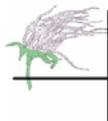


Milltown Revegetation Data Summary Report

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Prepared by:

Geum Environmental Consulting, Inc.
307 State Street
Hamilton, MT 59840



GEUM ENVIRONMENTAL
CONSULTING, INC.

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Introduction

This document provides a summary of the methods and results of vegetation field assessments intended to map existing plant communities, weed populations and plant salvage potential within the Milltown Dam restoration area to support the Final Restoration Plan (FRP). These field assessments were conducted by Geum Environmental Consulting, Inc. personnel on October 20, 21 and 24, 2005 and August 17, 2006. The assessment area includes SAAIV, SAAV and CFR 3a-c.

Data collected during field assessments include:

- Locations of distinct plant communities (either plant communities named in existing classifications, or local dominance types);
- Relative abundance of species within representative plant communities;
- Locations of plant communities with salvage potential;
- Location of weed infestations and invasive plant species populations.

Purpose

The purpose of this document is to describe: (1) methods—how vegetation data were collected to support final design for Milltown Dam restoration; (2) results—the types of vegetation data that were collected and (3) how these vegetation data will be used to support final design. The data collection effort focused on characterizing vegetation that occurs within the Milltown project area (Appendix A, Map 1). These data will be analyzed in combination with additional data layers such as floodplain topography, channel cross-sections, results of hydraulic analyses, other geomorphic data, and soils data to support development of the FRP.

Methods

Plant Communities

Plant communities within the assessment area were mapped in the field on an aerial photograph base by delineating boundaries observed while walking the area. This allowed us to determine the range and distribution of plant communities present. Riparian and wetland plant communities were generally mapped according to the habitat and community types describe by Hansen and others (1995) as they applied, but habitat typing was not the purpose of the assessments. In addition to riparian and wetland communities described in Hansen and others, additional vegetation dominance types were described and mapped as a way to capture the range of existing vegetation conditions present within the assessment area. Dominance types were named in the field, according to the dominant species in the tallest layer; this approach was used for plant communities where ecological site potential is uncertain due to disturbed conditions. Our use of the term dominance type is based on Hansen and others' (1988) local usage, which is similar to the Nature Conservancy's use of the term cover type (for example, Mayberry 1999). Once these plant community boundaries were drawn in the field, vegetation community polygons were digitized over an electronic, spatially referenced aerial photo base using ArcView 9.1 GIS software.

For all plant communities, a detailed species list was recorded, and canopy cover was estimated for each species, using the following categories expressed as percent of aerial cover: <1; 1-5; 5-15; 15-25; 25-35; 35-45; 45-55; 55-65; 65-75; 75-85; 85-95; and >95. These data were initially collected from a specific detail area located within each distinct plant community when it was first observed. As additional occurrences of each plant community were encountered, the species/cover list was expanded, resulting in data sufficient to characterize the overall relative abundance of plant species within each community. In addition to relative abundance data, the following information was recorded for each plant community: hydrologic indicators; spatial position within the floodplain; weed species present; presence of salvageable live plants; and notes about potential restoration and/or enhancement opportunities.

Salvage Potential

Within the project area, some existing vegetation may need to be removed as part of restoration activities, and some of this vegetation may be salvaged and used to revegetate the restored channel. During field assessments, all areas within SAAIV, SAAV and within the preferred 2005 RP channel alignment were evaluated for salvage potential. Locations of potential salvage areas were marked on field maps and general notes on species and type of salvageable material (e.g. whole plants with roots, cuttings, or sod) were recorded. Boundaries and points recorded on field maps were digitized onto an aerial photo base in ArcView 9.1 to create a map showing potential salvage locations.

Weed Areas

Weed infestations within the assessment area were recorded during field assessments. Weed species occurring within mapped plant communities were recorded by species and relative abundance. Some weed infestations, such as large areas of common tansy (*Tanacetum vulgare*) or areas dominated by reed canarygrass (*Phalaris arundinacea*) were recorded as a distinct dominance type due to their wide distribution throughout the assessment area. Other smaller infestations were recorded as separate data points and notes on possible weed control measures were recorded. Weed dominance types were mapped according to the methods described above. For other sites, data points were digitized onto an aerial photo base in ArcView 9.1 and combined with other mapped weed vegetation communities to create a weed distribution map of the assessment area.

Results

Plant Communities

A total of 26 plant communities were mapped within the assessment area (Appendix A, Map 1). Data were collected for one additional plant community located in the CFR-3 Upstream Study Area, for a total of 27 described plant communities. A description of each plant community/dominance type, corresponding Hansen habitat or community type if applicable, geomorphic location within the floodplain, dominant plant species, presence of hydrologic indicators, weed species, potential for salvage, restoration, or enhancement and a photograph is provided in Appendix B. Complete species lists for

each plant community are not provided in this report, but are part of the project file and are available upon request.

Salvage Potential

Three types of salvage were identified during field assessments. These include: sod salvage (ST-1); live willow cutting sources (ST-2); and native shrub salvage areas (ST-3). Specific results from the assessment of salvage opportunities are described in more detail below. Specific large salvage areas, identified by salvage type, are located on Map 1 in Appendix A; however, these areas do not include all potential salvageable materials for the project. Notes on potential salvage available within each vegetation community are provided in the table in Appendix B. Salvage potential data include estimated quantities of suitable salvage material by species. Exact amounts of salvageable material will be refined during development of the final design. In general, salvage potential is considered high in areas having low weed cover and appropriate age classes of native shrubs. Appropriate age classes include sapling and mature shrubs. Seedling and decadent shrub age classes are not considered appropriate for salvage and transplant. Sod comprised of predominantly native wetland herbaceous species is also suitable for salvage and transplant.

Salvage Type 1: Sod Salvage

This salvage type is present primarily at the downstream end of the assessment area in SAA IV where the backwater effect of Milltown dam supports larger communities dominated by sedges, wetland grasses, and wetland forbs, and where weed cover is relatively low. Most herbaceous plant communities upstream of the SAA's are heavily infested with invasive species reducing their potential for sod salvage. The primary plant communities/dominance types with potential for sod salvage include; CARUTR (4), Drier Sedge (5), and ELEPAL (8). Salvaged wetland sods will be placed along the newly constructed channel banks to provide stability and reduce colonization of weeds.

Salvage Type 2: Live willow cutting sources

Willow cutting sites occur throughout the project area where willow density is moderate to high. Mowing or cutting back the willow community one to two years before harvesting will stimulate new shoot growth that can be used for willow cuttings and stakes. The primary plant communities/dominance types with potential as live willow cutting sources include: SALEXI (6), ALNINC (10), Disturbed willow (13), SALEXI Young (21), and SALEXI/PHAARU (25). Live willow cuttings will be used in bioengineering structures to be installed along the channel, and in created floodplain wetlands.

Salvage Type 3: Mature shrub salvage

In general, SALEXI (11) and ALNINC (10) communities mapped within the assessment area provide opportunities for mature shrub root salvage and transplant. Sandbar willow communities are common throughout the area and are suitable for root salvage wherever the understory is not dominated by reed canarygrass. Alder communities occur primarily upstream of the SAA's and outside of the estimated extent of construction disturbances. All plant communities with a shrub understory will provide some opportunity for plant salvage from within construction impact limits. Mature native shrub root salvage should

be maximized from within construction impact limits to the extent possible. Salvaged shrubs should be directly transplanted to appropriate elevations along the new channel.

Weed Areas

Weeds dominate large areas of the assessment area. The downstream end of the assessment area (SAA IV and V) is influenced by the backwater effect of the dam and has large amounts of reed canarygrass and smaller infestations of Canada thistle and musk thistle. The upstream end of the assessment area (CFR 3a-c) has areas with high cover of weedy species adapted to drier conditions. Weeds and invasive species within these drier areas include tansy, leafy spurge, Dalmatian toadflax, spotted knapweed, and cheatgrass. Monotypic stands of reed canarygrass are common along channel margins and mid-channel bars throughout the assessment area. As described earlier, some infestations were mapped as separate dominance types due to the extent of their infestations. These types include PHAARU (11) and DRY GRASS/TANVUL (12) and are shown on the plant community map (Appendix A, Map 1). These weed infestations, along with other weed concern areas, are also shown on a separate map (Appendix A, Map 2).

Reed canarygrass and tansy are the predominant weed species in the project area. These species infest large areas and are capable of rapid spread and aggressive colonization. Both species will be difficult or impossible to eradicate from the site because upstream seed sources are abundant, and the river's natural deposition patterns result in areas of exposed substrate where weedy species can easily colonize and spread. The primary use of weed data will be to inform final design to minimize the further spread of these species. A weed management plan including specific notes on infestations and recommended weed management measures before, during and after construction will be included as part of the FRP.

Revegetation Planning Analysis

The data described within this report were collected to support development of the FRP. A map of existing vegetation communities provides information that will inform final design in ways we have described above. However, this information will be most useful when combined with other data sets and spatial data layers such as:

- Soil characteristics (by MSU soil data point number)
 - Soil textural class and pH
 - Soil profile descriptions
 - Depth to groundwater
 - Depth to alluvium (soil depth)
 - Presence/absence of mine tailings
- State soil survey polygons
- Topography and channel cross-section data
- Existing and proposed channel alignments
- Sediment transport analyses
- Channel geomorphic features

Combining the existing plant community data with additional data layers will make it possible to view which abiotic variables (e.g. substrate, soil moisture, geomorphic position, proximity to the active channel, elevation relative to channel hydraulic features) are associated with which plant communities. Conversely, from a design perspective, these relationships can then be used to guide floodplain grading and substrate placement to create conditions that will most likely support desired plant communities in the restored floodplain. Upstream from the SAA's, where existing floodplain vegetation will remain intact, the existing plant community map shows locations where existing mature woody vegetation would provide deep, binding root mass and thus form a stable outer bank for the restored channel.

It is important to note that the plant communities described in this data summary report do not necessarily represent desired plant communities that will be included as part of the FRP. Out of the 27 plant communities described here, perhaps only six or seven will be targeted as part of the final design (many of the others are either highly disturbed or supported by conditions that will not persist after dam removal). As the design process advances, other riparian and wetland plant communities occurring in the upper Clark Fork basin or along the Blackfoot River will likely be included as target plant communities for the Milltown Dam restoration project.

Because this is a data summary report, analysis has not been completed, and these data should be considered as relatively raw. For purposes of design and planning, plant communities described here may be lumped together, and these data will be interpreted in light of other data sets. These data as presented here should not be interpreted as representing final designs or plans.

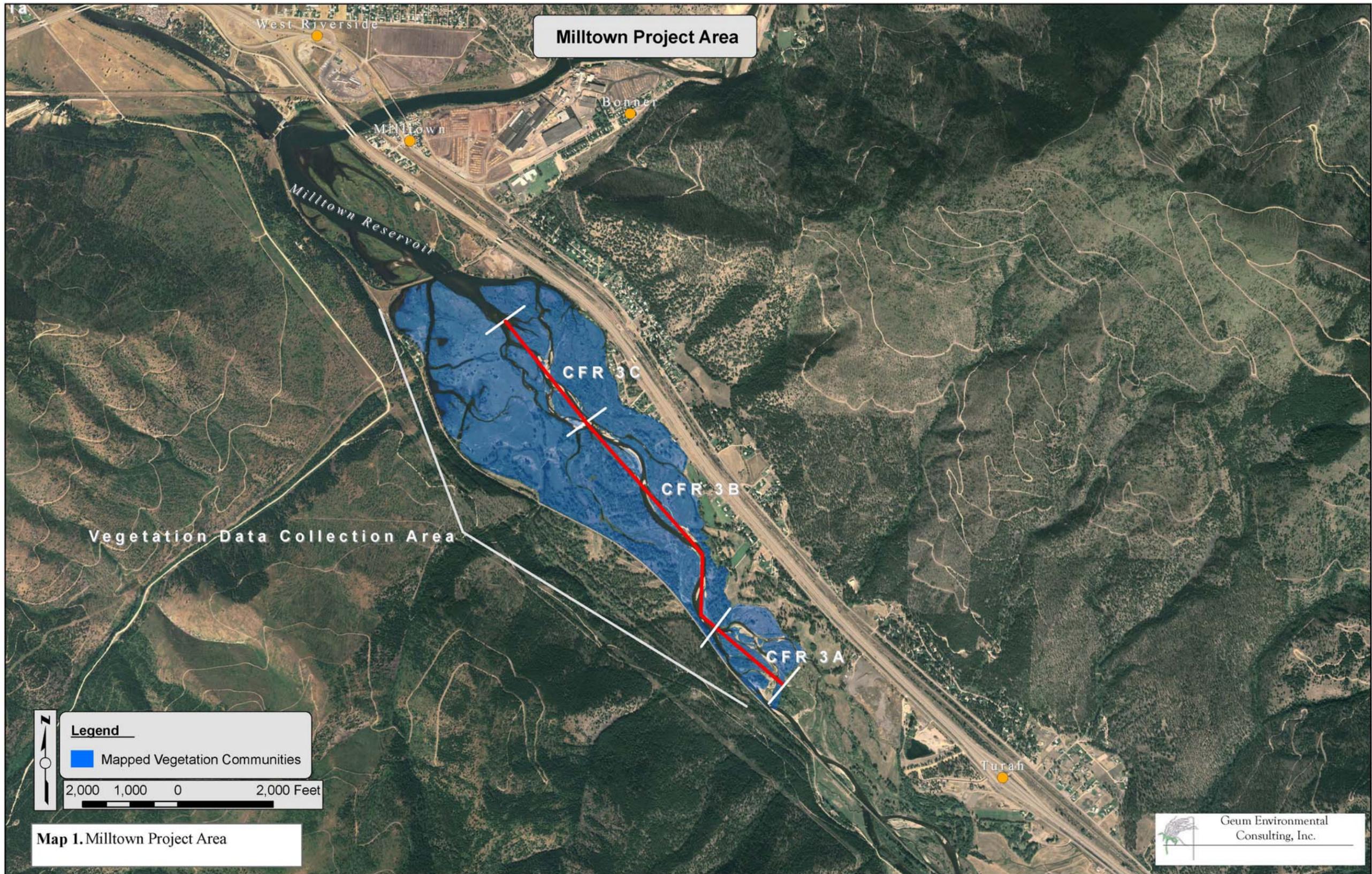
Literature Cited

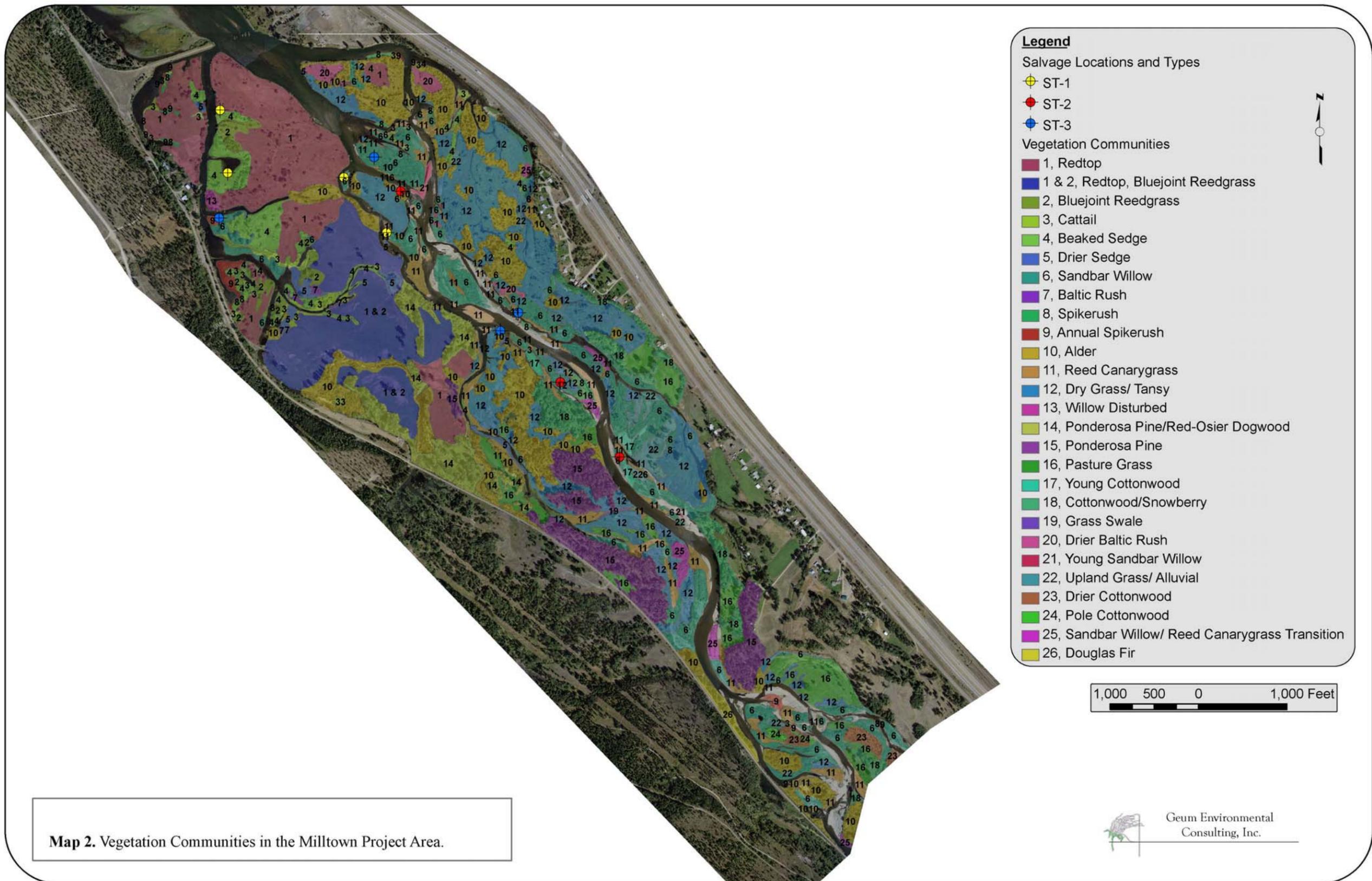
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Appendix A: Vegetation Community, Weed and Salvage Maps







Map 3. Weedy Vegetation Communities in the Milltown Project Area.



Appendix B: Vegetation Community Descriptions

ID	Vegetation Community	Hansen Type ¹	Description	Floodplain Location	Hydrologic Indicators	Dominant Plant Species ²	Weeds and Invasive Species	Salvage Potential ³	Photographs
1	AGRSTO <i>Agrostis stolonifera</i> (Redtop)	Redtop C.T.	Herbaceous plant community dominated by redtop. Occurs at highest topographic elevations within the southern floodplain in SAAs IV and V.	Generally located in cleared areas between floodplain ponds and forested riparian plant communities. Occur directly along river on the west side and in small patches on the east side.	None observed-this plant community typically occurs on drier portions of the floodplain.	Redtop; Kentucky bluegrass and high cover of a Clover species in communities south side of the river.	Musk thistle; Pig weed; Canada thistle; Black medic; Pasture grasses also occur in this community in small amounts.	Very little salvage potential occurs within this plant community. Areas with higher abundance of sedges and wetland forbs may be suitable as sod salvage.	 (background)
2	CALCAN <i>Calamagrostis canadensis</i> (Bluejoint reedgrass)	Bluejoint Reedgrass H.T.	Wetter grass community with low occurrence of forbs located on southern floodplain. Transition community between AGRSTO (drier) and drier sedge communities (wetter).	Occur away from main channel within floodplain. Occur at a higher topographic position, above sedge and willow communities, but lower than AGRSTO community.	Soils likely saturated for a short period during the growing season.	Bluejoint reedgrass and Redtop.	Musk thistle and Common tansy (low cover of both).	Very little salvage potential occurs within this plant community. Areas with higher abundance of sedges and wetland forbs may be suitable sod.	 (transition between foreground and background)
3	TYPLAT <i>Typha latifolia</i> (Common cattail)	Common cattail H.T.	Herbaceous wetland plant community typically dominated by monotypic stand of cattail with low abundance of wet forbs and occasionally reed canarygrass.	Along water line of side channels and backwater areas of standing or slow moving water. Low lying areas of the floodplain in SAAIV at margins and within standing water. North side of channel community occurs in small floodplain depressions and along side-channels.	Inundated, saturated soils typical of vegetation community.	Common cattail; Unbranched bur-reed and Lesser duckweed.	Reed canarygrass invading drier margins in some locations.	Limited salvage potential.	 (foreground and left edge of photo)
4	CARUTR <i>Carex utriculata</i> (Beaked sedge)	Carex rostrata H.T.	Dense herbaceous communities with lower species diversity.	Along side channels or in backwater areas with standing or slow moving water above the water line.	Inundated, saturated soils typical of vegetation community.	Beaked sedge; American mannagrass; and Common cattail.	Reed canarygrass present in trace amounts, may be increasing in some communities.	Sod salvage potential in most of these communities.	 (in foreground along right edge of photo)
5	Drier Sedge (<i>Carex</i> sp.)	Carex rostrata H.T.	Transitional community between grass and (CARUTR). Typically occurs as small patches between other communities.	Along side channel or backwater areas higher than the CARUTR wetter sedge communities.	Short periods of inundation possible, saturated soils typical of vegetation community.	Bebb's sedge; Yellow sedge; Saw-beaked sedge and some areas with high cover of Common spikerush.	Low weed cover.	Most of this community type has potential for use as sod salvage.	

ID	Vegetation Community	Hansen Type ¹	Description	Floodplain Location	Hydrologic Indicators	Dominant Plant Species ²	Weeds and Invasive Species	Salvage Potential ³	Photographs
6	SALEXI <i>Salix exigua</i> (Sandbar willow)	Sandbar willow C.T.	Sandbar willow communities along the main channel are typically early to mid-successional. Late successional communities occur outside the main channel in areas of the floodplain that are not regularly disturbed by seasonal flooding.	Occur on point bars, mid channel bars, and other recent alluvial deposit areas. Also occur in some wetter areas of the floodplain.	Sediment deposits, debris accumulation typical with saturated soils occurring in some floodplain communities.	Sandbar willow and Redtop.	Reed canarygrass and Common tansy cover ranges from 80% to 100% in some places along channels. Floodplain communities have Canada thistle, common tansy, common mullein, climbing nightshade, Common hound's tongue, Musk thistle in small amounts.	Live willow cutting potential in areas with dense mid to late successional stands. Mature shrub salvage potential in areas with low weed cover.	
7	JUNBAL <i>Juncus balticus</i> (Baltic rush)	Baltic rush C.T.	Transitional community at the drier end of the hydrologic spectrum. Weed cover is higher in portions of the southern floodplain.	Mid elevation positions on the floodplain.	None in higher elevation locations of the floodplain, soils may be saturated during some of the growing season, JUNBAL communities are wetter on the north side of the river.	Baltic rush, Bluejoint reedgrass, Musk thistle, and Tufted hairgrass.	Musk thistle and Canada thistle.	Low to no potential for sod salvage.	
8	ELEPAL <i>Eleocharis palustris</i> (Common spikerush)	Common spikerush H.T.	Monotypic stands of Common spikerush at and just above the water line of side channel and some backwater areas. Typically above the annual Common spikerush community and transitioning to a wide range of other communities.	Low elevations, above the ELESPP Annual community along side channels and in backwater areas.	Inundated, saturated soils typical of vegetation community.	Common spikerush monotype.	No weeds within, but small stands may be adjacent Reed canarygrass communities along channels.	Some sod salvage potential where communities are large enough and where adjacent plant communities have low weed cover.	 (bottom right)

ID	Vegetation Community	Hansen Type ¹	Description	Floodplain Location	Hydrologic Indicators	Dominant Plant Species ²	Weeds and Invasive Species	Salvage Potential ³	Photographs
9	ELESPP Annual <i>Eleocharis</i> spp. (annual spikeseedge)	Common spikeseedge H.T.	Monotypic stands in areas of slow moving water that are typically inundated with shallow water through much of the growing season and characterized by fine textured substrate.	Occur at low elevations, along channels and in areas of shallow standing water.	Vegetation community is typically seasonally inundated.	Annual spikerush species (annual, may be Beautiful spikeseedge, <i>Eleocharis bella</i>).	No weeds, but adjacent to Reed canarygrass communities in some areas.	Low salvage potential, annual plant community only.	 (open area center of photo)
10	ALNINC <i>Alnus incana</i> (Mountain alder)	Mountain alder C.T.	Alder cover varies in mapped areas, but is typically around 50%. Community represents shrub dominated areas within the floodplain and particularly occurs in small clumps or along off-channel springs.	Along side channels, backwaters and around areas of ponded water.	Surface water, saturated soil, sediment deposits, debris accumulations, water stained leaves typical of vegetation community.	Mountain alder, Red-osier dogwood, birch and sedges in less disturbed communities. High cover of Western snowberry in ALNINC communities on north floodplain, at higher elevation or sites with more draining soils.	High cover of Canada thistle in disturbed communities on the southern floodplain, Climbing nightshade, and Common tansy also present.	Most alder is mid to late age class. Root salvage potential of alder and birch in areas with low weed cover.	 (photo background)
11	PHAARU <i>Phalaris arundinacea</i> (Reed canarygrass)	Reed canarygrass H.T.	Monotypic or low diversity herbaceous communities.	Wide range of topographic positions, typically wetter end of the floodplain spectrum in both newly deposited alluvial areas and on the floodplain with developed mineral soils.	Surface water, saturated soils, sediment deposits, debris accumulation, water stained leaves typical of vegetation community.	Reed canarygrass; in areas with lower cover of Reed canarygrass there is young sandbar Willow, Wild licorice and Goldenrod.	Reed canarygrass, Canada thistle and Leafy spurge.	None; other areas with high cover of Reed canarygrass should not be used as sod salvage.	 (along channel banks)
12	Dry grass/ TANVUL <i>Tanacetum vulgare</i> (Common tansy)	Western snowberry C.T.	Typically a herbaceous community with very high (80% or higher) cover of tansy.	Higher floodplain locations with drier soils during the growing season. Occupies a similar position as the pasture grass (16) community and may be a weedy state of the same plant community.	None present, occur at higher topographic locations.	Common tansy with native species present including White sagebrush, Wild licorice, Common yarrow, Goldenrod, and Western snowberry present in small amounts with decadent alder present in one community.	Common tansy, Dalmatian toadflax, Leafy spurge, Reed canarygrass, Common mullein, Cheatgrass, Spotted knapweed, Canada thistle, and smooth brome.	No salvage available.	
13	Disturbed willow <i>Salix</i> sp.	Pacific willow C.T.	Mix of golden willow and other tree/shrub willow species.	Located on the south side of the river, east side of Deer Creek.	Saturated soils typical of vegetation community.	Redtop, Golden willow or Pacific willow; western snowberry, red-osier dogwood, Wood's rose, red raspberry, prickly currant.	Common tansy, common mullein, and Canada thistle.	Salvage of younger age class shrubs.	

ID	Vegetation Community	Hansen Type ¹	Description	Floodplain Location	Hydrologic Indicators	Dominant Plant Species ²	Weeds and Invasive Species	Salvage Potential ³	Photographs
14	POPTRI/ CORSTO <i>Populus trichocarpa</i> / <i>Cornus stolonifera</i> (Black cottonwood/ Red-osier dogwood)	Black cottonwood/ Red-osier dogwood H.T.	Mature and sapling cottonwood with a diverse shrub understory.	On the floodplain occur at mid elevations and appears to be associated with low water table or backwater areas.	Saturated soils typical of vegetation community.	Black cottonwood, Reed canarygrass, Western snowberry, Red-osier dogwood, Common tansy and Mountain alder.	Reed canarygrass, Common tansy, Canada thistle, Quackgrass, and Climbing nightshade.	Younger age class shrubs such as alder and dogwood could be root salvaged, but cover of these species of salvageable size is low.	
15	PINPON <i>Pinus ponderosa</i> (Ponderosa pine)	Ponderosa pine/Red-osier dogwood H.T.	Forested communities dominated by Ponderosa pine, some with Black cottonwood or Quaking aspen and with moderate shrub cover in the understory.	Occur in drier, higher floodplain positions ranging from the edges of the floodplain to near the channel.	None present, occur at higher topographic locations.	Ponderosa pine, Common tansy, Western snowberry, Redtop and some decadent Douglas hawthorne in one community and a few Red-osier dogwood along a backwater channel on the north side.	Common tansy and Smooth brome.	Because community represents mature vegetation, preservation of these areas may be desired.	
16	Pasture Grass	Upland site	Herbaceous communities dominated by pasture grasses and weeds on the south side of the river. Herbaceous communities dominated by quack grass on the north side of the river. Occupies similar landscape position as TANVUL communities but less weed cover.	Higher floodplain terraces with better drained soils outside of the active floodplain and typically located in areas with mineral soil (not alluvium).	None present, occur at higher topographic locations.	Timothy (south side of the river), Quackgrass (north side of the river), Kentucky bluegrass	Spotted knapweed, Dalmatian toadflax, Cheatgrass, Common mullein, and Common tansy.	Due to high weeds, no salvage potential.	
17	POPTRI/ young <i>Populus trichocarpa</i> (Black cottonwood)	Black cottonwood/ recent alluvial bar C.T.	Early successional community growing on exposed cobble. On the north side of the river, Black cottonwood cover is lower and weed cover is higher.	Vegetation community forms on newly formed or recently scoured/deposited surfaces along the main channel or larger side channels in the active floodplain.	Sediment deposits, debris accumulation, water stained leaves, and seasonally inundated during runoff.	Black cottonwood (seedling and sapling), Reed canarygrass and Kentucky bluegrass.	Reed canarygrass, Common tansy, Canada thistle, Dalmatian toadflax, and Quackgrass.	Low potential for root harvest, but some available where weed cover is low.	 

ID	Vegetation Community	Hansen Type ¹	Description	Floodplain Location	Hydrologic Indicators	Dominant Plant Species ²	Weeds and Invasive Species	Salvage Potential ³	Photographs
18	POPTRI/ SYMOCC <i>Populus trichocarpa/Symphoricarpos occidentalis</i> (Black cottonwood/ Western snowberry)	Black Cottonwood / Western snowberry C.T.	Drier cottonwood communities typically outside the active floodplain with mostly mature cottonwood.	Drier, better drained, higher topographic locations, ranging from near the bank of the main channel to the outside edge of the active floodplain.	None present, occur at higher topographic locations.	Black cottonwood, Common tansy, and Western snowberry.	Common tansy, Canada thistle, Smooth brome, and Reed canarygrass.	No potential for salvage was observed.	
19	Grass swale	Redtop C.T.	Old oxbow features that may be activated during runoff, but maintain wetland characteristics during most of the growing season. Community is primarily herbaceous with some shrub regeneration.	Low elevation, old oxbow features typically outside the active floodplain, but may be activated during runoff some years.	Some areas of standing water, saturated soils, water stained leaves typical.	Redtop, Quackgrass, Kentucky bluegrass, Timothy, Sandbar willow and Mountain alder with low cover.	Leafy spurge, Quackgrass, and Reed canarygrass.	Sod salvage from areas of low weed cover is available.	
20	Dry JUNBAL <i>Juncus balticus</i> (Baltic rush)	Kentucky bluegrass C.T. Western snowberry C.T.	Located on the north side of the river. Mid-to late-successional community	Higher, drier portions of the floodplain, outside of the active floodplain	None present, occur at higher topographic locations.	Kentucky blue grass, Redtop, Baltic rush, and Quackgrass.	Leafy spurge and Common tansy.	No potential for salvage was observed.	
21	SALEXI young <i>Salix exigua</i> (Sandbar willow)	Sandbar willow C.T.	Early successional community colonizing new alluvial features along the main channel and larger side channel, substrate is typically alluvium.	Relatively recently formed or scoured bars along the main channel or larger side channels.	Sediment deposits, debris accumulation, water stained leaves, and seasonally inundated during runoff typical.	American speedwell, Sandbar willow, small amounts of Black cottonwood, typically pole.	Reed canarygrass, Canada thistle, Common tansy, and Leafy spurge.	Willow cuttings in the future, root salvage where sediment contamination is low.	

ID	Vegetation Community	Hansen Type ¹	Description	Floodplain Location	Hydrologic Indicators	Dominant Plant Species ²	Weeds and Invasive Species	Salvage Potential ³	Photographs
22	Upland grass alluvial	Upland	Herbaceous upland plant communities located on primarily cobble substrates.	Drier, drained low to mid elevation floodplain located outside of the active floodplain.	Sediment deposits and debris accumulations (may be old indicators) typical.	Canada bluegrass, Quackgrass, and Kentucky bluegrass.	Quackgrass, Common mullein, Dalmatian toadflax, and Spotted knapweed.	No potential for salvage was observed.	
23	POPTRI drier <i>Populus trichocarpa</i> (Black cottonwood)	Black cottonwood/ western snowberry C.T. Black cottonwood/ herbaceous C.T.	Black cottonwood overstory with Sandbar willow as the dominant shrub species and weedy herbaceous community in the understory.	Drier, drained mid to high elevation floodplain. Primarily on the north side of the river.	None present, occur at higher topographic locations.	Black cottonwood, Sandbar willow, Common tansy, Redtop, and Reed canarygrass.	Common tansy, Reed canarygrass, Spotted knapweed, and Dalmatian toadflax.	None, willow density is typically too low for collecting willow cuttings.	
24	POPTRI pole <i>Populus trichocarpa</i> (Black cottonwood)	Black cottonwood/ recent alluvial bar C.T.	Mid-successional cottonwood community on older alluvial surfaces near and in the active floodplain.	Primarily on the island at the upstream end of the project area, in the interior of the island.	Saturated soils during parts of the growing season, some debris accumulation and sediment deposits typical.	Black cottonwood, Reed canarygrass, Redtop, some Red-osier dogwood and Sandbar willow.	Reed canarygrass, Canada thistle, Common tansy, Spotted knapweed, and Dalmatian toadflax.	Low to none for root harvest because of high weed cover and low to none for willow cuttings because of low density	
25	SALEXI/ PHAARU transition <i>Salix exigua/ Phalaris arundinacea</i> (Sandbar willow/Reed canarygrass)	Sandbar willow C.T.	This does not represent a distinct community type, but rather a distinct pattern representing the transition areas between PHAARU to SALEXI and likely represents encroachment of PHAARU into SALEXI stands.	Common along the margins of the main channel, mid-channel bars and islands and along side channels within the active floodplain.	Sediment deposits, debris accumulation, water stained leaves, seasonally inundated during spring runoff typical.	Reed canarygrass, Redtop, Sandbar willow, Goldenrod, and Curlydoc.	Reed canarygrass, Quackgrass, and Common tansy.	Willow cutting salvage from these areas should be done.	
26	PSEMEN <i>Pseudotsuga menziesii</i> (Douglas-fir)	Douglas fir/ Red-osier dogwood H.T.	Present in only one location within assessment area where outer meander bend is located against sloping upland terrace. Consists of upland plant communities.	Along the southwest edge of an outside bend of the main channel, elevation higher than adjacent pine and cottonwood communities; channel flows against relatively steeper slope along southwest channel.	None present, occur at higher topographic locations.			Vegetation community only occurs in one area which is not likely to be disturbed during construction activities.	

ID	Vegetation Community	Hansen Type ¹	Description	Floodplain Location	Hydrologic Indicators	Dominant Plant Species ²	Weeds and Invasive Species	Salvage Potential ³	Photographs
27	POPTRE <i>Populus tremuloides</i> (Quaking aspen)	Ponderosa pine/ Red-osier dogwood H.T.	Present upstream of assessment area in CFR-3 Upstream Study Area along right bank.	Located along the main channel along an outer bank. Occupies similar location as POPTRI and PINPON plant communities further downstream.	None present, occur at higher topographic locations.	Ponderosa pine, Quaking aspen, Western snowberry, Douglas hawthorne, Common chokecherry, Goldenrod	Common tansy, Reed canarygrass, Hound's tongue, Canada thistle		

¹ Hansen et al. (1995) habitat types and community types are close matches but may not fit all criteria in Hansen et al. because our data were not collected for habitat typing purposes.

² Complete species lists were recorded for each vegetation community, the species provided in this table represent the dominant or defining species for each vegetation community and do not represent all species present.

³ Specific salvage areas identified in this column (e.g. S1-S11) are shown as points on Map-1 in Appendix A.