impact Site is not available. In addition, flows are diverted for upstream agricultural uses of livestock and irrigation. Additional upstream irrigation projects intended to improve water delivery efficiencies are currently underway. One project will convert some of the flows which had previously flowed to above the Impact Site to a pipe system. If the impacts had not occurred, the Falls Creek flows and hydrology to the sites would still have been decreased to some degree.

3. Precipitation-

Average annual precipitation for the area is 15.98 inches, with May averaging a peak of 2.21 inches in the month. (See Appendix 7.) .

4. Manipulations

a. Historic-

Historic hydrological alterations have occurred on Falls Creek which affect the hydrology of the Impact, Reference, and Mitigation Sites. Appendix 7 includes historic aerial photos of the site from 1945 to 2009. Although waterway manipulations had occurred over the years, the presumed Falls Creek channel was still visible through to 2011 imagery. Historic aerial photos from 1968 show the area immediately west of the Impact Site, at the bottom of the hill slope was irrigated, although it was not in the 1953 photos. It is not clear if the irrigation on the site was completed using the ditch which still remains along that base of the hill slope. That irrigation ditch historically diverted some flows from Falls Creek.

b. Recent-

The irrigation ditch along the base of the hill slope was reworked in 2012 to intercept all of the Falls Creek flows which had previously flowed through the Impact Site. The flows now are contained in the open ditch irrigation system. The irrigation system was upgrade in 2012 from wild flood to gated pipe. The land leveling which occurred in the impact site is to facilitate the operation and effectiveness of a gated pipe irrigation delivery system.

The reworking of the irrigation ditches will also affect the Reference Site since flows to the site are no diverted into irrigation ditch directly upstream. That ditch bypasses the area and flows into another ditch to the south. Even if some subsurface hydrology is maintained, it is unlikely the area will become annual inundated. If no subsurface hydrology is present, the site may not become annually saturated and would likely become permanently dry.

5. Hydroperiod

Although a spring-fed system is often more consistent in terms of a hydroperiod, the effects of upstream agriculture would mean a greater impact during annual periods of increased irrigation demand. The expectation would be a decrease in inundation and saturation during the late summer, when irrigation demand peaks.

Based on site characteristics and historic aerial photos, open water did not dominate the Impact or Reference Sites prior to the hydrological manipulations. Inundation was likely limited to only the deepest portion of the waterways and heavily influence by the on-site means of irrigating the area. The 2012 manipulation of water to the irrigation system likely increased the amount of open water by concentrating all flows into a single narrow waterway flowing through the property.

Between the lack of data and offsite agricultural water demands and the continued alterations to flows upstream, the development of a water budget on the Impact or Reference Site would be highly flawed.

i. Vegetation

Impact Site-

- Disturbance- Currently, high due to filling, land leveling, tilling, and planting non-native species. Historically, moderate due to grazing and farming practices.
- Species- Planted in 2012 to a non-native "forage pasture mix".
- Cover- At the time of the wetland delineation, area had not yet been planted and was predominantly bare ground. Currently, cover varies from 2 to 30%. However, expect at least 70% average cover by end of 2013 growing season. As a recently planted and managed pasture, no canopy stratification is present or

expected in the future. No woody vegetation was ever visible on historic aerial photos.
- Invasive Species- None surveyed on site.

Reference Site-
- Disturbance- Historically, moderate due to grazing and farming practices. In the future, high due to the long-term effects of the manipulation of the site's hydrology.
- Species- *Carex nebrascensis,* a wetland obligate, dominates (80%) the bottom, wetter area of the old Falls Creek channel. *Juncus balticus* and *Poa pratensis* dominate the banks/slopes, with *J. balticus* more prevalent lower.
- Cover- Sedge is 100% cover and 80% cover on banks. No woody vegetation was ever visible on historic aerial photos.
- Invasive Species- Scattered *Cirsium spp.* reported on delineation.

Mitigation Site-
- Disturbance- Moderate due to grazing and effects of agricultural management.
- Species- Dominated by upland grasses including *Poa pratensis* and *Bromus inermis* with patches of *J. balticus*. Forbs scattered but primarily *Taraxacum officinale* in spring. *Sarcobatus vermiculatus* is the dominant shrub.
- Cover- Average 60%. No apparent additional woody vegetation visible in historic aerial photos.
- Invasive Species- Scattered *Carduus nutans* in disturbed areas.

j. Wildlife

- Federally listed threatened, endangered, and proposed species- Neither the Impact, Reference, nor Mitigation Site contains or effects suitable habitat for any federally listed plant or animal species (USFWS 2013, IDFG 2013).

- Idaho Species of Greatest Conservation Need- Non-cropped areas along the Bear River provide important resting, nesting, and forage habitat for many migratory bird species, including several Idaho Species of Greatest Conservation Need. Sandhill cranes have been observed onsite. Trumpeter swans and bald eagles have been reported next to the site on the Bear River. Although Falls Creek flows drain into Bear River, the bank is physical disconnect/barrier and flows are not sufficient to provide access or habitat for Bonneville cutthroat trout.

- Other species- Relatively undeveloped land along permanent water provides habitat for many wildlife species. However, native vegetation provides considerably more habitat than a planted pasture. Deer and small mammals would be expected to utilize the site.

2. Mitigation

a. Proposal

Proposed mitigation is permittee-responsible compensatory mitigation through the establishment of wetlands at 1:1 compensation. The proposed 2.8 acre area is adjacent and contiguous with the Reference Site. In addition to the wetland establishment, the mitigation proposal would enhance the existing adjacent wetlands. Also, both the established and the enhanced areas would be preserved under a conservation easement which would not allow development or agricultural production to occur on the land.

b. Site

The Mitigation Site is currently considered non-wetlands, meeting none of the wetland criteria. Although mapped as the same soils map unit as the Impact and Reference Sites, the soils in the Mitigation Site do not exhibit the redox dark surface or oxidized rhizospheres found in the Reference Site soils samples.

Since the position of the proposed site is adjacent to an existing wetland area under the same land ownership, both areas could be managed to further reduce impacts from livestock grazing by being fenced. Also, the areas are upstream, adjacent, and contiguous with an additional 5 acres of wetlands under different ownership. While that area could not be permanently preserved, the location and state is not conducive to grazing, farming, or development. Those acres are located along approximately 1,600 linear feet of the Bear River. The site would improve habitat connectivity.

The proposed Mitigation Site is located in an area where water is in relatively good supply, particularly in the spring. This water and the ability to manipulate it into the site greatly increase the potential for a successful wetland creation.

Given the large amount of soil which would need to be removed from the site to meet the designed wetland functions, the proximity to a relatively little used county road is a benefit. While county road would ensure a right-of-way ingress-egress, the remote setting would not encourage unwanted attention.

c. Map

Relationship of Impact Site, Reference Site, and Mitigation Site.

d. Design

The proposed wetland establishment design would not negatively affect the agricultural operations on adjacent lands and ensures the water needs of both the adjacent lands and the wetlands would be met. The design would provide greater variety in wetland habitat, complementing and supporting the existing wildlife habitat.

The hydrology necessary for the design is feasible given the location and existing water rights. By locating the mitigation site in the downstream portion of the drainage, the location and design are less likely to be controversial in the community and more apt to function with little additional management. The design also allows for flexibility during water short years once the wetland vegetation is established. The conservation easement would ensure the continuation of the designed wetland.

Because the landowner operates and owns construction equipment, the associated construction costs would be reduced.

e. Hydrogeomorphic (HGM) assessment of wetland functions

1. Method-

The *USDA-NRCS Idaho Interim Functional Assessment for Riverine Wetlands on the Floodplains of Low to Moderate gradient, 2nd or 3rd Order Streams on Find Textured Substrates* developed as per USDA National Food Security Act Manual 5th Edition, Part 516, Subpart A - Wetland Functional Assessments was used.

2. Assumptions-

The assessment was completed with the assumption that the Reference Site represented the Impact Site at the time of the manipulations. The Reference Site was determined to likely be most similar to the Impact Site due to the same mapped soils, same drainage area, same aspect, similar slope, and same land ownership which supposes similar land and water management. However, interpretation of wetland signatures on historic aerial photos could support that when the manipulations occurred, the Impact Site had a narrower area of inundation and wider area of seasonal saturation. If so, the site may have been less dominated by wetland obligate plant species. See Appendix I, Upstream Falls Creek as an example of an alternative reference site.

Since the Impact Site was not assessed before the soil, hydrologic, and vegetative manipulations occurred, the Reference Site was used as the "Pre-" condition site for the assessment. The Impact Site was used in its current state for the "Post-" condition. The future state of the proposed design on the proposed mitigation site was used as the "mitigation site: after"/"post-".

Since the Reference Site would be enhanced with the proposed mitigation, the future potential negative effects with the alteration in hydrology were not

separately analyzed. Any potential positive effects with the enhancement would be additional cumulative effects not analyzed in the HGM assessment.

3. Results

In the Impact Site, the assessment determined a decrease in both dynamic and long term surface water storage, as well as sediment and nutrient retention and removal. Characteristic plant communities and detrital biomass were lost, as were habitat interspersion and connectivity and characteristic bird populations. The losses in all functions were immediate and permanent on the site once the soil and water manipulations occurred.

The greatest loss with the manipulations was in long term surface water storage, which resulted in a functional loss of 2.5 acres of long term surface water storage. The functional loss of 1.4 acres of the assumed characteristic plant community correlated closely with the functional loss of 1.1 acres of habitat interspersion and connectivity.

The assessment found the proposed 1:1 mitigation of 2.8 acres of wetlands mitigated for all losses caused by the conversion of the Impact Site. In addition, several functions were improved with the proposed mitigation, particularly sediment and nutrient retention and removal. The functional mitigation and improvement in the long term water storage would support the area's hyporheic flow recharge. See Appendix 9 for complete assessment.

3. Mitigation Work Plan

a. Construction

1. Adherence to design-

- Landowner will obtain all necessary permits, compliance, and/or permissions prior to being any work.
- Wetland will be constructed as per the Wetland Mitigation Work Plan designs and NRCS standards and specifications.
- If previously unknown site conditions are found which prohibit following the designed grade or slopes, the NRCS engineer will be contacted to determine appropriate design changes.

2. Pollution control-

- NRCS Construction Specification 5- Pollution Control will be followed.
- Any addition pollution/sediment control measures required as per a necessary permit will be followed.

3. Schedule

- Construction must occur during lowest waterway flows. If it is possible to divert all flows during construction and no subsurface or ground water is present, work may occur.
- Expectation is to construct in 2013.

b. Planned hydrology

1. Source

- Flows diverted at structure for water control.

2. Connection to existing waters-

-Some diverted flows will pass through historic channel. Any flows leaving wetland easement site will enter into adjacent downstream easement and enter the Bear River.
- Interaction with ground water is unknown, but given silty alluvial soils, recharge would be expected.

3. Hydroperiod-

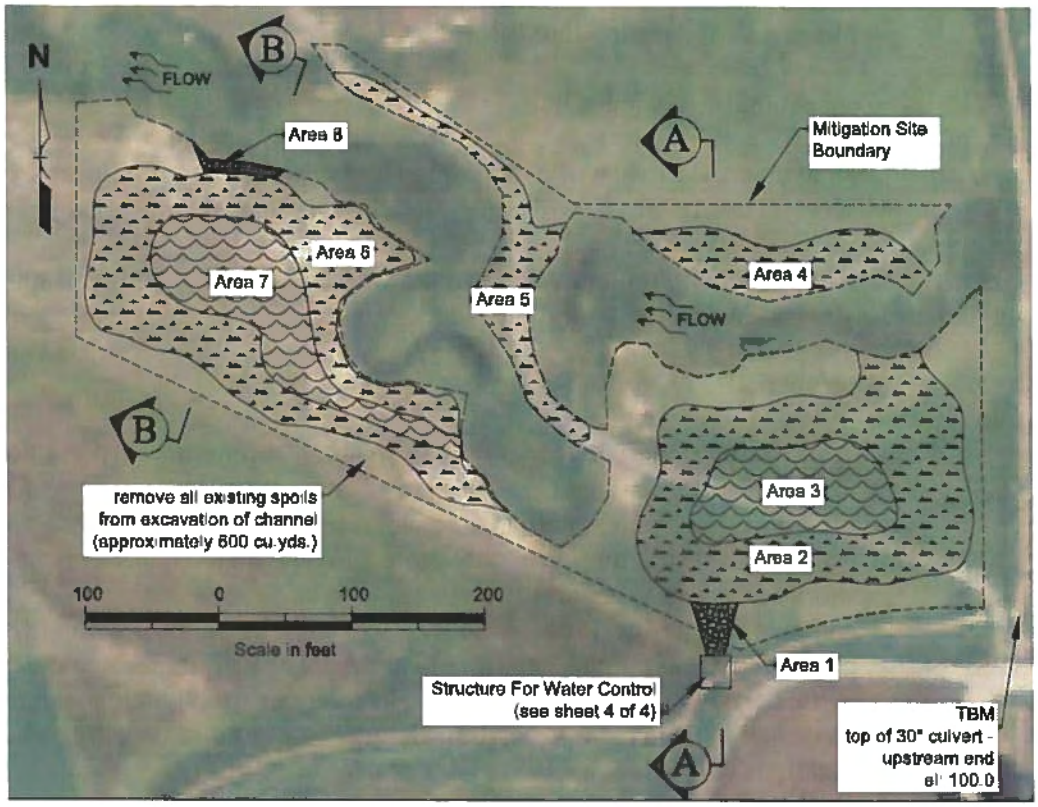
- After completion of construction and planting, a minimum of 1 cfs flows will be diverted into the wetland.
- 1 cfs flows will be maintained for as long as water is available to divert at the water control structure. See "Site protection and maintenance- maintenance" for short water year exception.
- Soil map unit defines soils as moderately well drained. Expectation is for water to pond for several months each year. However, if soils drain more quickly, particularly within the first couple years after construction, no changes should be made and the emergent vegetation should be allowed to develop. The wetland functions will still be met.

4. Maintenance-

- Hydrologic maintenance is not anticipated within the wetland area. if require due to a disaster or unforeseen circumstances, engineering assistance must be obtained.
- Design anticipates and allows for minor variations in flow patterns due to vegetation or other such causes which may affect timing or rate of saturation or inundation in portions of the wetlands.
- Water control structure must be maintained in a functioning manner as per the NRCS Structure for Water Control Operation and Maintenance Worksheet included in the Wetland mitigation Work Plan design packet.

c. Planned vegetation

Vegetation will be planted by Areas as defined in the Wetland Mitigation Work Plan Design Plan Map. See Appendix 10.



1. Areas 2, 4, and 6

Plant to *Juncus* and *Carex spp.* (rushes and sedges)- Do not transplant *Typha latifolia* (cattails). Although *T. latifolia* will likely establish in wetland, preference is to establish other species. Planting options include:

a. Wild transplant-
- Collection and transplant of local wild wetland plants.
- This method is highly recommended to improve potential planting success, ensure planting of locally adapted species, and reduce construction costs. Follow USDA-NRCS Plant Material Technical Note 13- Harvesting, Propagating, and Planting Wetland Plants pp. 6-10.
  - Plant at no greater than 12 inch spacing.
  - Saturate site prior to planting.
  - Recommend spring planting to avoid replanting if area frost heaves.
  - Follow recommended water inundation for best planting success
  - Appropriate local sites include the Reference Site wetland or, with landowner permission, the adjacent and downstream wetland site.

d. Planned soils

- Excess soils will be removed from site and will not be used to fill any wetlands on or off site.
- Soil compaction during construction is unavoidable. After construction, little to no disturbance is expected.

e. Planned buffer

- After construction is completed, a fence will be built around the wetland easement. Consideration should be to construct a "wildlife friendly" fence to avoid creating habitat fragmentation issues. Although the vegetative buffer will be narrow, it will provide some benefit. The landowner is highly encouraged to leave a buffer of upland grass if haying adjacent agricultural field.

4. Required Performance Standards

a. Hydrologic

1. A minimum of0.25 cfs flows will be diverted and maintained for no less than 6 months following construction and planting.

2. One (1) cfs flows will be diverted and maintained annually for at least nine months.

3. Inundation will occur in Areas 3 and 7 for 6 months annually during normal precipitation years.

4. Saturation will occur in 75% of Areas 2 and 6 during normal precipitation years.

b. Vegetative

1. Vegetative cover will be at least 25% in each of the three types of planting areas within one year. Areas inundated over 12" inches for longer than 3 months should not be considered when determining cover.

2. Vegetative cover will be at least 50% in each of the three types of planting areas within three years. Areas inundated over 12" inches for longer than 3 months should not be considered when determining cover.

3. Vegetative cover will be at least 50% in each of the three types of planting areas every year after three years. Areas inundated over 12" inches for longer than 3 months should not be considered when determining cover

4. Invasive species must not comprise more than 5% of the cover.

- Prior to collecting, recommend contacting the area or local NRCS to verify appropriate and/or alternate sites.

b. Purchase plugs from a reputable wetland plants nursery.
- Plant at no greater than 12 inch spacing.
- Saturate site prior to planting.
- Recommend spring planting to avoid replanting if area frost heaves.
- Follow recommended water inundation for best planting success

2. Areas Zones 3 and 7
Plant to *Scirpus spp* (bulrush)

a. Wild transplant-
- Collection and transplant of local wild wetland plants.
- This method is highly recommended to improve potential planting success, ensure planting of locally adapted species, and reduce construction costs. Follow USDA-NRCS Plant Material Technical Note 13- Harvesting, Propagating, and Planting Wetland Plants pp. 6-10.
  - Plant at no greater than 12 inch spacing.
  - Saturate site prior to planting.
  - Recommend spring planting to avoid replanting if area frost heaves.
  - Follow recommended water inundation for best planting success
- Prior to collecting, recommend contacting the area or local NRCS to verify appropriate and/or alternate sites.

b. Purchase plugs from a reputable wetland plants nursery.
- Plant at no greater than 12 inch spacing.
- Saturate site prior to planting.
- Recommend spring planting to avoid replanting if area frost heaves.
- Follow recommended water inundation for best planting success

3. Area 8 and all upland and disturbed areas
Seed to *Alopecurus ventricosus* (Creeping meadow foxtail) to reduce potential for invasive plants.

4. Woody vegetation (trees and shrubs)
No woody vegetation planting is recommended. Given small area and expected prevalence of long-term saturated soils, establishing woody vegetation would be difficult. In addition, tall woody species could act as predator perches and traps which would cause the area to be less desirable for the expected use of resting, foraging, and nesting by migratory birds.

However, any woody species which naturalize should be allowed to do so.

c. Soils- The development of hydric soil characteristics usually requires decades of anaerobic conditions. Therefore, it is not reasonable to require a performance standard.

d. Maintenance- All required maintenance will be completed at least annually.

5. Site Protection and Maintenance

a. Long-term legal protection instrument

Mitigation area and the remaining enhanced portion of the Falls Creek channel (i.e., Reference Site) will be put into a conservation easement to ensure wetland functions and values continue. The easement will prohibit development and agricultural production on the land.

The landowner agrees to be responsible for all costs associated with conveying the conservation easement.

b. Maintenance

The landowner agrees to be responsible for the maintenance of the wetland including:

- Ensuring fence is in good repair and prevents livestock access into the easement area.
- Any livestock which trespass into the area are removed from the site and the incident is reported to the easement holder within 24 hours.
- Water flows are maintained in the wetland at a minimum of 1cfs. In short water years, when irrigation demands for crops peak, flows may be reduced to 0.25 cfs if easement holder is pre-notified. However, flows will be increased to original levels as soon as feasible.
- Easement area is surveyed and treated at least annually for noxious and invasive species.
- Water control structures are maintained.
- Vegetation is maintained as per Performance Standards.
- Ensure integrity of the site.
- Removal of excess silt and debris in the wetland, if the easement holder determines the silt or debris impedes the wetland functions.
- Not storing any materials or equipment in the site.

Maintenance activities will occur outside the migratory bird nesting season to the extent practicable.

6. Monitoring

a. Responsible party- Completed by conservation easement entity..

b. Frequency- Monitoring must be completed annually until construction, vegetation, and fence component are installed. Monitoring must be completed annually for the first

three years following installation completion. Once established, monitoring may be completed every three years or more often if noncompliance issues occur.

c. Assessment- Must ensure hydrologic and vegetative required performance standards are assessed.

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Appendix 1 – Site photos

Impact Site- (Post-impact)

Reference Site-

Mitigation Site-

Below Mitigation Site to adjacent offsite wetland and Bear River

Upstream Falls Creek-

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Hank Carpenter City/County: Caribou Sampling Date: 6/14/2012
Applicant/Owner: Kay Sauer State: ID Sampling Point: 4
Investigator(s): Fuller, Rebernak Section, Township, Range: T11S, R40E, Sec 16
Landform (hillslope, terrace, etc.): drainage swale Local relief (concave, convex, none): concave Slope (%): 0-2
Subregion (LRR): B Lat: N 42°28' 18.5" Long: W 111° 46' 39.5" Datum: NAD83
Soil Map Unit Name: 83SA Thatcher Flats silt loam NWI classification: PEM 2
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation X, Soil ____, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes ____ No X
Are Vegetation ✓, Soil ____, or Hydrology ✓ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No ____	Is the Sampled Area within a Wetland? Yes ✓ No ____
Hydric Soil Present?	Yes ✓	No ____	
Wetland Hydrology Present?	Yes ✓	No ____	

Remarks: Low precip, low snowpack this past winter. Water diverted from channel in ditches. Area has been used & managed as pasture.
Area approx. 80' x 30' filled since last site visit.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: ~3 ac)			
1. Juncus baltricus	40	Y	FACW
2. Carex nebraskensis	30	Y	OBL
3. Rumex crispus	10	N	FACW
4. Poa pratensis	20	Y	FACU
5. Alopecurus arundinaceus	trace	N	NI
6. Lepidium spp.	5	N	—
7. Taraxacum officinale	trace	N	FACU+
8. Atriplex patula	trace	N	FACW
	110 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 67% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	30	x 1 =	30
FACW species	51	x 2 =	102
FAC species	0	x 3 =	0
FACU species	21	x 4 =	84
UPL species	0	x 5 =	0
Column Totals:	102 (A)		216 (B)

Prevalence Index = B/A = 2.1

Hydrophytic Vegetation Indicators:
✓ Dominance Test is >50%
✓ Prevalence Index is ≤3.0[1]
__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
✓ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks: 1988 Plant List used
Managed plant community, affected by grazing

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SOIL Sampling Point: 4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 2/2	100					L (12%c)	granular structure
8-15	7.5YR 2.5/1	↓	5YR 3/4	3	C	root channels	L (13%c)	angular blocky structure
15-20+	10YR 3/2	↓	7.5YR 3/4	10	C	M	L (25%c)	" " "

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (If present):

Type: ___

Depth (inches) ___

Hydric Soil Present? Yes ✓ No ___

Remarks:

Inclusion in map unit

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ✓ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✗ Depth (inches): ___

Water Table Present? Yes ___ No ✗ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ✗ Depth (inches): ___

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Inundation observed during previous site visit. Channel (surface water) has been cut off + water diverted. Part of drainage shown on

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WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Hank Carpenter City/County: Caribou Sampling Date: 6/14/2012
Applicant/Owner: Ray Sauer State: ID Sampling Point: 5
Investigator(s): Fullen, Peterson Section, Township, Range: T11S, R40E, Sec. 10
Landform (hillslope, terrace, etc.): hillslope near channel Local relief (concave, convex, none): concave-convex Slope (%): 30
Subregion (LRR): B Lat: N42° 28' 40.2" Long: W111° 46' 31.2" Datum: NAD83
Soil Map Unit Name: 91OA Bearhollow-Brifox-Iphil complex NWI classification: none
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation X, Soil ____, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes ____ No X
Are Vegetation ✓, Soil ____, or Hydrology ✓ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ✓ No ____
Hydric Soil Present? Yes ✓ No ____
Wetland Hydrology Present? Yes ✓ No ____
Is the Sampled Area within a Wetland? Yes ✓ No ____

Remarks: Low precip & snowpack this past winter. Water has been impounded & diverted to ditches. Area has been grazed.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size ____)			
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 1 ac)			
1. Beckmannia syzigachne	25	Y	OBL
2. Poa pratensis	30	Y	FACU
3. Juncus balticus	30	Y	FACW
4. Equisetum laevigatum	trace	N	FACW
5. Carex douglasii	10	N	FACU
6.			
7.			
8.			
	97 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 3 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 67 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	25	x 1 =	25
FACW species	37	x 2 =	64
FAC species	0	x 3 =	0
FACU species	30	x 4 =	120
UPL species	0	x 5 =	0
Column Totals:	87 (A)		209 (B)

Prevalence Index = B/A = 2.4

Hydrophytic Vegetation Indicators:
✓ Dominance Test is >50%
✓ Prevalence Index is ≤3.0[1]
__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks: 1988 Plant List used.

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SOIL Sampling Point: 5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3"	7.5YR 3/2						fsl	
3-16"	10YR 3/2		7.5YR 3/4	20	masses		fsl	concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

Stopped at 16" by basalt stone (>10" fragment)

Inclusion in map unit

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): _____

Water Table Present? Yes ___ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Surface water in drainages east + west of sampling point. Majority of water directed into ditch to the west.

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WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Hank Carpenter City/County: Caribou Sampling Date: 6/14/2012
Applicant/Owner: Ray Sauer State: ID Sampling Point: 6
Investigator(s): Fullen, Rebernak Section, Township, Range: T11S, Range 40E, Sec. 10
Landform (hillslope, terrace, etc.): hillslope Springs Local relief (concave, convex, none): concave Slope (%): 40
Subregion (LRR): B Lat: N42°28'405" Long: W111°46'42.4" Datum: NAD83
Soil Map Unit Name: 910A Bearhollow-Brifox-Iphill complex NWI classification: none
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ____ No X
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No ____	Is the Sampled Area within a Wetland? Yes ✓ No ____
Hydric Soil Present?	Yes ✓	No ____	
Wetland Hydrology Present?	Yes ✓	No ____	

Remarks: Channel below spring on hillslope. Low precip + snowpack year.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: 0.5 ac.)			
1. Rosa woodsii	2	N	FAC-
2.			
3.			
4.			
5.			
	2 = Total Cover		
Herb Stratum (Plot size: 0.5 ac)			
1. Calabrosa aquatica	30	Y	OBL
2. Bromus inermis	10	N	—
3. Agrostis Stolonifera	25	Y	FACW
4. Poa Pratensis	15	N	FACU
5. Carex douglassii	10	N	FACU
6. Veronica anagallis-aquatica	2	N	OBL
7. Cirsium spp.	5	N	—
8. Rumex crispus	5	N	FACW
	____ = Total Cover		
Woody Vine Stratum (Plot size. ____)			
1.			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species 55	x 1 = 55
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = 1

Hydrophytic Vegetation Indicators:
✓ Dominance Test is >50%
✓ Prevalence Index is ≤3.0[1]
__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks: Spring / seep areas in northern part of tract on hillslope

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SOIL Sampling Point: 6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/2	100					fsl	~40% live roots
4-8	Gley1 2.5/N	80					fsl	
4-8	2.5Y 4/1	20					"	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ✓ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ✓ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks: Inclusion in mapo unit

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ✓ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✓ No ___ Depth (inches): 0

Water Table Present? Yes ✓ No ___ Depth (inches): 0

Saturation Present? (includes capillary fringe) Yes ✓ No ___ Depth (inches): 0

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: appears that channel has been somewhat deepened and directed into east-west ditch at the top of the disturbed area.

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WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Hank Carpenter City/County: Caribou Sampling Date: 5-22-2012
Applicant/Owner: Ray Sauer State: ID Sampling Point: 1
Investigator(s): Fullen, Rebernak Section, Township, Range: T11S R40E Sec. 16
Landform (hillslope, terrace, etc.): leveled terrace Local relief (concave, convex, none): Linear / Linear Slope (%): 0
Subregion (LRR): B Lat: 42° 28' 22.0" Long: 111° 46' 21.0" Datum: NAD83
Soil Map Unit Name: 835B - Thatcher Flats - Bear Lake Complex NWI classification: PEM
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ( ) No (✓) (If no, explain in Remarks.)
Are Vegetation [✓] Soil [✓] or Hydrology [✓] significantly disturbed? Are "Normal Circumstances" present? Yes ( ) No (✓)
Are Vegetation [✓] Soil [✓] or Hydrology [✓] naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes (✓)	No ( )	Is the Sampled Area within a Wetland? Yes ( ) No (✓)
Hydric Soil Present?	Yes ( )	No (✓)	
Wetland Hydrology Present?	Yes ( )	No (✓)	

Remarks: Dark area in SE field w/ least amount of surface disturbance. Precip. at 73% of normal for Bear River Basin. Growing season has begun as evidenced by emergence of herbaceous plants from ground.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. bareground	18%		
2. Typha latifolia	+		
3. Carex spp. (nebrascensis?)	+		
4. Eleocharis	+		
5. Another Carex spp.	+		
6.			
7.			
8.			
Total Cover:			
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 98 % % Cover of Biotic Crust %

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals:	(A)	0 (B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:
- [ ] Dominance Test is >50%
- [ ] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [✓] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No ( )

Remarks: Herbaceous vegetation altered by irrigation, tillage, + land-leveling. Remnants of last seasons veg collected for ID. Grasses starting to grow back.

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SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture[3]	Remarks
0-8	10YR 3/1	100					silt loam	
8-19	7.5YR 3/2		7.5YR 4/4	10	C	M	silty clay loam	
19-26	10YR 5/3		7.5YR 5/3	10	C	M	clay loam	contains 15% pockets of A2 material
26-36	7.5YR 4/3						clay loam	
36-50	10YR 5/4						clay	
50-6'	10YR 4/4						Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (LRR C)
- ☐ 1 cm Muck (A9) (LRR D)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☒ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (LRR C)
- ☐ 2 cm Muck (A10) (LRR B)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present

Restrictive Layer (if present):

Type: none

Depth (inches):

Hydric Soil Present? Yes ○ No ☑

Remarks: fine smectitic subactive frigid calcic argixeroll

Below 26 inches, redox is not present and the soil appears to have formed in non-aquic conditions. The iron concentrations in the zone from 8-26 inches are likely due to saturated flows slowing down through the profile in the heavy clay textures. Episaturated, not endosaturated.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (Nonriverine)
- ☐ Sediment Deposits (B2) (Nonriverine)
- ☐ Drift Deposits (B3) (Nonriverine)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☑ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (Riverine)
- ☐ Sediment Deposits (B2) (Riverine)
- ☐ Drift Deposits (B3) (Riverine)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ☑ Depth (inches): _____

Water Table Present? Yes ○ No ☑ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ○ No ☑ Depth (inches): _____

Wetland Hydrology Present? Yes ○ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Pond snail shells on soil surface - not numerous, may have been transported in irrigation water or on equipment.

US Army Corps of Engineers

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USDA-NRCS	PEDON DESCRIPTION			Draft 9/98
Series or Component Name: stop 1	Map Unit Symbol: 835b	Photo #:	Classification: fine smectitic mesic aquic argixeroll	Soil Moisture Regime (Tax.):
Describer(s): CR	Date: 5-22-12	Weather:	Temp: Air: Soil: Depth:	Latitude: 12T 0456499 mN Datum: Longitude: 4782559 mW	Location: Sec T. R.
UTM: Zone mE mN:	Topo Cited:	YR: State:	County: Unit:	Soil Survey Area: Ceriban Co.	MLRA:	Transect: ID: Stop #: Intv:
Landscape:	Landform: tilled terrace	Microfeature:	Anthro:	Elevation: 4935	Aspect:	Slope (%): 0	Slope Complexity:	Slope Shape: (Up/Across) L/L
Hillslope Profile Position:	Geom. Component:	Microrelief:	Physiogr. Division:	Physio. Prov.:	Physio. Sect.:	State Physio.:	Local Physio.:
Drainage: well drained	Flooding:	Ponding:	Soil Moisture Status:	Permeability: Ksat:
Land Cover:	Parent Material: loess	Bedrock: Kind: Fract: Hard: Depth:	Erosion: Kind: Deg:	Runoff:
Surface Frag %: GR: CB: ST: BD: CN: FL:	Diagnostic Horz / Prop: Kind: Depth:
Control Section Ave Clay %: Rock Frag %:

VEGETATION:		
SYMBOL	COMMON NAME	%GD COVER

NOTES / SKETCH:

pieces of a 2" thick Oe one present on the surface, broken from leveling, although land owner says this area was minimally disturbed

redox is from episaturation ponding on heavy layers

well drained but meets F6 Redox Dark surface

Component Name:				Map Unit:												Date:
Obser. Method	Depth (in)	(cm)	Horizon	Bnd	Matrix Color Dry	Matrix Color Moist	Texture	Rock Frag Knd	%	Rnd	Sz	Structure gd	sz	ty	CONSISTENCE Dry	Mst	Stk	Pls	Mottles % Sz Cont. Col Msl Shp Loc
WG	0-8	0-20	Ap			10YR 3/1	SiL												
	8-19	20-49	A			7.5YR 3/2	SiCL												
	19-26	48-65	BE			10YR 5/3	CL												
	26-36	65-90	BEK1			7.5YR 4/3	CL												
	36-50	90-125	BEK2			10YR 5/4	C												
	50-60+	125-150+	CB			10YR 4/4	L wf rfs												

Redoximorphic Features Knd % Sz Loc Con. Col. Mst Shape	Concentrations Knd % Sz Cont. Col Mst Shp Loc	Ped Surface Features Knd % Con Dst Loc Col Mst	Roots Qty Sz Loc	Pores Qty Sz Shp	pH	Effer	Clay %	CCE	Notes
						VS	26		
FSM 10 T distinct 5YR4/4 I						VS/NE	33		
FS T faint 7.5YR 5/3 I	CAM 20 in structural plates					VE	35		15% pockets of A2
	CAM 10	CLF 10				ST	39		
	CAM 20	CLF 2				ST	41		
	FDS + CAM 2					SL	15		

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Hank Carpenter City/County: Caribou Sampling Date: 5-22-12
Applicant/Owner: Ray Sauer State: ID Sampling Point: 2
Investigator(s): Fullen, Rebernale Section, Township, Range: T11S R40E Sec 16
Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave/concave (very slightly) Slope (%): 0
Subregion (LRR): B Lat: 42° 28' 16.5" Long: 111° 46' 17.5" Datum: NAD83
Soil Map Unit Name: 835B-Thatcher Flats-Bear Lake Complex NWI classification: PEM
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ○ No ● (If no, explain in Remarks.)
Are Vegetation ☑ Soil ☑ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ○ No ●
Are Vegetation ☑ Soil ☑ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ●	No ○	
Hydric Soil Present?	Yes ●	No ○	Is the Sampled Area within a Wetland? Yes ○ No ●
Wetland Hydrology Present?	Yes ○	No ●	

Remarks: Lowest point of SE field with strongest wetland signature on aerial photos.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. Carex douglasii?			
2. juncus balticus			
3. Typha latifolia			
4. Brassicaceae sprouting			
5.			
6.			
7.			
8.			
Total Cover:	%		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 95 % % Cover of Biotic Crust %

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	0
FACW species	x 2 =	0
FAC species	x 3 =	0
FACU species	x 4 =	30
UPL species	x 5 =	0
Column Totals:	(A)	30 (B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:
- ○ Dominance Test is >50%
- ○ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☑ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present

Hydrophytic Vegetation Present? Yes ● No ○

Remarks: Vegetation plowed under & area rough - leveled in Fall 2011.

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SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture[3]	Remarks
0-8	10YR 3/2	100	7.5YR 4/6	10	C	M	silt loam	
8-15	7.5YR 3/2		5YR 3.5/1 7.5YR 4/6	10 15	C	M	clay loam	
15-40	10YR 4/4		7.5YR 6/4 10YR 5/6	2 10	C C	M M	clay loam	
40-50	7.5YR 5/3		5YR 3.5/1	5	C	M	very fine, sandy loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- [ ] Histosol (A1)
- [ ] Histic Epipedon (A2)
- [ ] Black Histic (A3)
- [ ] Hydrogen Sulfide (A4)
- [ ] Stratified Layers (A5) (LRR C)
- [ ] 1 cm Muck (A9) (LRR D)
- [ ] Depleted Below Dark Surface (A11)
- [ ] Thick Dark Surface (A12)
- [ ] Sandy Mucky Mineral (S1)
- [ ] Sandy Gleyed Matrix (S4)
- [ ] Sandy Redox (S5)
- [ ] Stripped Matrix (S6)
- [ ] Loamy Mucky Mineral (F1)
- [ ] Loamy Gleyed Matrix (F2)
- [ ] Depleted Matrix (F3)
- [x] Redox Dark Surface (F6)
- [ ] Depleted Dark Surface (F7)
- [x] Redox Depressions (F8)
- [ ] Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- [ ] 1 cm Muck (A9) (LRR C)
- [ ] 2 cm Muck (A10) (LRR B)
- [ ] Reduced Vertic (F18)
- [ ] Red Parent Material (TF2)
- [ ] Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: none

Depth (inches): _____

Hydric Soil Present? Yes [✓] No [ ]

Remarks: According to Soil Taxonomy, the zone between 10 and 20 inches has aquic conditions as evidenced by the iron concentrations + depletions, but the lower part of the mollic epipedon has chroma 3 and therefore does not classify as an aquoll, but rather an aquic argixeroll.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- [ ] Surface Water (A1)
- [ ] High Water Table (A2)
- [ ] Saturation (A3)
- [ ] Water Marks (B1) (Nonriverine)
- [ ] Sediment Deposits (B2) (Nonriverine)
- [ ] Drift Deposits (B3) (Nonriverine)
- [ ] Surface Soil Cracks (B6)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [ ] Water-Stained Leaves (B9)
- [ ] Salt Crust (B11)
- [ ] Biotic Crust (B12)
- [ ] Aquatic Invertebrates (B13)
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres along Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Plowed Soils (C6)
- [ ] Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- [ ] Water Marks (B1) (Riverine)
- [ ] Sediment Deposits (B2) (Riverine)
- [ ] Drift Deposits (B3) (Riverine)
- [ ] Drainage Patterns (B10)
- [ ] Dry-Season Water Table (C2)
- [ ] Thin Muck Surface (C7)
- [ ] Crayfish Burrows (C8)
- [x] Saturation Visible on Aerial Imagery (C9)
- [ ] Shallow Aquitard (D3)
- [ ] FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes [ ] No [✓] Depth (inches): 30

Water Table Present? Yes [ ] No [✓] Depth (inches): 30

Saturation Present? (includes capillary fringe) Yes [ ] No [✓] Depth (inches): 50

Wetland Hydrology Present? Yes [ ] No [✓]

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Even though precip + snowpack were below average this year, water table would be expected within 24".

US Army Corps of Engineers

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USDA-NRCS — **PEDON DESCRIPTION** — Draft 9/98

Series or Component Name: stop 2		Map Unit Symbol: 835 b	Photo #:	Classification: fi-lo m sa frigid aquic argixeroll					Soil Moisture Regime (Tax.):
Describer(s): CL	Date: 5-22-12	Weather:	Temp.: Air: Soil: Depth:	Latitude: 12T 0934577 N Datum:	Longitude: 4702388 W				Location: Sec. T. R.
UTM: Zone: mE: mN:		Topo Quad:	YR: State: County: Unit:			Soil Survey Area: Cerro Gordo Co	MLRA:		Transect: ID: Stop #: Intv:
Landscape:	Landform: terrace	Microfeature:	Anthro:	Elevation: 4949	Aspect: /	Slope (%): 0	Slope Complexity:	Slope Shape: (Up/Across) very gently CC/CC	
Hillslope Profile Position:	Geom. Component:	Microrelief:	Physiogr. Division:	Physio. Prov.:	Physio. Sect.:	State Physio.:	Local Physio.:		
Drainage: poorly	Flooding:	Ponding:	Soil Moisture Status:	Permeability: Ksat:					
Land Cover:	Parent Material: loess	Bedrock: Kind:	Fract.: Hard.: Depth:	Erosion: Kind:	Deg:	Runoff:			
Surface Frag %: GR: CB: ST: BO: CN: FL:		Diagnostic Horz. / Prop.:	Kind: Depth:						
Control Section Ave: Clay %: Rock Frag %:									

VEGETATION:

SYMBOL	COMMON NAME	%GD COVER

NOTES / SKETCH:

original surface seems to be intact

feels very moist at 50", WT probably not far below

Poorly drained

F6 Redox dark surface
F8 Redox depressions

Component Name:				Map Unit:											Date:
Obser. Method	Depth (in) (cm)	Horizon	Bnd	Matrix Color Dry	Matrix Color Moist	Texture	Rock Frag Knd % Rnd Sz	Structure gd sz ty	CONSISTENCE Dry	Mst	Stk	Pls	Mottles % Sz Cont. Col Mst Shp Loc
avg	0% 0-20	Ap			10 YR 3/2	SiL							
↓	8-15 20-38	B+1			2.5 YR 3/3	CL							
	15-40 38-100	B+2			10 YR 4/4	CL							
	40-80 100-152	CB			1.5 YR 5/3	VFSL							

Redoximorphic Features Knd % Sz Cont. Col. Mst Shape	Concentrations Knd % Sz Cont. Col Mst Shp Loc	Ped Surface Features Knd % Con Dst Loc Col Mst	Roots Qty Sz Loc	Pores Qty Sz Shp	pH Effer Clay % CCE	Notes
10% Matrix FSM distinct 7.5YR 4/6					NE 14%	
FMM 10 5YR 2.5/1		C1f 5%			SL 34%	
FSM 15 7.5YR 4/6						
FSM 2% 7.5YR 5/4 distinct CAM 5%		CLF 2			ST 32	
CB - roof channels - 10YR 5/2 10%						
FMM 5% 5YR 2.5/1	CAM-5				10	

S&W 9/05

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Hank Carpenter City/County: Caribou Sampling Date: 5-22-12
Applicant/Owner: Ray Sauer State: ID Sampling Point: 3
Investigator(s): Fulleh, Reberrak Section, Township, Range: T11S R40E Sec. 15
Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Linear/Linear Slope (%): 0
Subregion (LRR): B Lat: 42° 28' 24.0" Long: 111° 46' 49.3" Datum: NAD83
Soil Map Unit Name: 100 B - Bear Cole - Chesterank - LaRoco complex NWI classification: PEM1
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ○ No ✓ (If no, explain in Remarks.)
Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ○ No ✓
Are Vegetation ✓ Soil ☐ or Hydrology ✓ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No ○	
Hydric Soil Present?	Yes ✓	No ○	Is the Sampled Area within a Wetland? Yes ✓ No ○
Wetland Hydrology Present?	Yes ✓	No ○	

Remarks:
Bear River Floodplain - low precip + low snowpack year

VEGETATION

Tree Stratum (Use scientific names)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. Carex nebrascensis	25	yes	OBL
2. Juncus balticus	40	"	FACW
3. Carex douglasii	30	"	FACU
4. Poa pratensis	10	no	FACU
5. Iva xanthifolia	2	"	FACW+
6. Plantago major	2	"	FAC
7. Potentilla anserina	1	"	FACU
8. Alopecurus arundinaceus	+	"	N.I.
Total Cover:	110%		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 0 % % Cover of Biotic Crust %

Remarks:

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)
Total Number of Dominant Species Across All Strata: 5 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 60% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	25	x 1 =	25
FACW species	42	x 2 =	84
FAC species	3	x 3 =	9
FACU species	42	x 4 =	168
UPL species		x 5 =	
Column Totals:	109 (A)		286 (B)

Prevalence Index = B/A = 2.62

Hydrophytic Vegetation Indicators:
✓ Dominance Test is >50%
✓ Prevalence Index is ≤3.0[1]
☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ✓ No ○

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SOIL Sampling Point: 3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture[3]	Remarks
0-4								Oe horizon
4-14	10YR 3/1	100	7.5YR 3/4	15	C	M	silt loam	
14-20	10YR 4/1	100	7.5YR 3/4	15	C	M+RC	silt loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- [ ] Histosol (A1)
- [ ] Histic Epipedon (A2)
- [ ] Black Histic (A3)
- [ ] Hydrogen Sulfide (A4)
- [ ] Stratified Layers (A5) (LRR C)
- [ ] 1 cm Muck (A9) (LRR D)
- [x] Depleted Below Dark Surface (A11)
- [ ] Thick Dark Surface (A12)
- [ ] Sandy Mucky Mineral (S1)
- [ ] Sandy Gleyed Matrix (S4)
- [ ] Sandy Redox (S5)
- [ ] Stripped Matrix (S6)
- [ ] Loamy Mucky Mineral (F1)
- [ ] Loamy Gleyed Matrix (F2)
- [ ] Depleted Matrix (F3)
- [x] Redox Dark Surface (F6)
- [ ] Depleted Dark Surface (F7)
- [ ] Redox Depressions (F8)
- [ ] Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- [ ] 1 cm Muck (A9) (LRR C)
- [ ] 2 cm Muck (A10) (LRR B)
- [ ] Reduced Vertic (F18)
- [ ] Red Parent Material (TF2)
- [ ] Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type: none
Depth (inches):

Hydric Soil Present? Yes ☑ No ☐

Remarks:
fine-silty mixed superactive frigid typic endoaquoll

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- [ ] Surface Water (A1)
- [ ] High Water Table (A2)
- [x] Saturation (A3)
- [ ] Water Marks (B1) (Nonriverine)
- [ ] Sediment Deposits (B2) (Nonriverine)
- [ ] Drift Deposits (B3) (Nonriverine)
- [ ] Surface Soil Cracks (B6)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [ ] Water-Stained Leaves (B9)
- [ ] Salt Crust (B11)
- [ ] Biotic Crust (B12)
- [ ] Aquatic Invertebrates (B13)
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres along Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Plowed Soils (C6)
- [ ] Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- [ ] Water Marks (B1) (Riverine)
- [ ] Sediment Deposits (B2) (Riverine)
- [ ] Drift Deposits (B3) (Riverine)
- [ ] Drainage Patterns (B10)
- [ ] Dry-Season Water Table (C2)
- [ ] Thin Muck Surface (C7)
- [ ] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imagery (C9)
- [ ] Shallow Aquitard (D3)
- [ ] FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ☐ No ☑ Depth (inches):
Water Table Present? Yes ☐ No ☑ Depth (inches):
Saturation Present? (includes capillary fringe) Yes ☑ No ☐ Depth (inches): 20

Wetland Hydrology Present? Yes ☑ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Adjacent veg in SW field: hoary mustard (Lepidium latifolium) (clasping) pepperweed, Bromus tectorum (cheat grass)
water table below 12" expected due to low precip. & snowpack.

US Army Corps of Engineers

Arid West - Version 11-1-2006

didn't dig to 125 cm so don't know if thick of irregular decreases in OM

USDA-NRCS | **PEDON DESCRIPTION** | **Draft 9/98**

Series or Component Name: step 3	Map Unit Symbol: 606?	Photo #:	Classification: ~~typic cryaquoll~~ Fi-si m sa typic endoaquoll		Soil Moisture Regime (Tax.):
Describer(s): CR	Date: 5-22-12	Weather: Air: Temp.: Soil: Depth:	Latitude: 12T 0435854 "N Datum: Longitude: 4702626 "W		Location: Sec. T. R.
UTM: Zone: mE: mN:	Topo Quad:	YR: State: County: Unit:	Soil Survey Area: Ceriboa Co	MLRA:	Transect: ID: Stop #: Intv.
Landscape:	Landform: Flood plain	Microfeature:	Anthro:	Elevation:	Aspect: / Slope (%): 0 Slope Complexity: Slope Shape: (Up/Across) L/L
Hillslope Profile Position:	Geom. Component:	Microrelief:	Physiogr. Division:	Physio. Prov.:	Physio. Sect.: Strie Physio.: Local Physio.:
Drainage: very poorly	Flooding:	Ponding:	Soil Moisture Status:	Permeability: Ksat:	
Land Cover	Parent Material: silty alluvium	Bedrock: Kind: Fract.: Hard.: Depth:		Erosion: Kind: Deg	Runoff:
Surface Frag %: GR: CB: ST: SD: CN: FL		Diagnostic Horz. / Prop.:	Kind: Depth:		
Control Section Azt: Clay %: Rock Frag %:					

no WT above 50 cm but feels saturated at 50 cm

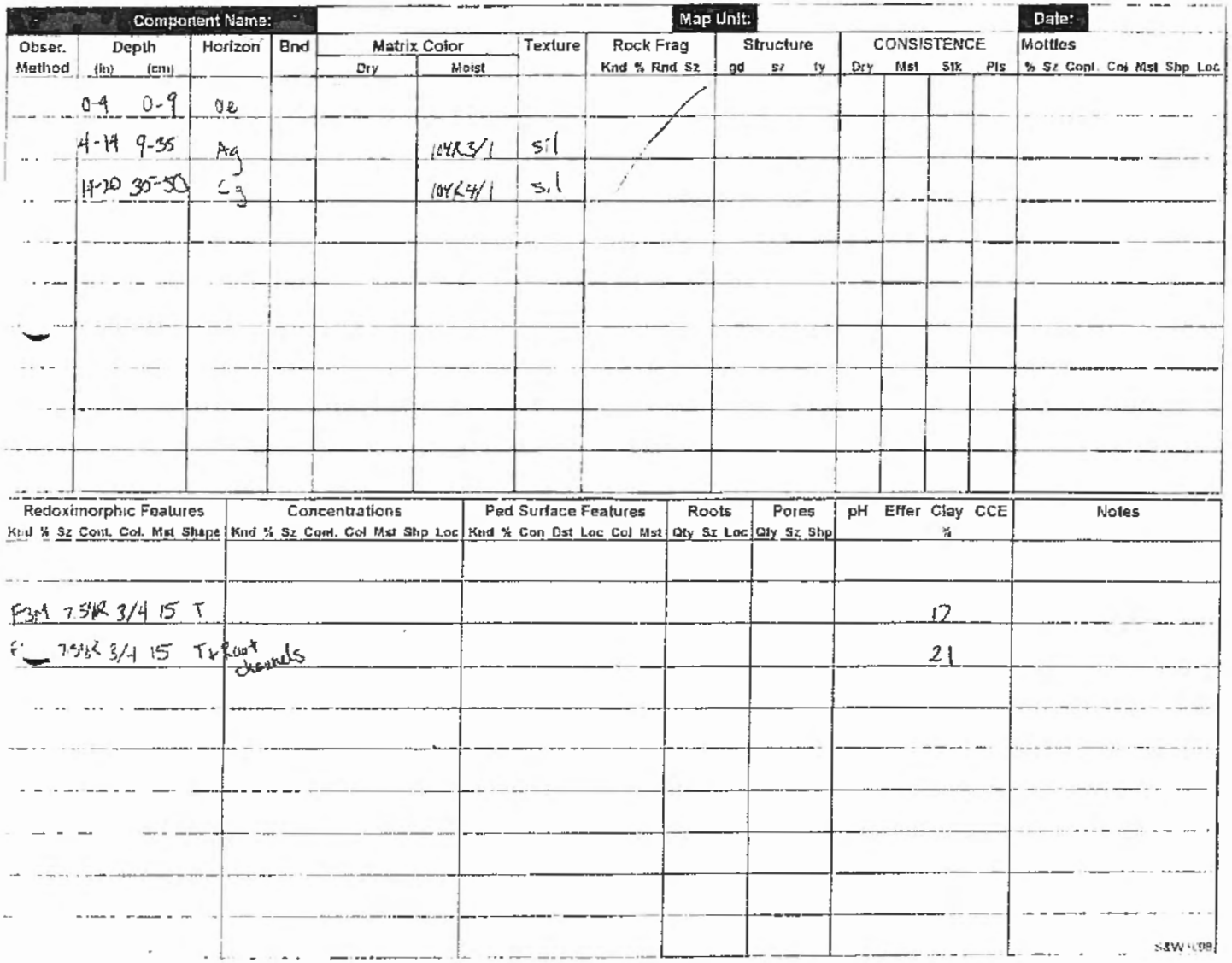
VEGETATION:

SYMBOL	COMMON NAME	%3D COVER
	nebraska sedge	

NOTES / SKETCH:

Very poorly drained

A1 Depleted below dark surface
F6 Redox dark surface



Component Name:				Map Unit:										Date:			
Obser. Method	Depth (in)	Depth (cm)	Horizon	Bnd	Matrix Color Dry	Matrix Color Moist	Texture	Rock Frag Knd % Rnd Sz	Structure gd sz ty	CONSISTENCE Dry	Mst	Stk	Pls	Mottles % Sz Cont Col Mst Shp Loc
	0-4	0-9	Oe											
	4-14	9-35	Ag			10YR3/1	sil							
	14-20	35-50	Cg			10YR4/1	s.l							

Redoximorphic Features Knd % Sz Cont Col Mst Shape	Concentrations Knd % Sz Cont Col Mst Shp Loc	Ped Surface Features Knd % Con Dst Loc Col Mst	Roots Qty Sz Loc	Pores Qty Sz Shp	pH	Effer	Clay %	CCE	Notes
F 7.5YR 3/4 15 T							17		
F 7.5YR 3/4 15 T	Root channels						21		