Rare Plant and Vegetation Surveys of Sacajawea State Park

Pacific Biodiversity Institute

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Executive Summary

Pacific Biodiversity Institute (PBI) conducted a rare plant and vegetation survey of Sacajawea State Park for the Washington State Parks and Recreation Commission (WSPRC). Sacajawea State Park is located near the City of Pasco at the confluence of the Columbia and Snake Rivers in Franklin County. The park covers about 275 acres.

Sacajawea State Park has great historical interest as an important Native American cultural site and popularized stopover of the Lewis and Clark Expedition. Visitation to the park seems to be centered around access to the rivers and experiencing the historical displays made available in the developed areas. There is a long history of human use and disturbance at Sacajawea State Park and most of the park's plant communities are highly disturbed and dominated by non-native plants.

Thirty-one vegetation community polygons were mapped in the park, consisting of seven different plant association or land cover types. Most polygons were represented by disturbed land cover types. Vegetation community conditions are very poor within the park.

124 plant species were encountered within the park. Of these 57% were non-native. This is one of the highest percentages of non-native plants and the greatest number of state listed noxious weeds of any of the state parks surveyed by PBI personnel in the last five years

Restoration opportunities abound at the park, but may be a low priority from a statewide perspective given the landscape context of the park (surrounded by urban development) and the abundance of a wide variety of persistent, exotic plants that can make restoration efforts challenging. It will be impossible to restore the park to historical conditions because of the elevation of the water table caused by the Columbia River dams.

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Introduction

PBI conducted a rare plant and vegetation survey of Sacajawea State Park for WSPRC. Sacajawea State Park is a roughly 270 acre park located at the intersection of the Snake and Columbia Rivers in the City of Pasco in Franklin County, Washington. The park has great historical interest as an important Native American cultural site and popularized stopover of the Lewis and Clark Expedition. There is a long history of human use and disturbance at Sacajawea State Park and most of the park's plant communities are highly disturbed and dominated by non-native plants.

Survey Conditions and Survey Routes

The project area was surveyed for rare plants on April 7 by three botanist/ecologists. The area was surveyed again by one botanist/ecologist for rare plants and vegetation community conditions on June 7, and October 25, 27, 29, 2008. Survey routes are noted in Figure 1. We accessed various areas of the park by maintained roads and trails. A few areas were densely covered by tumbleweeds making it difficult to enter and view the ground.

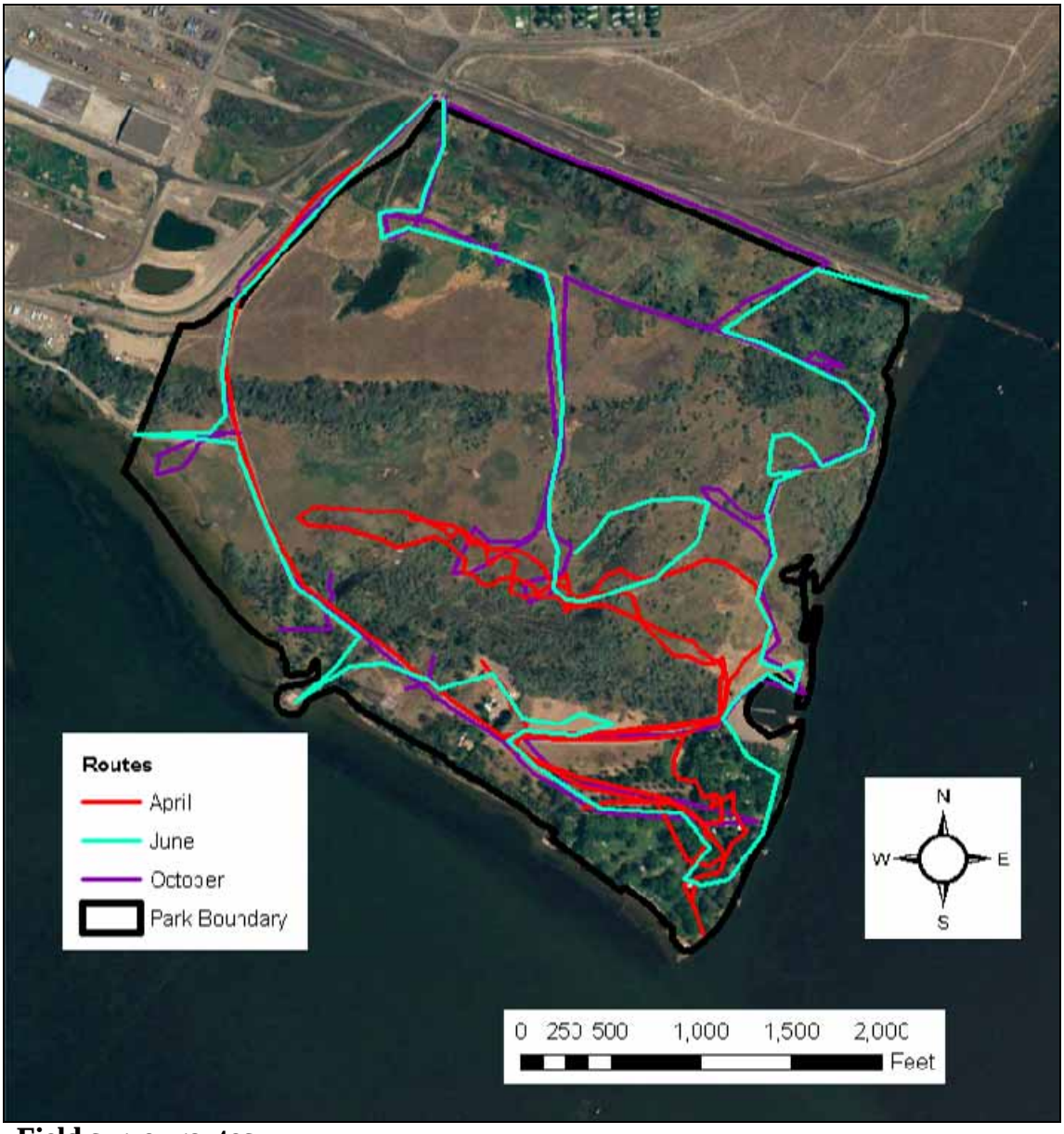


Figure 1. Field survey routes.

Vegetation Communities

Methods

Pre-field reviews of literature, GIS data, and remote sensing data were conducted early in the season. Maps, GIS data, and remotely sensed data were assembled together into an ArcMap GIS project covering the project area. Topographic maps and digital elevation models (DEMs) were also assembled. Using the gathered spatial data resources, discrete vegetation polygons meant to represent specific plant communities or mosaics of plant communities were manually delineated by staff ecologists as polygon features in an ESRI shapefile format.

Parks were then visited several times during the field season to assure observation of both early and late-blooming plant species. The first visit was primarily a reconnaissance of the project area, meant to create a basic plant list for the park and to conduct initial rare plant surveys for early bloomers. Later visits focused on collecting field data for the vegetation polygon map and adding more species to the plant list during different times of the season. Before the field season was complete, all vegetation polygons that could be accessed safely were visited and field data was collected.

Plant community data was recorded on a form initially developed by WSPRC (Appendix A). Recorded data included a wide variety of information about the vegetation composition, environmental characteristics, disturbance history and other notes for each polygon. Each polygon was rated for its overall ecological condition according to a simple ranking system (Appendix B). Vegetation community and land cover classifications were assigned using information and keys from standard literature sources cited in the Reference section of this document (Bourgeron and Engelking 1994, Clausnitzer and Zamora 1987, Crawford 1999, Crawford 2003, Daubenmire 1970, Kagan et al 2000, Kovalchik and Clausnitzer 2004, Lillybridge et al 1995, NatureServe 2008). In some cases, the existing plant community descriptions were not adequate in describing existing vegetation associations. In these cases, alternative vegetation communities or plant associations were created.

During field visits survey personnel had printed and digital maps available that included high-resolution aerial imagery. Digital maps were accessed in the field using ArcPad software (ESRI 2007) running on pocket PC, GPS enabled devices. Use of ArcPad allowed all survey routes to be mapped on a GPS recorder in real time, and allowed for viewing and editing data directly from field locations, resulting in field-verified attributes for the vegetation polygons.

Once gathered, the field data was edited and entered into a Microsoft Access database and linked to the vegetation polygon geodatabase. Further refinements and editing of the vegetation data stored in the personal geodatabase was made based on information collected in the field with ArcPad.

Historical Vegetation

The historical vegetation of Sacajawea State Park most likely consisted of dry Columbia Basin shrub-steppe and dunal communities, with some small bands of riparian vegetation along the river. The landscape of the park, located at the intersection of the Snake and Columbia Rivers, was extensively used by Native Americans as an important trading and cultural site. It is unknown how Native American use of the park's landscape changed or affected native vegetation communities.

More recently, modern development, agricultural land conversion, and reservoir flooding have had a heavy impact on the park's vegetation communities. Euro-American settlement converted much of the dry shrub-steppe lands into agricultural fields. Some of the shrub-steppe and dune communities are still seen in a historical aerial photo from the 1930s (Figure 2). Also visible in this photo are agricultural fields within the park area.

Figure 2. Oblique aerial photo of the park looking from the southeast across the Columbia River. Photo date is assumed to be from the 1930s.

Additional significant alteration of vegetation within the park's landscape came during the period of dam construction on the Columbia River. The Columbia River dams elevated the water table considerably and resulted in wetlands forming in areas that were historically dry. In addition, considerable dredging and landscape reworking was done within the park to develop parking lots and recreational features. These features are visible in another oblique aerial photo of the park estimated to be from the 1970s (Figure 3).

Figure 3. Oblique aerial photo of the park looking from the southwest across the Columbia River. Photo date is assumed to be from the 1970s.

The wetlands created by the dredging, landscape reworking, and artificially elevated water table have continued to develop and were mapped as part of the National Wetland Inventory program in the 1980s (Figure 4).

Figure 4. National Wetland Inventory Map depicting wetlands at Sacajawea State Park in the 1980s.

The result of all this human disturbance and development activity at the park is that very little of the park's current vegetation communities resemble historic conditions. Nearly all the vegetation communities at the park now contain very significant amounts of non-native species and the ecological composition of native species is highly altered from historic conditions.

Results

Vegetation Mapping

A total of 31 vegetation community polygons were mapped and visited in Sacajawea State Park (Figure 5). Within these polygons a total of 7 vegetation community/land cover classes were attributed as primary, secondary, or tertiary community types (Table 1 and Figure 6). The GIS database created for this project can be queried to show the more complex mixtures of vegetation communities that occur in many polygons. Appendix D lists the attributes for each polygon in the project area.

Figure 5. Vegetation community polygons overlaid onto an aerial photo of the park.

Table 1. Plant associations and land cover types of Sacajawea State Park. (See Appendix C for definitions to Global Status.)

Plant Associations	Scientific Names	Common Names	Authority	Global Status
JUARL	*Juncus arcticus ssp. littoralis*	mountain rush	Crawford 2003	G5
SCTA2	*Schoenoplectus tabernaemontani*	softstem bulrush	Crawford 2003	G5
SCTA2-TYLA	*Schoenoplectus tabernaemontani - Typha latifolia*	softstem bulrush - broadleaf cattail	Crawford 2003	G5
Developed	Developed	developed	PBI	NR
Disturbed forested wetland	Disturbed forested wetland	disturbed forested wetland	PBI	NR
Disturbed shrub/grassland	Disturbed shrub/grassland	disturbed shrub/grassland	PBI	NR
Disturbed wetland	Disturbed wetland	disturbed wetland	PBI	NR
Water	water	water	PBI	NR

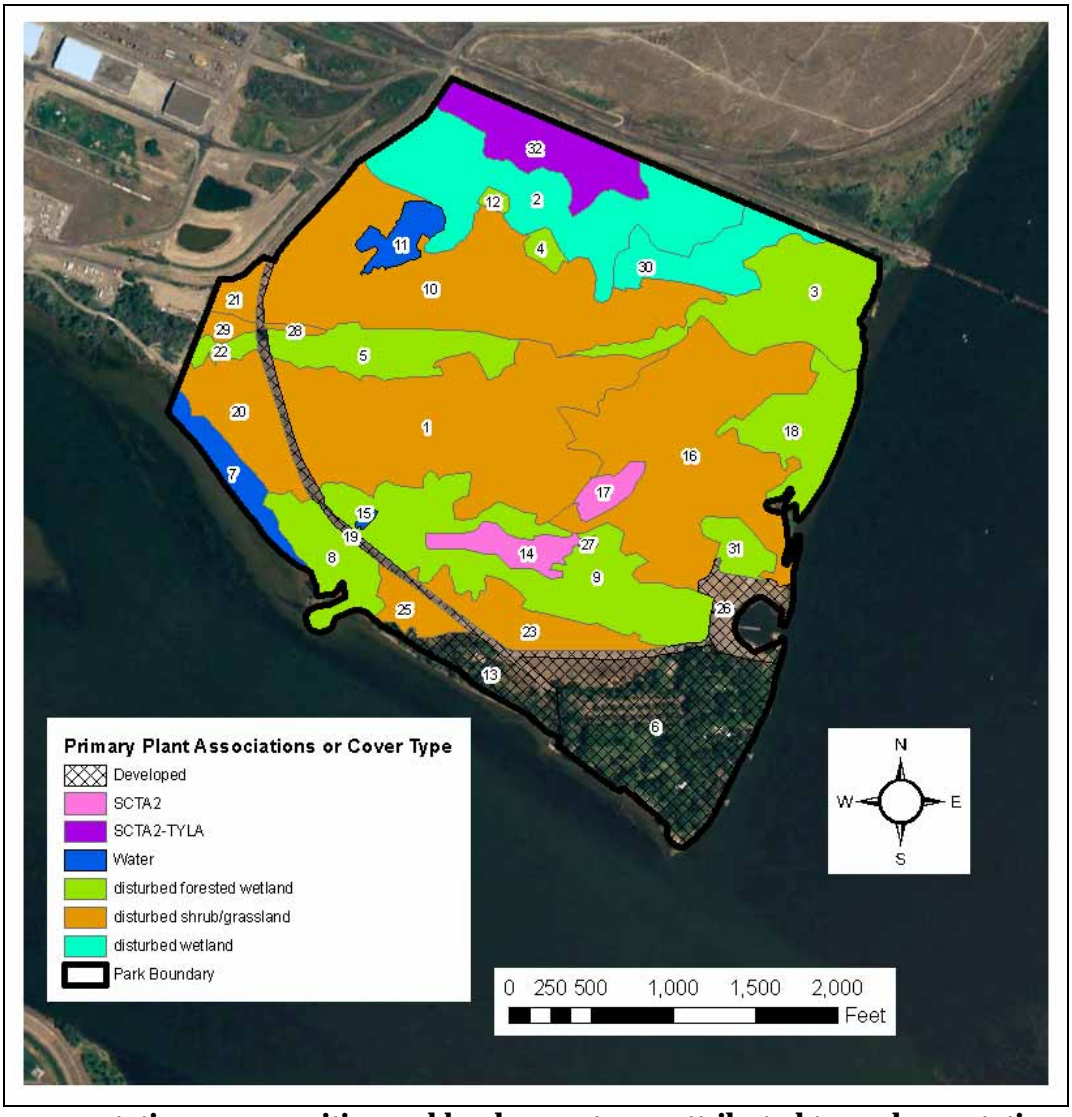


Figure 6. Primary vegetation communities and land cover types attributed to each vegetation polygon

These vegetation community/land cover types represent our best determination of how the existing vegetation and land cover patterns observed within the park's landscape relate to vegetation communities, plant associations, and/or land cover categories previously described in existing reference literature (see Appendix B for description of Global Status codes). Table 2 illustrates how existing vegetation patches observed and mapped by PBI were assigned to a particular vegetation community/land cover classification.

Table 2. Relationship of observed vegetation patches to subsequent vegetation community/land cover classification.[1]

Plant Association or Land Cover Type	Existing Vegetation
Developed	House site
	Parking Area
	Parking Area, Day Use Area, Buildings
	Ranger Station
	Road System
	Tower
Disturbed forested wetland	ACSA2-ELAN-SAEX/COSE16-GLLE3-CYDA-PHAR3-SCTA2-LELA2
	ELAN/CYDA-BASC5-LELA2
	ELAN/CYDA-LELA2
	ELAN/EUOC4-SCTA2-TYLA
	ELAN/SAAM2-LELA2
	ELAN/SCTA2
	ELAN-ROPS/BASC5-LELA2-PHAR3-HOMUL
	PODE3-AIAL/BRT3-LELA2
	PODE3-ELAN-SAAM2
	PODE3-ELAN-SAAM2/ACRE3-BRTE
	PODE3-ELAN-SAAM2/LELA2-ELLAL-CIAR4
	PODE3-ELAN-SAAM2/ROWO/PHAR3
	PODE3-ELAN-SAEX
	PODE3-SAAM2-SAEX/CIAR4-ELAN/PHAU7-LELA2-BASC5
	SAEX/ACRE3-BRTE
	TARA-ELAN-SAAM2/CYDA-BASC5-LELA2-BRTE-THIN6
Disturbed shrub/grassland	ACMI2-SPCR-BRTE
	ACRE3-BRTE-SPCR
	AGCR-BRTE-ACMI2
	ARTR2/BRTE-SPCR
	ARTR2/LELA2-BRTE
	BRTE-BASC5-ASSP-SPCR
	BRTE-SPCR-BASC5-SAKA
	BRTE-SPCR-EQHY
	BRTE-SPCR-LELA2
	CHVI8-ERNA10/BRTE-HECO26-ACMI2
	CYDA-THIN6-BRTE-CHJU

[1] Although most Existing Vegetation patches can be intuitively assigned to a corresponding Vegetation Community or Plant Association, some existing vegetation assignments are less intuitive and require a more in-depth understanding of the vegetation conditions than what is presented in this table. Such in-depth information is better provided in Appendix D. There is not a direct one-to-one relationship between Existing Vegetation patch descriptions and the Vegetation Community or Plant Association type. Diverse sets of variables such as growth form canopy cover, ecological condition, historic conditions, and effects of natural and human caused disturbances must also be considered.

Plant Association or Land Cover Type	Existing Vegetation
Disturbed shrub/grassland	ELWA2-BRTE
	ERNA10/AGCR-BRTE-ACMI2
	LELA2-BRTE
	LELA2-BRTE-SAKA
Disturbed wetland	BASC5-LELA2-PHAR3
	CYDA-BASC5-LELA2
	CYDA-BASC5-LELA2-THIN6
	CYDA-EQHY-LELA2-BRTE
	LELA2
	LELA2-BASC5-THIN6
	SCTA2-PHAR3
JUARL	JURAL
SCTA2	SCTA2
	SCTA2-ELCA7
	SCTA2-SCAM6
SCTA2-TYLA	SCTA2-TYLA
	SCTA2-TYLA-EUOC4-APCA
Water	Water

Vegetation Communities

mountain rush – JUARL – G5

This wetland community is described by Crawford (2003). It occurs in very small patches throughout the wetlands of the park, but was mapped as tertiary community in only one polygon on the eastside of the park. Mountain rush forms a dominant herbaceous cover in plant community.

softstem bulrush – SCTA2 – G5

This wetland community is described by Crawford (2003). It is the only native plant community occurring with significant abundance in the park at this time (the SCTA2-TYLA community is closely related and more or less a sub-type of this community). In this community softstem bulrush forms a near mono-culture stand in standing water. Other graminoid species are sometimes present, such as canary reedgrass and chairmaker's bulrush.

softstem bulrush- broadleaf cattail – SCTA2-TYLA – G5

The SCTA2 and TYLA wetland communities are described by Crawford (2003). We have combined these communities into a single community type as they occur deeply interspersed with one another within the park. These communities consist of near mono-culture stands of softstem bulrush and broadleaf cattail in standing water.

Disturbed forested wetland

The disturbed forested wetland land cover classification designates forested and/or tall shrub dominated wetland vegetation patches consisting of eastern cottonwood, Russian olive, saltcedar, and/or silver maple. Understory conditions typically possess high amount of exotic grass and herb cover. A large portion of the park’s landscape is mapped as disturbed forested wetlands.

Disturbed shrub/grassland

This land cover designation represents non-forested/non-wetland vegetation patches within the park that are dominated by exotic and noxious species. Some native species associated with typical shrub-steppe community composition occur in these patches, but exotic species cover is very high in these areas and it

is very possible that the native composition will soon be completely replaced by exotic plants. Most of the areas mapped as this land cover type were highly impacted by agricultural and park infrastructure development. Cheatgrass, broadleaved pepperweed, and Russian thistle are some of the worst exotic and noxious invaders in the disturbed shrub/grassland areas. A very large portion of the park's landscape is mapped as disturbed shrub/grassland.

Disturbed wetland

The disturbed wetland cover type represents non-forested wetland areas in the park dominated by exotic and noxious plants. Broadleaved pepperweed, Bermudagrass, and burningbush are some of the worst exotic and noxious invaders of non-forested wetland sites within the park.

Rare Plant Surveys

Methods

We visited the project area of Sacajawea State Park multiple times throughout the 2008 field season to conduct rare plant surveys. We used the Washington Department of Natural Resources Natural Heritage Program's (DNR NHP) rare plant list to determine the conservation status of vascular plants encountered in the field. We collected plant specimens for later identification when needed. We used a wide range of floras and other plant identification references (e.g. Boersma et al 2006, Flora of North America 1993+, Hitchcock and Cronquist 1973, Hitchcock et al 1955, Hickman 1993, University of Washington Burke Museum Herbarium Vascular Plant Collection, USDA 2008, Washington Natural Heritage Program 2008, Washington Natural Heritage Program. no date, Whitson et al 2000, Wilson 2006).

Field surveys were conducted on April 7, 2008, June 7, 2008, and October 25, 27, and 29, 2008. We looked for rare plants in habitats previously identified as being likely occurrence sites based on DNR NHP rare plant lists and maps of previous sightings in the surrounding area. So as not to miss a rare plant, all vascular plant species encountered during the inventory were identified on site, at base camp in the portable laboratory, or back at our office.

Survey routes were determined based on the desire to cover efficiently a large proportion of the park's area throughout the field season. We surveyed areas of the park more intensively where rare plants are more likely to occur. This method is referred to as the intuitive-controlled method of rare plant surveys (Whiteaker et al. 1998). Survey routes for the rare plant inventory, as well as rare plant locations were recorded either as GPS waypoints and trackpoints, which were later compiled into a single GIS data layer, depicted in Figure 1 (page 5).

Results

Despite diligent searches, we did not observe any rare or watch listed plants within the park. This was expected due to the highly disturbed nature of the vegetation at the park, the abundance of non-native species (nearly 60% of the species total) and the lack of previous rare plant sightings. Habitat conditions are not ideal within the park for rare plant occurrence.

Vascular Plant List for Sacajawea State Park

A total of 124 vascular plant species were identified during the 2008 survey at the Sacajawea State Park property (Table 3). Of these, 70 of the plant species are non-native to the park, accounting for 57% of the total.

Key to Vascular Plant Species Lists

Column 1: "Code": Four-letter plant code as shown on the USDA PLANTS database.
Column 2: Scientific name as shown on the USDA PLANTS database.
Column 3: Common name as shown on the USDA PLANTS database.
Column 4: Status as noxious in Washington State according to WA State Noxious Weed Board.
Column 5: Status as exotic to Washington State according to USDA PLANTS database.

Table 3. Vascular Plants of Sacajawea State Park.

Code	Scientific Name with Author	National Common Name	Family	Exotic
ACGL	Acer glabrum Torr.	Rocky Mountain maple	Aceraceae	
ACPL	Acer platanoides L.	Norway maple	Aceraceae	yes
ACSA2	Acer saccharinum L.	silver maple	Aceraceae	yes
ACMI2	Achillea millefolium L.	common yarrow	Asteraceae	
ACHY	Achnatherum hymenoides (Roem. & Schult.) Barkworth	Indian ricegrass	Poaceae	
ACRE3	Acroptilon repens (L.) DC.	hardheads	Asteraceae	yes
AGCR	Agropyron cristatum (L.) Gaertn.	crested wheatgrass	Poaceae	yes
AGEX	Agrostis exarata Trin.	spike bentgrass	Poaceae	
AIAL	Ailanthus altissima (Mill.) Swingle	tree of heaven	Simaroubaceae	yes
AMAC2	Ambrosia acanthicarpa Hook.	flatspine bur ragweed	Asteraceae	
AMFR	Amorpha fruticosa L.	desert false indigo	Fabaceae	yes
AMTE3	Amsinckia tessellata A. Gray	bristly fiddleneck	Boraginaceae	
APCA	Apocynum cannabinum L.	Indianhemp	Apocynaceae	
ARDR4	Artemisia dracunculus L.	tarragon	Asteraceae	
ARTR2	Artemisia tridentata Nutt.	big sagebrush	Asteraceae	
ASSP	Asclepias speciosa Torr.	showy milkweed	Asclepiadaceae	
ASOF	Asparagus officinalis L.	garden asparagus	Liliaceae	yes
BACA3	Balsamorhiza careyana A. Gray	Carey's balsamroot	Asteraceae	
BASC5	Bassia scoparia (L.) A.J. Scott	burningbush	Chenopodiaceae	yes
BEPO	Betula populifolia Marsh.	gray birch	Betulaceae	yes
BRNI	Brassica nigra (L.) W.D.J. Koch	black mustard	Brassicaceae	yes
BRAR5	Bromus arvensis L.	field brome	Poaceae	yes
BRIN2	Bromus inermis Leyss.	smooth brome	Poaceae	yes
BRTE	Bromus tectorum L.	cheatgrass	Poaceae	yes
CAAT3	Carex athrostachya Olney	slenderbeak sedge	Cyperaceae	
CEDI3	Centaurea diffusa Lam.	diffuse knapweed	Asteraceae	yes
CHMU2	Chenopodium murale L.	nettleleaf goosefoot	Chenopodiaceae	yes
CHJU	Chondrilla juncea L.	rush skeletonweed	Asteraceae	yes
CHVI8	Chrysothamnus viscidiflorus (Hook.) Nutt.	yellow rabbitbrush	Asteraceae	
CIAR4	Cirsium arvense (L.) Scop.	Canada thistle	Asteraceae	yes
CLLU2	Cleome lutea Hook.	yellow spiderflower	Capparaceae	
COAR4	Convolvulus arvensis L.	field bindweed	Convolvulaceae	yes
COCA5	Conyza canadensis (L.) Cronquist	Canadian horseweed	Asteraceae	
COSE16	Cornus sericea L.	redosier dogwood	Cornaceae	
CYDA	Cynodon dactylon (L.) Pers.	Bermudagrass	Poaceae	yes

Code	Scientific Name with Author	National Common Name	Family	Exotic
DEPI	Descurainia pinnata (Walter) Britton	western tansymustard	Brassicaceae	
DIFU2	Dipsacus fullonum L.	Fuller's teasel	Dipsacaceae	yes
DISP	Distichlis spicata (L.) Greene	saltgrass	Poaceae	
DRVE2	Draba verna L.	spring draba	Brassicaceae	yes
ELAN	Elaeagnus angustifolia L.	Russian olive	Elaeagnaceae	yes
ELCA7	Elodea canadensis Michx.	Canadian waterweed	Hydrocharitaceae	
ELCA11	Elymus caninus (L.) L.	bearded wheatgrass	Poaceae	yes
ELLAL	Elymus lanceolatus (Scribn. & J.G. Sm.) Gould ssp. lanceolatus	thickspike wheatgrass	Poaceae	
ELWA2	Elymus wawawaiensis J. Carlson & Barkworth	Snake River wheatgrass	Poaceae	
EPBR3	Epilobium brachycarpum C. Presl	tall annual willowherb	Onagraceae	
EQHY	Equisetum hyemale L.	scouringrush horsetail	Equisetaceae	
ERNA10	Ericameria nauseosa (Pall. ex Pursh) G.L. Nesom & Baird	rubber rabbitbrush	Asteraceae	
ERCI6	Erodium cicutarium (L.) L'Hér. ex Aiton	redstem stork's bill	Geraniaceae	yes
EUOC4	Euthamia occidentalis Nutt.	western goldentop	Asteraceae	
FRAL4	Frangula alnus Mill.	glossy buckthorn	Rhamnaceae	yes
FRLA	Fraxinus latifolia Benth.	Oregon ash	Oleaceae	yes
FRPE	Fraxinus pennsylvanica Marsh.	green ash	Oleaceae	yes
GLLE3	Glycyrrhiza lepidota Pursh	American licorice	Fabaceae	
GRCO	Grindelia columbiana (Piper) Rydb.	Columbia River gumweed	Asteraceae	
HECU3	Heliotropium curassavicum L.	salt heliotrope	Boraginaceae	
HECO26	Hesperostipa comata (Trin. & Rupr.) Barkworth	needle and thread	Poaceae	
HOJU	Hordeum jubatum L.	foxtail barley	Poaceae	
HOMUL	Hordeum murinum L. ssp. leporinum (Link) Arcang.	hare barley	Poaceae	yes
IVAX	Iva axillaris Pursh	povertyweed	Asteraceae	
JUARL	Juncus arcticus Willd. ssp. littoralis (Engelm.) Hultén	mountain rush	Juncaceae	
JUTE	Juncus tenuis Willd.	poverty rush	Juncaceae	
LASE	Lactuca serriola L.	prickly lettuce	Asteraceae	yes
LAMIU	Lamium L.	deadnettle	Lamiaceae	
LELA2	Lepidium latifolium L.	broadleaved pepperweed	Brassicaceae	yes
LEPE2	Lepidium perfoliatum L.	clasping pepperweed	Brassicaceae	yes
LECI4	Leymus cinereus (Scribn. & Merr.) A. Löve	basin wildrye	Poaceae	
LITU	Liriodendron tulipifera L	tuliptree	Magnoliaceae	yes
MACA2	Machaeranthera canescens (Pursh) A. Gray	hoary tansyaster	Asteraceae	
MANE	Malva neglecta Wallr.	common mallow	Malvaceae	yes
MADI6	Matricaria discoidea DC.	disc mayweed	Asteraceae	yes
MELU	Medicago lupulina L.	black medick	Fabaceae	yes
MESA	Medicago sativa L.	alfalfa	Fabaceae	yes
MOAL	Morus alba L.	white mulberry	Moraceae	yes
MYSP2	Myriophyllum spicatum L.	Eurasian watermilfoil	Haloragaceae	yes
NECA2	Nepeta cataria L.	catnip	Lamiaceae	yes

Code	Scientific Name with Author	National Common Name	Family	Exotic
NYOD	Nymphaea odorata Aiton	American white waterlily	Nymphaeaceae	yes
OEPA	Oenothera pallida Lindl.	pale evening primrose	Onagraceae	
OPPO	Opuntia polyacantha Haw.	plains pricklypear	Cactaceae	
PAQU2	Parthenocissus quinquefolia (L.) Planch.	Virginia creeper	Vitaceae	yes
PHAR3	Phalaris arundinacea L.	reed canarygrass	Poaceae	yes
PHLO2	Phlox longifolia Nutt.	longleaf phlox	Polemoniaceae	
PHAU7	Phragmites australis (Cav.) Trin. ex Steud.	common reed	Poaceae	yes
PHMA5	Physocarpus malvaceus (Greene) Kuntze	mallow ninebark	Rosaceae	
PIAB	Picea abies (L.) Karst.	Norway spruce	Pinaceae	yes
PIPU	Picea pungens Engelm.	blue spruce	Pinaceae	yes
PLMA2	Plantago major L.	common plantain	Plantaginaceae	yes
PLPA2	Plantago patagonica Jacq.	woolly plantain	Plantaginaceae	
PLHY3	Platanus hybrida Brot.	London planetree	Platanaceae	yes
POAN	Poa annua L.	annual bluegrass	Poaceae	yes
POBU	Poa bulbosa L.	bulbous bluegrass	Poaceae	yes
POPR	Poa pratensis L.	Kentucky bluegrass	Poaceae	yes
POSE	Poa secunda J. Presl	Sandberg bluegrass	Poaceae	
POBAT	Populus balsamifera L. ssp. trichocarpa (Torr. & A. Gray ex Hook.) Brayshaw	black cottonwood	Salicaceae	
PODE3	Populus deltoides Bartram ex Marsh.	eastern cottonwood	Salicaceae	yes
PONI	Populus nigra L.	Lombardy poplar	Salicaceae	yes
QUEL	Quercus ellipsoidalis E.J. Hill	northern pin oak	Fagaceae	yes
QUMA2	Quercus macrocarpa Michx.	bur oak	Fagaceae	yes
RIAU	Ribes aureum Pursh	golden currant	Grossulariaceae	
ROPS	Robinia pseudoacacia L.	black locust	Fabaceae	yes
ROWO	Rosa woodsii Lindl.	Woods' rose	Rosaceae	
RUAR9	Rubus armeniacus Focke	Himalayan blackberry	Rosaceae	yes
RUCR	Rumex crispus L.	curly dock	Polygonaceae	yes
SASE10	Salix ×sepulcralis Simonkai [alba × ?pendulina]	weeping willow	Salicaceae	yes
SAAM2	Salix amygdaloides Andersson	peachleaf willow	Salicaceae	
SAEX	Salix exigua Nutt.	narrowleaf willow	Salicaceae	
SAKA	Salsola kali L.	Russian thistle	Chenopodiaceae	yes
SCAM6	Schoenoplectus americanus (Pers.) Volkart ex Schinz & R. Keller	chairmaker's bulrush	Cyperaceae	
SCTA2	Schoenoplectus tabernaemontani (C.C. Gmel.) Palla	softstem bulrush	Cyperaceae	
SIAL2	Sisymbrium altissimum L.	tall tumblemustard	Brassicaceae	yes
SPMU2	Sphaeralcea munroana (Douglas) Spach	Munro's globemallow	Malvaceae	
SPSA3	Sphaerophysa salsula (Pall.) DC.	alkali swainsonpea	Fabaceae	yes
SPCR	Sporobolus cryptandrus (Torr.) A. Gray	sand dropseed	Poaceae	
TARA	Tamarix ramosissima Ledeb.	saltcedar	Tamaricaceae	yes

Code	Scientific Name with Author	National Common Name	Family	Exotic
TAVU	Tanacetum vulgare L.	common tansy	Asteraceae	yes
TAOF	Taraxacum officinale F.H. Wigg.	common dandelion	Asteraceae	yes
THIN6	Thinopyrum intermedium (Host) Barkworth & D.R. Dewey	intermediate wheatgrass	Poaceae	yes
TITO	Tilia tomentosa Moench	Silver linden	Tiliaceae	yes
TRDU	Tragopogon dubius Scop.	yellow salsify	Asteraceae	yes
TRRE3	Trifolium repens L.	white clover	Fabaceae	yes
TYLA	Typha latifolia L.	broadleaf cattail	Typhaceae	
VETH	Verbascum thapsus L.	common mullein	Scrophulariaceae	yes
VEBR	Verbena bracteata Cav. ex Lag. & Rodr.	bigbract verbena	Verbenaceae	
VUMI	Vulpia microstachys (Nutt.) Munro	small fescue	Poaceae	
VUMY	Vulpia myuros (L.) C.C. Gmel	rat-tail fescue	Poaceae	yes

Discussion and Recommendations

Noxious Weeds of Sacajawea State Park

The noxious plants listed in Table 4 account for the species encountered within the park in 2008 that are tracked by the Washington State Noxious Weed Control Board.

Table 4. Noxious weeds of Sacajawea State Park. Classes are defined by the Washington State Noxious Weed Control Board.

Code	Scientific Name with Author	National Common Name	Family	State Noxious Status
ACRE3	Acroptilon repens (L.) DC.	hardheads	Asteraceae	B
AMFR	Amorpha fruticosa L.	desert false indigo	Fabaceae	B
BASC5	Bassia scoparia (L.) A.J. Scott	burningbush	Chenopodiaceae	B
CEDI3	Centaurea diffusa Lam.	diffuse knapweed	Asteraceae	B
CHJU	Chondrilla juncea L.	rush skeletonweed	Asteraceae	B
LELA2	Lepidium latifolium L.	broadleaved pepperweed	Brassicaceae	B
MYSP2	Myriophyllum spicatum L.	Eurasian watermilfoil	Haloragaceae	B
PHAU7	Phragmites australis (Cav.) Trin. ex Steud.	common reed	Poaceae	B
SPSA3	Sphaerophysa salsula (Pall.) DC.	alkali swainsonpea	Fabaceae	B
CIAR4	Cirsium arvense (L.) Scop.	Canada thistle	Asteraceae	C
COAR4	Convolvulus arvensis L.	field bindweed	Convolvulaceae	C
NYOD	Nymphaea odorata Aiton	American white waterlily	Nymphaeaceae	C
PHAR3	Phalaris arundinacea L.	reed canarygrass	Poaceae	C
TAVU	Tanacetum vulgare L.	common tansy	Asteraceae	C
TARA	Tamarix ramosissima Ledeb.	saltcedar	Tamaricaceae	B

Figure 7 provides a map of some of the noxious weed locations mapped in the park. This map does not comprehensively cover all noxious weed occurrences in the park. *Acroptilon repens* was found in a large colony at the locations in Figure 7 and was found throughout the park in wetland habitat. *Amorpha fruticosa* was found near the public boat launch. Infestations were small where observed. *Bassia scoparia* was found throughout the park especially in wetlands. Exact locations were not recorded, as the populations were extensive. *Centaurea diffusa* locations were not noted, but it was found sparsely throughout the park. *Cirsium arvense* was noted at the

location in Figure 7, but was found elsewhere the park in wetlands. *Chondrilla juncea* was observed at the locations in Figure 7. *Lepidium latifolium* was noted at the location in Figure 7, but was found throughout the park in wetland habitats in extensive colonies. This species poses a significant threat to the quality of the habitat in the park. *Myriophyllum spicatum* and *Nymphaea odorata* were noted at the location in Figure 7. Where observed there were only several plants of each species. *Phalaris arundinacea* was noted in wetland areas throughout the park. *Phragmites australis* was only noted in a small population at the site in Figure 7. *Sphaerophysa salsula* was observed in two small colonies noted in Figure 7. *Tamarix ramosissima* was noted near the location in Figure 7 with only several plants. *Tanacetum vulgare* was found only at the location in Figure 7 and there were few plants at the location. It is likely that these noxious weeds will be found in other areas of the park not observed during the survey.

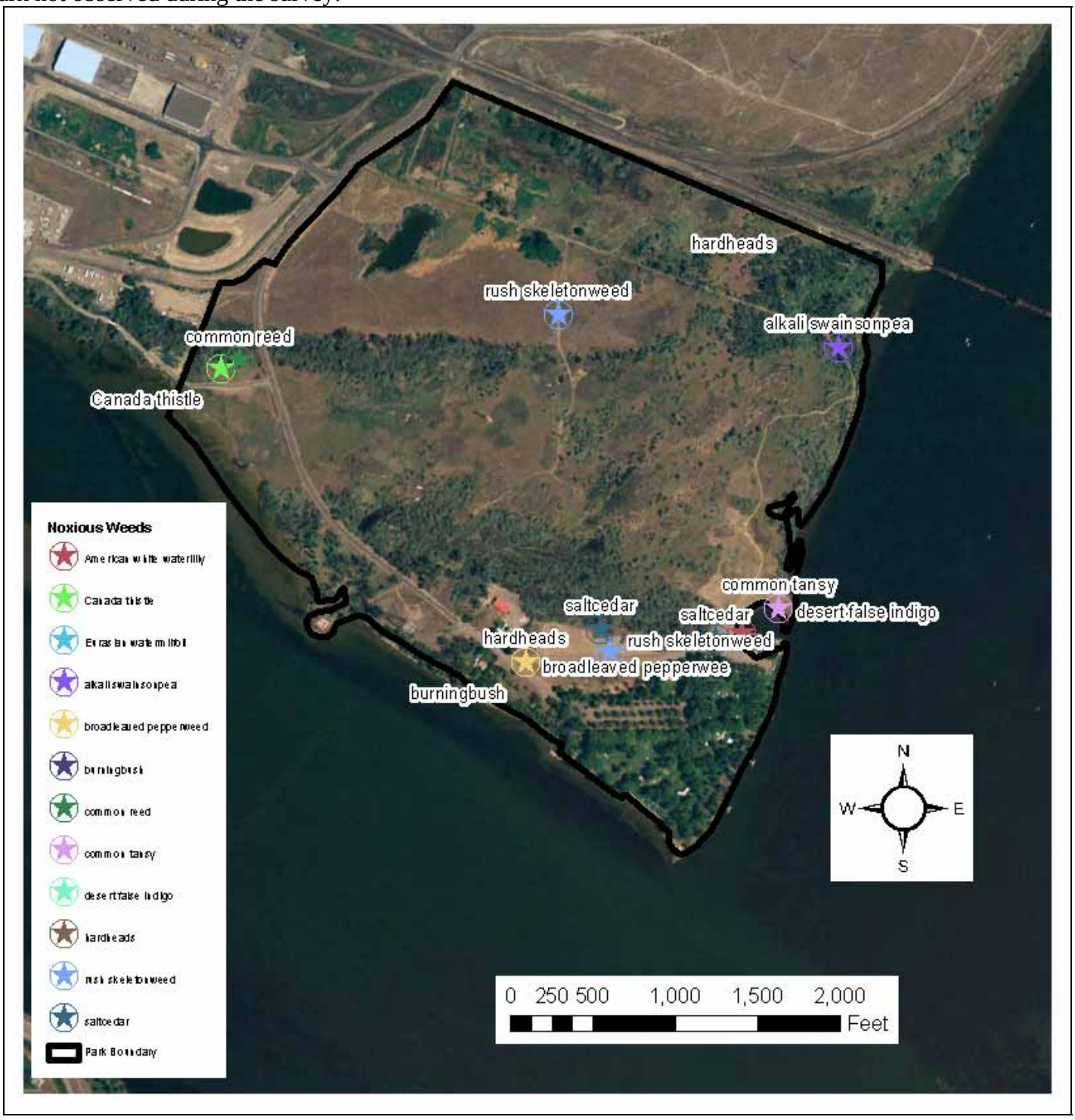


Figure 7. Map of noxious weed locations in Sacajawea State Park.

Ecological Condition

The ecological condition of Sacajawea State Park is poor based on the large amount of cover and composition of non-native plants. Figure 8 provides a map of the resulting condition ranks ascribed to the primary plant community within each vegetation community polygon based on our 2008 surveys.

Only small areas like deeper water wetlands and some very small pockets of stabilized dunes are in relatively good condition. Noxious weeds and exotic plants pose an immediate threat to these parts of the park, in particular broadleaved pepperweed and cheatgrass.

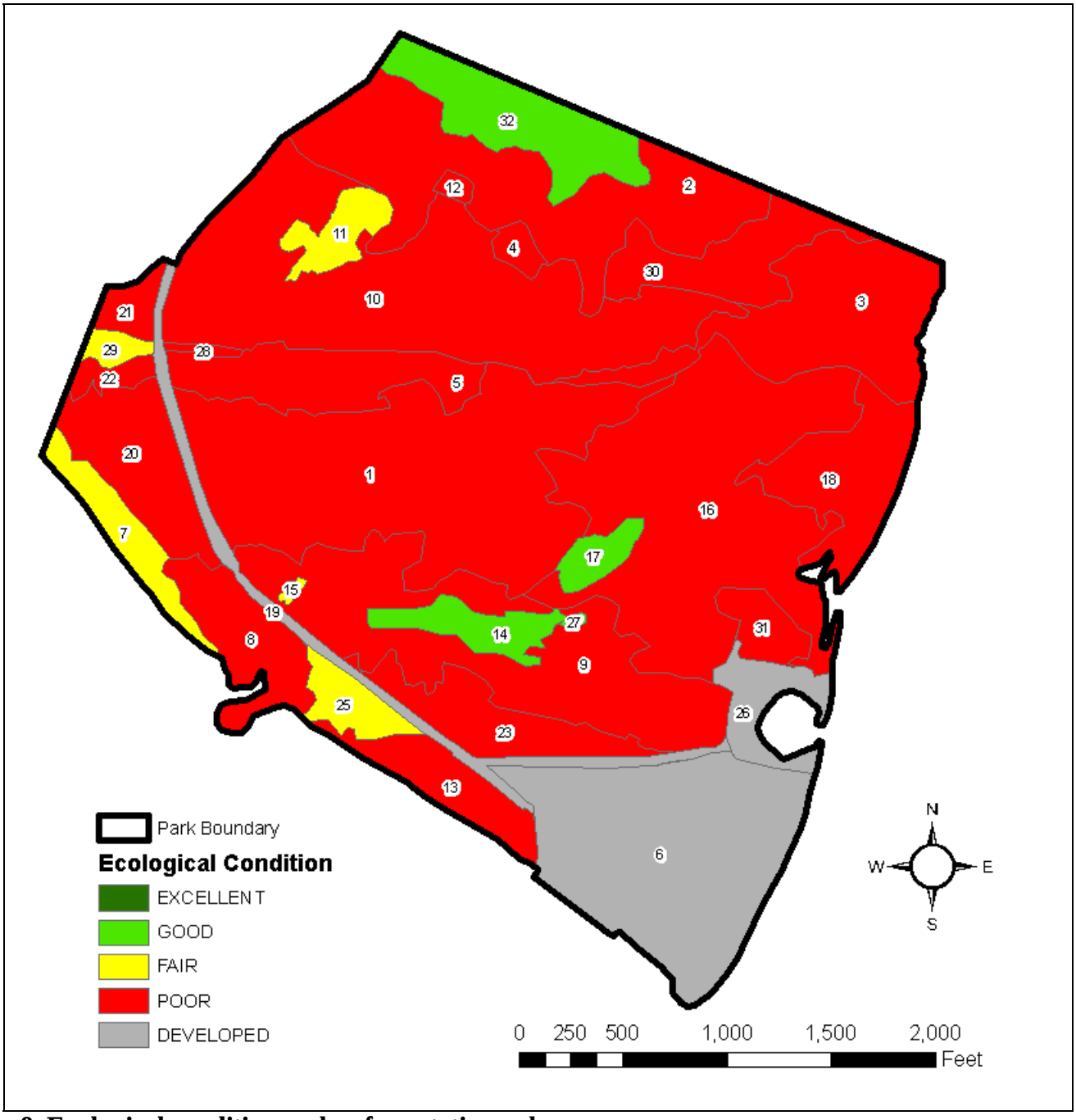


Figure 8. Ecological condition ranks of vegetation polygons.

Restoration Opportunities

Restoration opportunities abound at the park, but may be a low priority from a statewide perspective, given the landscape context of the park. Being that the park is surrounded by urban development, and the abundance of a wide variety of persistent exotic plants, restoration efforts would be very challenging and expensive. It will be impossible to restore the park to historical vegetation conditions because of the elevation of the water table caused by the Columbia River dams.

GIS Products Produced

Associated with this report are polygon layers created by PBI depicting the vegetation community types mapped in the project area of within Sacajawea State Park. The datasets have been converted into ESRI shapefile formats and provided to the WSPRC. The spatial datasets are complete with metadata meeting FGDC standards. Refer to the associated metadata for descriptions and attribute definitions for each spatial dataset.

References

Crawford, R.C., 2003. Riparian Vegetation Classification of the Columbia Basin, Washington for BLM, Spokane District, TNC, and EPA. WA Dept. Natural Resources. Natural Heritage Program . Olympia, WA. 98 pp. plus tables.

Daubenmire, R., 1970. Steppe vegetation of Washington, Washington Agricultural Experiment Station Technical Bulletin Number 62, Pullman, Washington, 131 pp.

Appendix A – Vegetation Survey Codes and Instructions

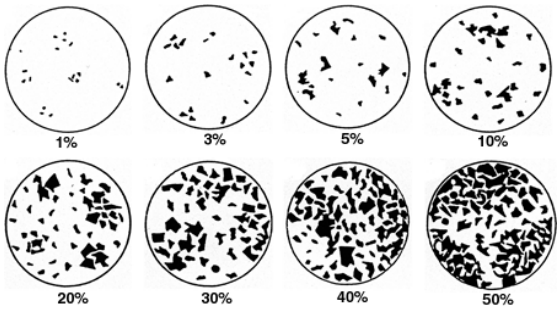
Site = name of locality of map project **Name/Date** = your name / day-month-year completed polygon survey
Polygon # = number you put on map

Survey intensity

1 = walked or could see most of polygon (high confidence in survey data)
2 = walked or could see part of polygon interior (moderate confidence)
3 = walked perimeter or could see part of polygon interior (low confidence)
4 = photo interpretation or other remote survey

TOTAL VEGETATION COVER includes all vascular plants, mosses, lichens and foliose lichens (crustose lichens excluded they are considered rock); this never exceeds 100%. Space between leaves/branches is included in "cover".

Code	**Cover (%)**	Cover mid-pt
0	0	0
1	<1	0.5
2	1-5	3
3	5-25	15
4	25-60	43
5	60-90	75
6	>90	95



TREES, SHRUBS, GRAMINOIDS, FORBS, EXOTICS cover includes the space between leaves/branches. Each Life form category canopy cover must be 0-100%. Therefore, the sum of all life forms (layers) can exceed 100%. List most abundant species in each life form category; when trees are cored, note DBH, species, length of core, number of rings counted.

EXOTICS = primary species observed; secondary species observed (please pay special attention to noxious weeds). Also, note the relative abundance of exotics in each polygon, using the 1-6 cover codes noted above.

SUBSTRATES estimate to nearest **%** the following, the sum of the categories adds to 100%. Describe in comments if there is wide variation in any category; note % standing water if it is persistent or characteristic of site.

Water = exposed standing or flowing water
Rock Outcrop = exposed bedrock including detached boulders over 1m across
Talus = exposed large, loose rocks
Gravel/Cobble = large fragments between sand and boulder
Bare Ground = exposed mineral soil
Mosses/Lichens = nonvascular plant cover on soil
Litter = includes logs, branches, and basal area of plants
Caves = area covered by caves
Mines = area covered by mines

LAND USE - put 0 (zero) if not applicable to site.

Logging

1 = unlogged, no evidence of past logging or occasional cut stumps not part of systematic harvest of trees, no or very little impact on stand composition
2 = selectively logged: frequent cut stumps but origin of dominant or co-dominant cohort appears to be natural disturbance
3 = heavy logging disturbance with natural regeneration: many cut stumps that predate the dominant or co-dominant cohort with no tree planting
4 = tree plantation: dominant cohort appears to be planted after clearcutting

Stand Age

1 = very young 0-40 yr
2 = young 40-90 yr
3 = mature 90-200 yr
4 = old-growth 200+ yr
5 = young with scattered old trees (2-10 old trees per acre)
6 = mature with scattered old trees

Fire

Note presence of fire (i.e. charcoal, fire scars, etc.) and, if present , estimate time of fire.

Agriculture

1 = active annual cropping
2 = active perennial herbaceous cropping
3 = active woody plant cultivation
4 = fallow, plowed no crops this yr
5 = Federal CRP
6 = other

Livestock

1 = active heavy grazing (most forage used, soil compaction or churning)
2 = active moderate grazing (25-75% forage used)
3 = active light grazing (lots of last yr's litter left)
4 = no current, heavy past grazing
5 = no current, light past grazing
6 = no obvious sign of grazing

Development

1 = actively used facilities
4 = abandoned facilities

2 = roads
3 = established trails
5 = none obvious
6 = multiple types (detail in comments)

Wildlife

1 = heavy ungulate use
2 = moderate ungulate use
3 = light to no ungulate use
4 = burrowing animals
5 = active beaver
6 = active porcupine
7 = other, list animal

Recreation Use Severity

1 = heavy use, abundant soil and vegetation displacement off trail/road
2 = moderate use, frequent soil and vegetation displacement off trail/road
3 = light use, little sign of activity off trail/road

Recreation Use Primary Type

1 = wheeled
2 = hoofed
3 = pedestrian
4 = combination of above
5 = other

Hydrology

1 = unaltered 2 = altered; dams, dikes, ditches, culverts, etc 3 = not assessed

Descriptions of Plant Communities

PLANT ASSOCIATION (PA) = list all PAs encountered in polygon survey, in comments list source of name if not on provided key. NOTE: Contractor is required to consult with the WNHP to obtain the most current classification and condition ranking information available.

Existing Vegetation Community – Write down the major tree/shrub/grass-forb-fern community type. Pay attention to indicator species. Alien species may be included in community description.

Ecological Condition Rank of PA in key or estimate. (The condition of each plant vegetation community polygon shall be rated using the codes listed in Appendix B.)

% of Polygon = your estimate of % of polygon covered by this plant community. (PA1 is the matrix and a greater % than PA2, if there is a PA2; PA2 is a greater % than PA3, if there is a PA3.)

Pattern = how PA is distributed in stand

1 = matrix (most of polygon)	3 = small patches	5 = scattered, more or less evenly repeating	7 = other
2 = large patches	4 = clumped, clustered, contiguous	6 = linear	

Appendix B – Ecological Condition Ranking System

Ecological Condition Ranks

When assessing conservation priorities and management decisions, it can be useful to rank natural communities into levels of ecological condition. For example, an unfragmented area with high native species diversity, absence of non-native species and little soil erosion often has greater conservation value than another area in the same habitat type that is fragmented, infested with weeds or has erosion problems. Likewise, areas with a lower ecological condition rank may be targets for restoration activities.

The flowing ecological condition ranks were applied to vegetation polygons that were surveyed in this project:

- **Excellent Ecological Condition**

Areas in this class have very few non-native plants. The composition and structure of native vegetation in this condition class correspond to the natural range of variation characteristic to this habitat type. Old-growth conditions often exist. Species diversity of native plants and animals is often high relative to the natural community under consideration. Wildlife habitat conditions are optimal for species of conservation concern. Soil compaction, accelerated erosion and hydrologic alteration are absent. Direct signs of human-induced ecological stress are absent. Many rare plant and animal species may only exist within this condition class.

- **Good Ecological Condition**

Areas in this class have few non-native plants. The composition and structure of native vegetation in this condition class correspond to the natural range of variation characteristic to this habitat type. Old-growth conditions may exist, but have been subject to some human-induced stress. Species diversity of native plants and animals is moderately high relative to the natural community under consideration. Wildlife habitat conditions are adequate for species of conservation concern. Soil compaction, accelerated erosion and hydrologic alteration do not significantly influence the area. Direct signs of human-induced ecological stress are infrequent. Some rare plant and animal species may exist within this condition class.

- **Fair Ecological Condition**

Areas in this class often have both native and non-native plants. The composition and structure of native vegetation in this condition class is altered from the natural range of variation characteristic to this habitat type. Old-growth conditions are absent. Species diversity of native plants and animals is lower than the two higher condition classes. Wildlife habitat conditions may be adequate for some species of conservation concern, but not adequate for many. Soil compaction, accelerated erosion and hydrologic alteration may influence the area. Direct signs of human-induced ecological stress are frequent. Most rare plant and animal species are only infrequently encountered within this condition class.

- **Poor Ecological Condition**

Areas in this class are often dominated by non-native plants. The composition and structure of native vegetation in this condition class is often dramatically altered from the natural range of variation characteristic to this habitat type. Old-growth conditions are absent. Species diversity of native plants and animals is often low. Wildlife habitat conditions are not adequate for most species of conservation concern. Soil compaction, accelerated erosion and hydrologic alteration often influence the area. Direct signs of human-induced ecological stress are frequent. Rare plant and animal species are seldom encountered within this condition class.

- **Developed**

Developed portions of the park property: campgrounds, offices, facilities, infrastructure, etc.

- **Ownership Issue**

Areas within the GIS boundary of the park that appear to be owned or controlled by another entity other than the Washington State Parks Commission.

Appendix C – Definitions of Vegetation Community Conservation Status

The following table defines the ranking system for plants and plant communities used by the Washington State Natural Heritage Program.

Code	Definition
G1	Critically imperiled throughout its range; extremely rare with five or fewer occurrences or very few remaining acres.
G2	Imperiled throughout its range; rare with six to 20 occurrences or few remaining acres.
G3	Either very rare and local throughout its range or found locally in a restricted range; uncommon with 21 to 100 occurrences.
G4	Apparently secure throughout its range, though it may be quite rare in some parts of its range, especially at the periphery; many occurrences.
G5	Demonstrably secure in its range, though it may be quite rare in some parts of its range, especially at the periphery; ineradicable under present conditions.
S1	Critically imperiled in Oregon; extremely rare with five or fewer occurrences or very few remaining acres.
S2	Imperiled in Oregon; rare with six to 20 occurrences or few remaining acres.
S3	Either very rare and local in Oregon or found locally in a restricted range; uncommon with 21 to 100 occurrences.
S4	Apparently secure in Oregon, though it may be quite rare in some parts; many occurrences.
S5	Demonstrably secure in Oregon, though it may be quite rare in some parts; ineradicable under present conditions.
U	Unknown
NA	Natural Heritage Rank not available
NR	Not Ranked

Appendix D – Vegetation Survey Polygon Data

Polygon Number 1

ParkName:
Sacajawea

Survey Intensity	3
Observer	SL
Date	10/27/2008
Total Vegetation	6
Trees Total	3
Dominant Trees	ELAN
emergent	0
maincanopy	3
subcanopy	0
Shrubs Total	2
Dominant Shrubs	
> 1.5' tall	0
< 1.5' tall	0
Graminoids Total	4
Dominant Graminoids	CYDA, BRTE, THIN6
Graminoids Perennial	3
Graminoids Annual	3
Forbs Total	4
Dominant Forbs	BASC5, LELA2
Forbs Perennial	3
Forbs Annual	4
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	6
Exotics Perennial	4
Exotics Annual	4
Water	1
Rock Outcrop	0
Gravel	0
Logging	0
Fire:	0
Stand Age	0
Agriculture	0
Livestock	0
Development	2
Wildlife	3
Recreation Severity	3
Recreation Type	4
Hydrology	2

Exotic Species

Noxious Exotic Plants
BASC5
Other Exotic Plants
CYDA, BRTE, THIN6

Water:	1
Rock:	0
Talus:	0
Gravel:	0
Bare Ground:	0
Moss Lichen:	0
Litter:	99

Vegetation Types

		Percent	Pattern	Rank
Existing Veg1:	CYDA-BASC5-LELA2-THIN6	90	Matrix	POOR
Veg Community1:	disturbed shrub/grassland			
Existing Veg2:	ELAN/CYDA-BASC5-LELA2	10	Small patches	POOR
Veg Community3:	disturbed forested wetland			
Existing Veg3:		0		
Veg Community3:				

Notes:

Polygon Number 2

ParkName:
Sacajawea

Survey Intensity	3
Observer	SL
Date	10/27/2008
Total Vegetation	6
Trees Total	3
Dominant Trees	ELAN, SAAM2
emergent	0
maincanopy	3
subcanopy	0
Shrubs Total	0
Dominant Shrubs	
> 1.5' tall	0
< 1.5' tall	0
Graminoids Total	3
Dominant Graminoids	THIN6
Graminoids Perennial	3
Graminoids Annual	0
Forbs Total	4
Dominant Forbs	BASC5, LELA2
Forbs Perennial	0
Forbs Annual	4
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	5
Exotics Perennial	3
Exotics Annual	4
Water	0
Rock Outcrop	0
Gravel	0
Logging	0
Fire:	0
Stand Age	1
Agriculture	0
Livestock	0
Development	2
Wildlife	3
Recreation Severity	3
Recreation Type	4
Hydrology	2

Exotic Species

Noxious Exotic Plants
BASC5, LELA2
Other Exotic Plants
ELAN

Water:	0
Rock:	0
Talus:	0
Gravel:	0
Bare Ground:	1
Moss Lichen:	0
Litter:	99

Vegetation Types

		Percent	Pattern	Rank
Existing Veg1:	LELA2-BASC5-THIN6	95	Matrix	POOR
Veg Community1:	disturbed wetland			
Existing Veg2:	ELAN/SAAM2-LELA2	5	Small patches	POOR
Veg Community3:	disturbed forested wetland			
Existing Veg3:		0		
Veg Community3:				

Notes:

Polygon Number 3

ParkName:
Sacajawea

Survey Intensity	3
Observer	SL
Date	10/27/2008
Total Vegetation	6
Trees Total	5
Dominant Trees	PODE, ELAN
emergent	0
maincanopy	0
subcanopy	0
Shrubs Total	0
Dominant Shrubs	
> 1.5' tall	0
< 1.5' tall	0
Graminoids Total	3
Dominant Graminoids	ELLAL, SCTA2, PHAR3
Graminoids Perennial	3
Graminoids Annual	2
Forbs Total	3
Dominant Forbs	LELA2, GLLE3
Forbs Perennial	3
Forbs Annual	0
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	6
Exotics Perennial	6
Exotics Annual	1
Water	0
Rock Outcrop	0
Gravel	0
Logging	0
Fire:	0
Stand Age	1/2
Agriculture	0
Livestock	0
Development	2
Wildlife	3
Recreation Severity	3
Recreation Type	4
Hydrology	2

Exotic Species

Noxious Exotic Plants
PHAR3, CIAR4, LELA2
Other Exotic Plants
ELAN

Water:	0
Rock:	0
Talus:	0
Gravel:	0
Bare Ground:	4
Moss Lichen:	0
Litter:	96

Vegetation Types

		Percent	Pattern	Rank
Existing Veg1:	PODE3-ELAN-SAAM2/LELA2-ELLAL-CIAR4	95	Matrix	POOR
Veg Community1:	disturbed forested wetland			
Existing Veg2:	SCTA2-PHAR3	5	Small patches	POOR
Veg Community3:	disturbed wetland			
Existing Veg3:		0		
Veg Community3:				

Notes: seasonal wetland; low areas dry during observation period

Polygon Number 4

ParkName:
Sacajawea

Survey Intensity	1
Observer	SL
Date	10/27/2008
Total Vegetation	6
Trees Total	5
Dominant Trees	AIAL, PODE3
emergent	0
maincanopy	5
subcanopy	0
Shrubs Total	0
Dominant Shrubs	
> 1.5' tall	0
< 1.5' tall	0
Graminoids Total	3
Dominant Graminoids	BRTE
Graminoids Perennial	0
Graminoids Annual	3
Forbs Total	5
Dominant Forbs	LELA2
Forbs Perennial	5
Forbs Annual	0
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	6
Exotics Perennial	6
Exotics Annual	3
Water	0
Rock Outcrop	0
Gravel	0
Logging	0
Fire:	0
Stand Age	1
Agriculture	0
Livestock	0
Development	5
Wildlife	3
Recreation Severity	3
Recreation Type	4
Hydrology	2

Exotic Species

Noxious Exotic Plants
LELA2
Other Exotic Plants
BRTE, AIAL

Water:	0
Rock:	0
Talus:	0
Gravel:	0
Bare Ground:	0
Moss Lichen:	0
Litter:	100

Vegetation Types

		Percent	Pattern	Rank
Existing Veg1:	PODE3-AIAL/BRT3-LELA2	75	Matrix	POOR
Veg Community1:	disturbed forested wetland			
Existing Veg2:	LELA2-BRTE	25	Large patch	POOR
Veg Community3:	disturbed shrub/grassland			
Existing Veg3:		0		
Veg Community3:				

Notes:

Polygon Number 5

ParkName:
Sacajawea

Survey Intensity	3
Observer	SL
Date	10/27/2008
Total Vegetation	6
Trees Total	0
Dominant Trees	PODE3, SAAM2, ELAN
emergent	0
maincanopy	0
subcanopy	0
Shrubs Total	0
Dominant Shrubs	
> 1.5' tall	0
< 1.5' tall	0
Graminoids Total	0
Dominant Graminoids	
Graminoids Perennial	0
Graminoids Annual	0
Forbs Total	0
Dominant Forbs	
Forbs Perennial	0
Forbs Annual	0
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	0
Exotics Perennial	0
Exotics Annual	0
Water	0
Rock Outcrop	0
Gravel	0
Logging	0
Fire:	0
Stand Age	1/2
Agriculture	0
Livestock	0
Development	5
Wildlife	3
Recreation Severity	3
Recreation Type	4
Hydrology	2

Exotic Species

Noxious Exotic Plants

Other Exotic Plants

Water:	0
Rock:	0
Talus:	0
Gravel:	0
Bare Ground:	0
Moss Lichen:	0
Litter:	100

Vegetation Types

		Percent	Pattern	Rank
Existing Veg1:	PODE3-ELAN-SAAM2	100	Matrix	POOR
Veg Community1:	disturbed forested wetland			
Existing Veg2:				
Veg Community3:				
Existing Veg3:		0		
Veg Community3:				

Notes:

Polygon Number 6

ParkName:
Sacajawea

Survey Intensity	1
Observer	SL
Date	10/25/2008
Total Vegetation	5
Trees Total	5
Dominant Trees	PLHY, ACSA2. FRPE
emergent	0
maincanopy	5
subcanopy	0
Shrubs Total	2
Dominant Shrubs	
> 1.5' tall	1
< 1.5' tall	2
Graminoids Total	5
Dominant Graminoids	POPR
Graminoids Perennial	5
Graminoids Annual	0
Forbs Total	2
Dominant Forbs	
Forbs Perennial	2
Forbs Annual	1
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	0
Exotics Perennial	0
Exotics Annual	0
Water	0
Rock Outcrop	15
Gravel	5
Logging	0
Fire:	0
Stand Age	2
Agriculture	0
Livestock	0
Development	1
Wildlife	3
Recreation Severity	3
Recreation Type	4
Hydrology	2

Exotic Species

Noxious Exotic Plants

Other Exotic Plants

Water:	0
Rock:	15
Talus:	0
Gravel:	5
Bare Ground:	0
Moss Lichen:	0
Litter:	80

Vegetation Types

		Percent	Pattern	Rank
Existing Veg1:	Parking Area, Day Use Area, Buildings	100	Matrix	DEVELO
Veg Community1:	Developed			
Existing Veg2:		0		
Veg Community3:				
Existing Veg3:		0		
Veg Community3:				

Notes: Rock = 5% rock, 10% asphalt

Polygon Number 7

ParkName:
Sacajawea

Survey Intensity	2
Observer	SL
Date	10/29/2008
Total Vegetation	3
Trees Total	0
Dominant Trees	
emergent	0
maincanopy	0
subcanopy	0
Shrubs Total	0
Dominant Shrubs	
> 1.5' tall	0
< 1.5' tall	0
Graminoids Total	3
Dominant Graminoids	SCTA2
Graminoids Perennial	3
Graminoids Annual	0
Forbs Total	1
Dominant Forbs	ELCA11
Forbs Perennial	1
Forbs Annual	0
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	1
Exotics Perennial	1
Exotics Annual	0
Water	95
Rock Outcrop	0
Gravel	0
Logging	0
Fire:	0
Stand Age	0
Agriculture	0
Livestock	0
Development	5
Wildlife	3
Recreation Severity	3
Recreation Type	4
Hydrology	2

Exotic Species

Noxious Exotic Plants
MYSP2
Other Exotic Plants

Water:	95
Rock:	0
Talus:	0
Gravel:	0
Bare Ground:	0
Moss Lichen:	0
Litter:	5

Vegetation Types

			Percent	Pattern	Rank
Existing Veg1:	Water		95	Matrix	FAIR
Veg Community1:	Water				
Existing Veg2:	SCTA2-ELCA7		5	4	GOOD
Veg Community3:	SCTA2	Crawford 2003			G5
Existing Veg3:			0		
Veg Community3:					

Notes: aquatic veg: ELCA11 - minor patches; MYSP2 - noxious weed in minor patches

Polygon Number 8

ParkName:
Sacajawea

Survey Intensity	3
Observer	SL
Date	10/29/2008
Total Vegetation	6
Trees Total	5
Dominant Trees	PODE3, SAAM2, ELAN
emergent	4
maincanopy	4
subcanopy	4
Shrubs Total	2
Dominant Shrubs	ROWO
> 1.5' tall	2
< 1.5' tall	0
Graminoids Total	5
Dominant Graminoids	PHAR3, SPCR, BRTE
Graminoids Perennial	4
Graminoids Annual	3
Forbs Total	3
Dominant Forbs	EQHY
Forbs Perennial	3
Forbs Annual	0
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	5
Exotics Perennial	5
Exotics Annual	3
Water	0
Rock Outcrop	0
Gravel	4
Logging	0
Fire:	0
Stand Age	1/2
Agriculture	0
Livestock	0
Development	2
Wildlife	3
Recreation Severity	3
Recreation Type	4
Hydrology	1

Exotic Species

Noxious Exotic Plants
PHAR3
Other Exotic Plants
ELAN, BRTE

Water:	0
Rock:	0
Talus:	0
Gravel:	4
Bare Ground:	0
Moss Lichen:	0
Litter:	96

Vegetation Types

		Percent	Pattern	Rank
Existing Veg1:	PODE3-ELAN-SAAM2/ROWO/PHAR3	73	Matrix	POOR
Veg Community1:	disturbed forested wetland			
Existing Veg2:	BRTE-SPCR-EQHY	27	Large patch	POOR
Veg Community3:	disturbed shrub/grassland			
Existing Veg3:		0		
Veg Community3:				

Notes:

Polygon Number 9

ParkName:
Sacajawea

Survey Intensity	3
Observer	SL
Date	10/29/2008
Total Vegetation	6
Trees Total	5
Dominant Trees	PODE3, ELAN, SAAM2
emergent	3
maincanopy	4
subcanopy	0
Shrubs Total	0
Dominant Shrubs	
> 1.5' tall	0
< 1.5' tall	0
Graminoids Total	3
Dominant Graminoids	BRTE
Graminoids Perennial	0
Graminoids Annual	3
Forbs Total	3
Dominant Forbs	ACRE3
Forbs Perennial	3
Forbs Annual	0
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	4
Exotics Perennial	4
Exotics Annual	2
Water	0
Rock Outcrop	0
Gravel	0
Logging	0
Fire:	0
Stand Age	1/2
Agriculture	0
Livestock	0
Development	5
Wildlife	3
Recreation Severity	3
Recreation Type	4
Hydrology	2

Exotic Species

Noxious Exotic Plants
ACRE3
Other Exotic Plants

Water:	0
Rock:	0
Talus:	0
Gravel:	0
Bare Ground:	0
Moss Lichen:	0
Litter:	100

Vegetation Types

		Percent	Pattern	Rank
Existing Veg1:	PODE3-ELAN-SAAM2/ACRE3-BRTE	100	Matrix	POOR
Veg Community1:	disturbed forested wetland			
Existing Veg2:		0		
Veg Community3:				
Existing Veg3:		0		
Veg Community3:				

Notes: ELAN

Polygon Number 10

ParkName:
Sacajawea

Survey Intensity	3
Observer	SL
Date	10/27/2008
Total Vegetation	6
Trees Total	0
Dominant Trees	
emergent	0
maincanopy	0
subcanopy	0
Shrubs Total	0
Dominant Shrubs	
> 1.5' tall	0
< 1.5' tall	0
Graminoids Total	5
Dominant Graminoids	ELWA2, BRTE
Graminoids Perennial	3
Graminoids Annual	5
Forbs Total	3
Dominant Forbs	LELA2, SAKA
Forbs Perennial	3
Forbs Annual	2
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	6
Exotics Perennial	2
Exotics Annual	6
Water	0
Rock Outcrop	0
Gravel	0
Logging	0
Fire:	0
Stand Age	1
Agriculture	0
Livestock	0
Development	2
Wildlife	3
Recreation Severity	3
Recreation Type	4
Hydrology	2

Exotic Species

Noxious Exotic Plants
LELA2
Other Exotic Plants
BRTE, SAKA

Water:	0
Rock:	0
Talus:	0
Gravel:	0
Bare Ground:	3
Moss Lichen:	0
Litter:	97

Vegetation Types

		Percent	Pattern	Rank
Existing Veg1:	LELA2-BRTE-SAKA	85	Matrix	POOR
Veg Community1:	disturbed shrub/grassland			
Existing Veg2:	ELWA2-BRTE	15	Small patches	POOR
Veg Community3:	disturbed shrub/grassland			
Existing Veg3:		0		
Veg Community3:				

Notes: bunchgrass looks successful. ELWA2 is not native here.

Polygon Number 11

ParkName:
Sacajawea

Survey Intensity	1
Observer	SL
Date	10/27/2008
Total Vegetation	2
Trees Total	2
Dominant Trees	ELAN
emergent	0
maincanopy	2
subcanopy	0
Shrubs Total	0
Dominant Shrubs	
> 1.5' tall	0
< 1.5' tall	0
Graminoids Total	2
Dominant Graminoids	SCTA2, TYLA
Graminoids Perennial	2
Graminoids Annual	0
Forbs Total	2
Dominant Forbs	EUOC4, CIAR4
Forbs Perennial	2
Forbs Annual	0
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	2
Exotics Perennial	2
Exotics Annual	0
Water	95
Rock Outcrop	0
Gravel	0
Logging	0
Fire:	0
Stand Age	1
Agriculture	0
Livestock	0
Development	
Wildlife	
Recreation Severity	
Recreation Type	
Hydrology	

Exotic Species

Noxious Exotic Plants
CIAR4, BASC5
Other Exotic Plants
ELAN

Water:	95
Rock:	0
Talus:	0
Gravel:	0
Bare Ground:	0
Moss Lichen:	0
Litter:	5

Vegetation Types

		Percent	Pattern	Rank
Existing Veg1:	Water	90	Matrix	FAIR
Veg Community1:	Water			
Existing Veg2:	ELAN/EUOC4-SCTA2-TYLA	10	Small patches	GOOD
Veg Community3:	disturbed forested wetland			
Existing Veg3:		0		
Veg Community3:				

Notes: CIAR4 small patches, BASC5 dry edge

Polygon Number 12

ParkName:
Sacajawea

Survey Intensity	1
Observer	SL
Date	10/27/2008
Total Vegetation	6
Trees Total	5
Dominant Trees	ROPS, ELAN
emergent	0
maincanopy	4
subcanopy	3
Shrubs Total	0
Dominant Shrubs	
> 1.5' tall	0
< 1.5' tall	0
Graminoids Total	3
Dominant Graminoids	PHAR3, HOMUL
Graminoids Perennial	3
Graminoids Annual	0
Forbs Total	5
Dominant Forbs	BASC5, LELA2
Forbs Perennial	3
Forbs Annual	4
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	6
Exotics Perennial	5
Exotics Annual	3
Water	0
Rock Outcrop	0
Gravel	0
Logging	0
Fire:	0
Stand Age	1/2
Agriculture	0
Livestock	0
Development	5
Wildlife	3
Recreation Severity	3
Recreation Type	4
Hydrology	2

Exotic Species

Noxious Exotic Plants
BASC5
Other Exotic Plants

Water:	0
Rock:	0
Talus:	0
Gravel:	0
Bare Ground:	0
Moss Lichen:	0
Litter:	100

Vegetation Types

		Percent	Pattern	Rank
Existing Veg1:	ELAN-ROPS/BASC5-LELA2-PHAR3-HOMUL	50	Matrix	POOR
Veg Community1:	disturbed forested wetland			
Existing Veg2:	BASC5-LELA2-PHAR3	50	Large patch	POOR
Veg Community3:	disturbed wetland			
Existing Veg3:		0		
Veg Community3:				

Notes:

Polygon Number 13

ParkName:
Sacajawea

Survey Intensity	3
Observer	SL
Date	10/29/2008
Total Vegetation	5
Trees Total	5
Dominant Trees	PODE3
emergent	0
maincanopy	5
subcanopy	3
Shrubs Total	2
Dominant Shrubs	ERNA10
> 1.5' tall	2
< 1.5' tall	0
Graminoids Total	4
Dominant Graminoids	AGCR, BRTE
Graminoids Perennial	3
Graminoids Annual	4
Forbs Total	3
Dominant Forbs	ACMI2
Forbs Perennial	3
Forbs Annual	0
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	5
Exotics Perennial	5
Exotics Annual	4
Water	0
Rock Outcrop	0
Gravel	0
Logging	0
Fire:	0
Stand Age	1/2
Agriculture	0
Livestock	0
Development	1
Wildlife	3
Recreation Severity	3
Recreation Type	4
Hydrology	1

Exotic Species

Noxious Exotic Plants

Other Exotic Plants
BRTE, AGCR

Water:	0
Rock:	0
Talus:	0
Gravel:	0
Bare Ground:	5
Moss Lichen:	0
Litter:	95

Vegetation Types

		Percent	Pattern	Rank
Existing Veg1:	House site	98	Matrix	POOR
Veg Community1:	Developed			
Existing Veg2:	ERNA10/AGCR-BRTE-ACMI2	2	Small patches	POOR
Veg Community3:	disturbed shrub/grassland			
Existing Veg3:		0		
Veg Community3:				

Notes:

Polygon Number 14

ParkName:
Sacajawea

Survey Intensity	3
Observer	SL
Date	10/29/2008
Total Vegetation	6
Trees Total	0
Dominant Trees	
emergent	0
maincanopy	0
subcanopy	0
Shrubs Total	0
Dominant Shrubs	
> 1.5' tall	0
< 1.5' tall	6
Graminoids Total	6
Dominant Graminoids	SCTA2
Graminoids Perennial	6
Graminoids Annual	0
Forbs Total	0
Dominant Forbs	
Forbs Perennial	0
Forbs Annual	0
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	0
Exotics Perennial	0
Exotics Annual	0
Water	0
Rock Outcrop	0
Gravel	0
Logging	0
Fire:	0
Stand Age	0
Agriculture	0
Livestock	0
Development	5
Wildlife	3
Recreation Severity	3
Recreation Type	4
Hydrology	2

Exotic Species

Noxious Exotic Plants

Other Exotic Plants

Water:	0
Rock:	0
Talus:	0
Gravel:	0
Bare Ground:	0
Moss Lichen:	0
Litter:	100

Vegetation Types

			Percent	Pattern	Rank
Existing Veg1:	SCTA2		95	Matrix	GOOD
Veg Community1:	SCTA2	Crawford 2003			G5
Existing Veg2:	LELA2		5	4	POOR
Veg Community3:	disturbed wetland				
Existing Veg3:			0		
Veg Community3:					

Notes:

Polygon Number 15

ParkName:
Sacajawea

Survey Intensity	2
Observer	SL
Date	10/29/2008
Total Vegetation	3
Trees Total	3
Dominant Trees	ELAN
emergent	0
maincanopy	3
subcanopy	0
Shrubs Total	0
Dominant Shrubs	
> 1.5' tall	0
< 1.5' tall	0
Graminoids Total	3
Dominant Graminoids	SCTA2
Graminoids Perennial	3
Graminoids Annual	0
Forbs Total	0
Dominant Forbs	
Forbs Perennial	0
Forbs Annual	0
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	3
Exotics Perennial	3
Exotics Annual	0
Water	90
Rock Outcrop	0
Gravel	0
Logging	0
Fire:	0
Stand Age	1
Agriculture	0
Livestock	0
Development	5
Wildlife	3
Recreation Severity	3
Recreation Type	4
Hydrology	2

Exotic Species

Noxious Exotic Plants

Other Exotic Plants
ELAN

Water:	90
Rock:	0
Talus:	0
Gravel:	0
Bare Ground:	0
Moss Lichen:	0
Litter:	10

Vegetation Types

		Percent	Pattern	Rank
Existing Veg1:	Water	90	Matrix	FAIR
Veg Community1:	Water			
Existing Veg2:	ELAN/SCTA2	10	linear	FAIR
Veg Community3:	disturbed forested wetland			
Existing Veg3:		0		
Veg Community3:				

Notes:

Polygon Number 16

ParkName:
Sacajawea

Survey Intensity	3
Observer	SL
Date	10/25/2008
Total Vegetation	6
Trees Total	3
Dominant Trees	ELAN
emergent	0
maincanopy	0
subcanopy	3
Shrubs Total	3
Dominant Shrubs	ARTR2
> 1.5' tall	3
< 1.5' tall	0
Graminoids Total	4
Dominant Graminoids	CYDA
Graminoids Perennial	4
Graminoids Annual	0
Forbs Total	4
Dominant Forbs	LELA2, BASC5
Forbs Perennial	3
Forbs Annual	3
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	5
Exotics Perennial	5
Exotics Annual	3
Water	0
Rock Outcrop	0
Gravel	0
Logging	0
Fire:	0
Stand Age	1
Agriculture	0
Livestock	0
Development	2
Wildlife	3
Recreation Severity	3
Recreation Type	4
Hydrology	2

Exotic Species

Noxious Exotic Plants
BASC5, LELA2
Other Exotic Plants
CYDA, ELAN

Water:	0
Rock:	0
Talus:	0
Gravel:	0
Bare Ground:	2
Moss Lichen:	0
Litter:	98

Vegetation Types

		Percent	Pattern	Rank
Existing Veg1:	CYDA-BASC5-LELA2	70	Matrix	POOR
Veg Community1:	disturbed shrub/grassland			
Existing Veg2:	ELAN/CYDA-BASC5-LELA2	25	Large patch	POOR
Veg Community3:	disturbed forested wetland			
Existing Veg3:	ARTR2/BRTE-SPCR	5	4	FAIR
Veg Community3:	disturbed			

Notes:

Polygon Number 17

ParkName:
Sacajawea

Survey Intensity	3
Observer	SL
Date	10/29/2008
Total Vegetation	6
Trees Total	0
Dominant Trees	
emergent	0
maincanopy	0
subcanopy	0
Shrubs Total	1
Dominant Shrubs	ARTR2
> 1.5' tall	1
< 1.5' tall	0
Graminoids Total	5
Dominant Graminoids	SCTA2, SCAM6
Graminoids Perennial	5
Graminoids Annual	0
Forbs Total	3
Dominant Forbs	LELA2
Forbs Perennial	3
Forbs Annual	0
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	2
Exotics Perennial	2
Exotics Annual	0
Water	0
Rock Outcrop	0
Gravel	0
Logging	0
Fire:	0
Stand Age	0
Agriculture	0
Livestock	0
Development	5
Wildlife	3
Recreation Severity	3
Recreation Type	3
Hydrology	2

Exotic Species

Noxious Exotic Plants
LELA2
Other Exotic Plants

Water:	0
Rock:	0
Talus:	0
Gravel:	0
Bare Ground:	0
Moss Lichen:	0
Litter:	100

Vegetation Types

			Percent	Pattern	Rank
Existing Veg1:	SCTA2-SCAM6		90	Matrix	GOOD
Veg Community1:	SCTA2	Crawford 2003			G5
Existing Veg2:	LELA2		10	Small patches	POOR
Veg Community3:	disturbed wetland				
Existing Veg3:			0		
Veg Community3:					

Notes:

Polygon Number 18

ParkName:
Sacajawea

Survey Intensity	3
Observer	SL
Date	10/25/2008
Total Vegetation	6
Trees Total	3
Dominant Trees	ELAN, SAAM2
emergent	0
maincanopy	3
subcanopy	0
Shrubs Total	3
Dominant Shrubs	ARTR2, CHVI8
> 1.5' tall	3
< 1.5' tall	2
Graminoids Total	5
Dominant Graminoids	CYDA, THIN6, JUARL, BRTE
Graminoids Perennial	5
Graminoids Annual	0
Forbs Total	3
Dominant Forbs	LELA2
Forbs Perennial	3
Forbs Annual	0
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	5
Exotics Perennial	5
Exotics Annual	3
Water	0
Rock Outcrop	0
Gravel	0
Logging	0
Fire:	0
Stand Age	1
Agriculture	0
Livestock	0
Development	2
Wildlife	3
Recreation Severity	3
Recreation Type	4
Hydrology	2

Exotic Species

Noxious Exotic Plants
BASC5, LELA2
Other Exotic Plants
TARA, ELAN, CYDA, THIN6, BRTE

Water:	0
Rock:	0
Talus:	0
Gravel:	0
Bare Ground:	5
Moss Lichen:	0
Litter:	95

Vegetation Types

			Percent	Pattern	Rank	
Existing Veg1:	TARA-ELAN-SAAM2/CYDA-BASC5-LELA2-	BRTE-THIN6	50	Matrix	POOR	
Veg Community1:	disturbed forested wetland					
Existing Veg2:	ARTR2/LELA2-BRTE		30	4	POOR	
Veg Community3:	disturbed shrub/grassland					
Existing Veg3:	JUARL		20	Small patches	GOOD	
Veg Community3:	JUARL	Crawford 2003			G5	

Notes:

Polygon Number 19

ParkName:
Sacajawea

Survey Intensity	1
Observer	SL
Date	10/29/2008
Total Vegetation	0
Trees Total	0
Dominant Trees	
emergent	0
maincanopy	0
subcanopy	0
Shrubs Total	0
Dominant Shrubs	
> 1.5' tall	0
< 1.5' tall	0
Graminoids Total	0
Dominant Graminoids	
Graminoids Perennial	0
Graminoids Annual	0
Forbs Total	0
Dominant Forbs	
Forbs Perennial	0
Forbs Annual	0
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	0
Exotics Perennial	0
Exotics Annual	0
Water	0
Rock Outcrop	0
Gravel	0
Logging	0
Fire:	0
Stand Age	0
Agriculture	0
Livestock	0
Development	2
Wildlife	3
Recreation Severity	3
Recreation Type	4
Hydrology	2

Exotic Species

Noxious Exotic Plants

Other Exotic Plants

Water:	0
Rock:	0
Talus:	0
Gravel:	0
Bare Ground:	0
Moss Lichen:	0
Litter:	100

Vegetation Types

		Percent	Pattern	Rank
Existing Veg1:	Road System	100	Matrix	DEVELO
Veg Community1:	Developed			
Existing Veg2:		0		
Veg Community3:				
Existing Veg3:		0		
Veg Community3:				

Notes: road

Polygon Number 20

ParkName:
Sacajawea

Survey Intensity	1
Observer	SL
Date	10/29/2008
Total Vegetation	6
Trees Total	1
Dominant Trees	ELAN
emergent	0
maincanopy	1
subcanopy	0
Shrubs Total	0
Dominant Shrubs	
> 1.5' tall	0
< 1.5' tall	0
Graminoids Total	6
Dominant Graminoids	CYDA, THIN6, BRTE
Graminoids Perennial	5
Graminoids Annual	3
Forbs Total	3
Dominant Forbs	LEPE2
Forbs Perennial	0
Forbs Annual	3
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	6
Exotics Perennial	5
Exotics Annual	3
Water	0
Rock Outcrop	0
Gravel	0
Logging	0
Fire:	0
Stand Age	0
Agriculture	0
Livestock	0
Development	5
Wildlife	3
Recreation Severity	3
Recreation Type	4
Hydrology	1

Exotic Species

Noxious Exotic Plants
CHJU
Other Exotic Plants

Water:	0
Rock:	0
Talus:	0
Gravel:	0
Bare Ground:	0
Moss Lichen:	0
Litter:	100

Vegetation Types

		Percent	Pattern	Rank
Existing Veg1:	CYDA-THIN6-BRTE-CHJU	100	Matrix	POOR
Veg Community1:	disturbed shrub/grassland			
Existing Veg2:		0		
Veg Community3:				
Existing Veg3:		0		
Veg Community3:				

Notes: CHJU along road side

Polygon Number 21

ParkName:
Sacajawea

Survey Intensity	1
Observer	SL
Date	10/29/2008
Total Vegetation	6
Trees Total	0
Dominant Trees	
emergent	0
maincanopy	0
subcanopy	0
Shrubs Total	0
Dominant Shrubs	
> 1.5' tall	0
< 1.5' tall	0
Graminoids Total	5
Dominant Graminoids	SPCR, BRTE
Graminoids Perennial	3
Graminoids Annual	5
Forbs Total	3
Dominant Forbs	BASC5, SAKA
Forbs Perennial	3
Forbs Annual	0
Ferns Total	3
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	5
Exotics Perennial	0
Exotics Annual	5
Water	0
Rock Outcrop	0
Gravel	2
Logging	0
Fire:	0
Stand Age	0
Agriculture	0
Livestock	0
Development	5
Wildlife	3
Recreation Severity	3
Recreation Type	4
Hydrology	2

Exotic Species

Noxious Exotic Plants
BASC5
Other Exotic Plants
SAKA, BRTE

Water:	0
Rock:	0
Talus:	0
Gravel:	2
Bare Ground:	0
Moss Lichen:	0
Litter:	98

Vegetation Types

		Percent	Pattern	Rank
Existing Veg1:	BRTE-SPCR-BASC5-SAKA	100	Matrix	POOR
Veg Community1:	disturbed shrub/grassland			
Existing Veg2:		0		
Veg Community3:				
Existing Veg3:		0		
Veg Community3:				

Notes:

Polygon Number 22

ParkName:
Sacajawea

Survey Intensity	3
Observer	SL
Date	10/29/2008
Total Vegetation	6
Trees Total	4
Dominant Trees	PODE3, ELAN
emergent	3
maincanopy	4
subcanopy	0
Shrubs Total	3
Dominant Shrubs	SAEX
> 1.5' tall	3
< 1.5' tall	0
Graminoids Total	3
Dominant Graminoids	SPCR, BRTE
Graminoids Perennial	2
Graminoids Annual	2
Forbs Total	2
Dominant Forbs	ACMI2
Forbs Perennial	2
Forbs Annual	0
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	5
Exotics Perennial	5
Exotics Annual	2
Water	0
Rock Outcrop	0
Gravel	0
Logging	0
Fire:	0
Stand Age	1/2
Agriculture	0
Livestock	0
Development	5
Wildlife	3
Recreation Severity	3
Recreation Type	4
Hydrology	2

Exotic Species

Noxious Exotic Plants

Other Exotic Plants
ELAN, BRTE

Water:	0
Rock:	0
Talus:	0
Gravel:	0
Bare Ground:	0
Moss Lichen:	0
Litter:	100

Vegetation Types

		Percent	Pattern	Rank
Existing Veg1:	PODE3-ELAN-SAEX	75	Matrix	POOR
Veg Community1:	disturbed forested wetland			
Existing Veg2:	ACMI2-SPCR-BRTE	25	Large patch	FAIR
Veg Community3:	disturbed shrub/grassland			
Existing Veg3:		0		
Veg Community3:				

Notes:

Polygon Number 23

ParkName:
Sacajawea

Survey Intensity	2
Observer	SL
Date	10/29/2008
Total Vegetation	5
Trees Total	2
Dominant Trees	
emergent	0
maincanopy	2
subcanopy	0
Shrubs Total	0
Dominant Shrubs	
> 1.5' tall	0
< 1.5' tall	0
Graminoids Total	5
Dominant Graminoids	AGCR, BRTE
Graminoids Perennial	4
Graminoids Annual	4
Forbs Total	4
Dominant Forbs	ACMI2
Forbs Perennial	4
Forbs Annual	0
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	5
Exotics Perennial	4
Exotics Annual	4
Water	0
Rock Outcrop	0
Gravel	0
Logging	0
Fire:	0
Stand Age	1
Agriculture	0
Livestock	0
Development	1
Wildlife	3
Recreation Severity	3
Recreation Type	4
Hydrology	2

Exotic Species

Noxious Exotic Plants

Other Exotic Plants

Water:	0
Rock:	0
Talus:	0
Gravel:	0
Bare Ground:	20
Moss Lichen:	0
Litter:	80

Vegetation Types

		Percent	Pattern	Rank
Existing Veg1:	AGCR-BRTE-ACMI2	80	Matrix	POOR
Veg Community1:	disturbed shrub/grassland			
Existing Veg2:	Ranger Station	20	Large patch	DEVELO
Veg Community3:	Developed			
Existing Veg3:		0		
Veg Community3:				

Notes:

Polygon Number 25

ParkName:
Sacajawea

Survey Intensity	1
Observer	SL
Date	10/29/2008
Total Vegetation	5
Trees Total	2
Dominant Trees	PODE3
emergent	2
maincanopy	2
subcanopy	0
Shrubs Total	4
Dominant Shrubs	CHVI8, ERNA10
> 1.5' tall	4
< 1.5' tall	0
Graminoids Total	5
Dominant Graminoids	HECO26, BRTE
Graminoids Perennial	3
Graminoids Annual	5
Forbs Total	3
Dominant Forbs	ACMI2
Forbs Perennial	3
Forbs Annual	0
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	4
Exotics Perennial	0
Exotics Annual	4
Water	0
Rock Outcrop	0
Gravel	0
Logging	0
Fire:	0
Stand Age	0
Agriculture	0
Livestock	0
Development	6
Wildlife	3
Recreation Severity	3
Recreation Type	4
Hydrology	1

Exotic Species

Noxious Exotic Plants

Other Exotic Plants
BRTE

Water:	0
Rock:	0
Talus:	0
Gravel:	0
Bare Ground:	5
Moss Lichen:	0
Litter:	95

Vegetation Types

		Percent	Pattern	Rank
Existing Veg1:	CHVI8-ERNA10/BRTE-HECO26-ACMI2	90	Matrix	FAIR
Veg Community1:	disturbed shrub/grassland			
Existing Veg2:	Tower	10	Small patches	DEVELO
Veg Community3:	Developed			
Existing Veg3:		0		
Veg Community3:				

Notes:

Polygon Number 26

ParkName:
Sacajawea

Survey Intensity	1
Observer	SL
Date	10/25/2008
Total Vegetation	4
Trees Total	2
Dominant Trees	ACSA2, ELAN
emergent	0
maincanopy	2
subcanopy	0
Shrubs Total	1
Dominant Shrubs	COSE16, GLLE3, SAEX
> 1.5' tall	1
< 1.5' tall	0
Graminoids Total	4
Dominant Graminoids	CYDA, PHAR3, SCTA2
Graminoids Perennial	4
Graminoids Annual	1
Forbs Total	2
Dominant Forbs	LELA2, DIFU2, AMFR
Forbs Perennial	2
Forbs Annual	0
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	4
Exotics Perennial	4
Exotics Annual	0
Water	0
Rock Outcrop	0
Gravel	40
Logging	0
Fire:	0
Stand Age	1
Agriculture	0
Livestock	0
Development	2
Wildlife	3
Recreation Severity	3
Recreation Type	4
Hydrology	2

Exotic Species

Noxious Exotic Plants
PHAR3, LELA2
Other Exotic Plants
ELAN, CYDA

Water:	0
Rock:	0
Talus:	0
Gravel:	40
Bare Ground:	3
Moss Lichen:	0
Litter:	57

Vegetation Types

		Percent	Pattern	Rank	
Existing Veg1:	Parking Area	50	Matrix	DEVELO	
Veg Community1:	Developed				
Existing Veg2:	BRTE-SPCR-LELA2	40	Large patch	POOR	
Veg Community3:	disturbed shrub/grassland				
Existing Veg3:	ASCA2-ELAN-SAEX/COSE16-GLLE3-CYDA-PHAR3-SCTA2-LELA2			10	Small patches
Poor					
Veg Community3:	disturbed forested				

Notes: parking lot and disturbed area; ELAN 15 years old

Polygon Number 27

ParkName:
Sacajawea

Survey Intensity	2
Observer	SL
Date	10/29/2008
Total Vegetation	6
Trees Total	1
Dominant Trees	TARA
emergent	0
maincanopy	1
subcanopy	0
Shrubs Total	0
Dominant Shrubs	
> 1.5' tall	0
< 1.5' tall	0
Graminoids Total	6
Dominant Graminoids	SCTA2, TYLA
Graminoids Perennial	6
Graminoids Annual	0
Forbs Total	2
Dominant Forbs	EUOC4, APCA
Forbs Perennial	2
Forbs Annual	0
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	1
Exotics Perennial	1
Exotics Annual	1
Water	0
Rock Outcrop	0
Gravel	0
Logging	0
Fire:	0
Stand Age	0
Agriculture	0
Livestock	0
Development	5
Wildlife	3
Recreation Severity	3
Recreation Type	3
Hydrology	2

Exotic Species

Noxious Exotic Plants
TARA
Other Exotic Plants

Water:	0
Rock:	0
Talus:	0
Gravel:	0
Bare Ground:	0
Moss Lichen:	0
Litter:	100

Vegetation Types

			Percent	Pattern	Rank
Existing Veg1:	SCTA2-TYLA-EUOC4-APCA		100	Matrix	GOOD
Veg Community1:	SCTA2-TYLA	Crawford 2003			G5
Existing Veg2:					
Veg Community3:					
Existing Veg3:			0		
Veg Community3:					

Notes: TARA along view

Polygon Number 28

ParkName:
Sacajawea

Survey Intensity	1
Observer	SL
Date	10/29/2008
Total Vegetation	6
Trees Total	0
Dominant Trees	
emergent	0
maincanopy	0
subcanopy	0
Shrubs Total	0
Dominant Shrubs	
> 1.5' tall	0
< 1.5' tall	0
Graminoids Total	5
Dominant Graminoids	SPCR, BRTE
Graminoids Perennial	2
Graminoids Annual	5
Forbs Total	3
Dominant Forbs	ASSP, BASC5
Forbs Perennial	3
Forbs Annual	3
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	5
Exotics Perennial	0
Exotics Annual	5
Water	0
Rock Outcrop	0
Gravel	0
Logging	0
Fire:	0
Stand Age	0
Agriculture	0
Livestock	0
Development	5
Wildlife	3
Recreation Severity	3
Recreation Type	4
Hydrology	2

Exotic Species

Noxious Exotic Plants
BASC5
Other Exotic Plants
BRTE

Water:	0
Rock:	0
Talus:	0
Gravel:	0
Bare Ground:	0
Moss Lichen:	0
Litter:	100

Vegetation Types

		Percent	Pattern	Rank
Existing Veg1:	BRTE-BASC5-ASSP-SPCR	100	Matrix	POOR
Veg Community1:	disturbed shrub/grassland			
Existing Veg2:				
Veg Community3:				
Existing Veg3:		0		
Veg Community3:				

Notes:

Polygon Number 29

ParkName:
Sacajawea

Survey Intensity	2
Observer	SL
Date	10/29/2008
Total Vegetation	6
Trees Total	0
Dominant Trees	
emergent	0
maincanopy	0
subcanopy	0
Shrubs Total	4
Dominant Shrubs	SAEX
> 1.5' tall	4
< 1.5' tall	0
Graminoids Total	4
Dominant Graminoids	SPCR, BRTE
Graminoids Perennial	3
Graminoids Annual	4
Forbs Total	4
Dominant Forbs	ACRE3
Forbs Perennial	4
Forbs Annual	0
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	4
Exotics Perennial	4
Exotics Annual	4
Water	0
Rock Outcrop	0
Gravel	0
Logging	0
Fire:	0
Stand Age	0
Agriculture	0
Livestock	0
Development	5
Wildlife	3
Recreation Severity	3
Recreation Type	4
Hydrology	2

Exotic Species

Noxious Exotic Plants
ACRE3
Other Exotic Plants
BRTE

Water:	0
Rock:	0
Talus:	0
Gravel:	0
Bare Ground:	0
Moss Lichen:	0
Litter:	100

Vegetation Types

		Percent	Pattern	Rank
Existing Veg1:	ACRE3-BRTE-SPCR	57	Matrix	FAIR
Veg Community1:	disturbed shrub/grassland			
Existing Veg2:	SAEX/ACRE3-BRTE	43	Large patch	FAIR
Veg Community3:	disturbed forested wetland			
Existing Veg3:		0		
Veg Community3:				

Notes:

Polygon Number 30

ParkName:
Sacajawea

Survey Intensity	2
Observer	SL
Date	10/27/2008
Total Vegetation	6
Trees Total	6
Dominant Trees	PODE3, ELAN, SAAM2
emergent	3
maincanopy	3
subcanopy	3
Shrubs Total	0
Dominant Shrubs	
> 1.5' tall	0
< 1.5' tall	0
Graminoids Total	4
Dominant Graminoids	CYDA, BRTE
Graminoids Perennial	4
Graminoids Annual	3
Forbs Total	3
Dominant Forbs	EQHY, LELA2
Forbs Perennial	3
Forbs Annual	0
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	5
Exotics Perennial	5
Exotics Annual	3
Water	0
Rock Outcrop	0
Gravel	0
Logging	0
Fire:	0
Stand Age	1/2
Agriculture	0
Livestock	0
Development	2
Wildlife	3
Recreation Severity	3
Recreation Type	4
Hydrology	2

Exotic Species

Noxious Exotic Plants
LELA2
Other Exotic Plants
ELAN, CYDA, BRTE

Water:	0
Rock:	0
Talus:	0
Gravel:	0
Bare Ground:	2
Moss Lichen:	0
Litter:	98

Vegetation Types

		Percent	Pattern	Rank
Existing Veg1:	CYDA-EQHY-LELA2-BRTE	70	Matrix	POOR
Veg Community1:	disturbed wetland			
Existing Veg2:	PODE3-ELAN-SAAM2	30	Large patch	POOR
Veg Community3:	disturbed forested wetland			
Existing Veg3:		0		
Veg Community3:				

Notes:

Polygon Number 31

ParkName:
Sacajawea

Survey Intensity	1
Observer	SL
Date	10/25/2008
Total Vegetation	5
Trees Total	1
Dominant Trees	ELAN
emergent	0
maincanopy	1
subcanopy	0
Shrubs Total	0
Dominant Shrubs	
> 1.5' tall	0
< 1.5' tall	0
Graminoids Total	5
Dominant Graminoids	
Graminoids Perennial	5
Graminoids Annual	0
Forbs Total	3
Dominant Forbs	LELA2
Forbs Perennial	3
Forbs Annual	0
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	6
Exotics Perennial	6
Exotics Annual	0
Water	0
Rock Outcrop	0
Gravel	0
Logging	0
Fire:	0
Stand Age	1
Agriculture	0
Livestock	0
Development	2
Wildlife	3
Recreation Severity	2
Recreation Type	4
Hydrology	2

Exotic Species

Noxious Exotic Plants
LELA2
Other Exotic Plants
CYDA, ELAN

Water:	0
Rock:	0
Talus:	0
Gravel:	0
Bare Ground:	5
Moss Lichen:	0
Litter:	95

Vegetation Types

		Percent	Pattern	Rank
Existing Veg1:	ELAN/CYDA-LELA2	100	Matrix	POOR
Veg Community1:	disturbed forested wetland			
Existing Veg2:		0		
Veg Community3:				
Existing Veg3:		0		
Veg Community3:				

Notes:

Polygon Number 32

ParkName:
Sacajawea

Survey Intensity	1
Observer	SL
Date	10/27/2008
Total Vegetation	6
Trees Total	4
Dominant Trees	PODE3, SAAM2, SAEX
emergent	3
maincanopy	3
subcanopy	0
Shrubs Total	0
Dominant Shrubs	
> 1.5' tall	0
< 1.5' tall	0
Graminoids Total	5
Dominant Graminoids	SCTA2, TYLA
Graminoids Perennial	5
Graminoids Annual	0
Forbs Total	0
Dominant Forbs	
Forbs Perennial	0
Forbs Annual	0
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	3
Exotics Perennial	3
Exotics Annual	0
Water	5
Rock Outcrop	0
Gravel	0
Logging	0
Fire:	0
Stand Age	1/2
Agriculture	0
Livestock	0
Development	5
Wildlife	3
Recreation Severity	3
Recreation Type	4
Hydrology	2

Exotic Species

Noxious Exotic Plants
CIAR4, BASC5
Other Exotic Plants
PODE3, ELAN, PHAU7

Water:	5
Rock:	0
Talus:	0
Gravel:	0
Bare Ground:	1
Moss Lichen:	0
Litter:	94

Vegetation Types

			Percent	Pattern	Rank	
Existing Veg1:	SCTA2-TYLA		70	Matrix	GOOD	
Veg Community1:	SCTA2-TYLA	Crawford 2003			G5	
Existing Veg2:	PODE3-SAAM2-SAEX/CIAR4-ELAN/PHAU7-	LELA2-BASC5	30		Large patch	POOR
Veg Community3:	disturbed forested wetland					
Existing Veg3:						
Veg Community3:						

Notes: