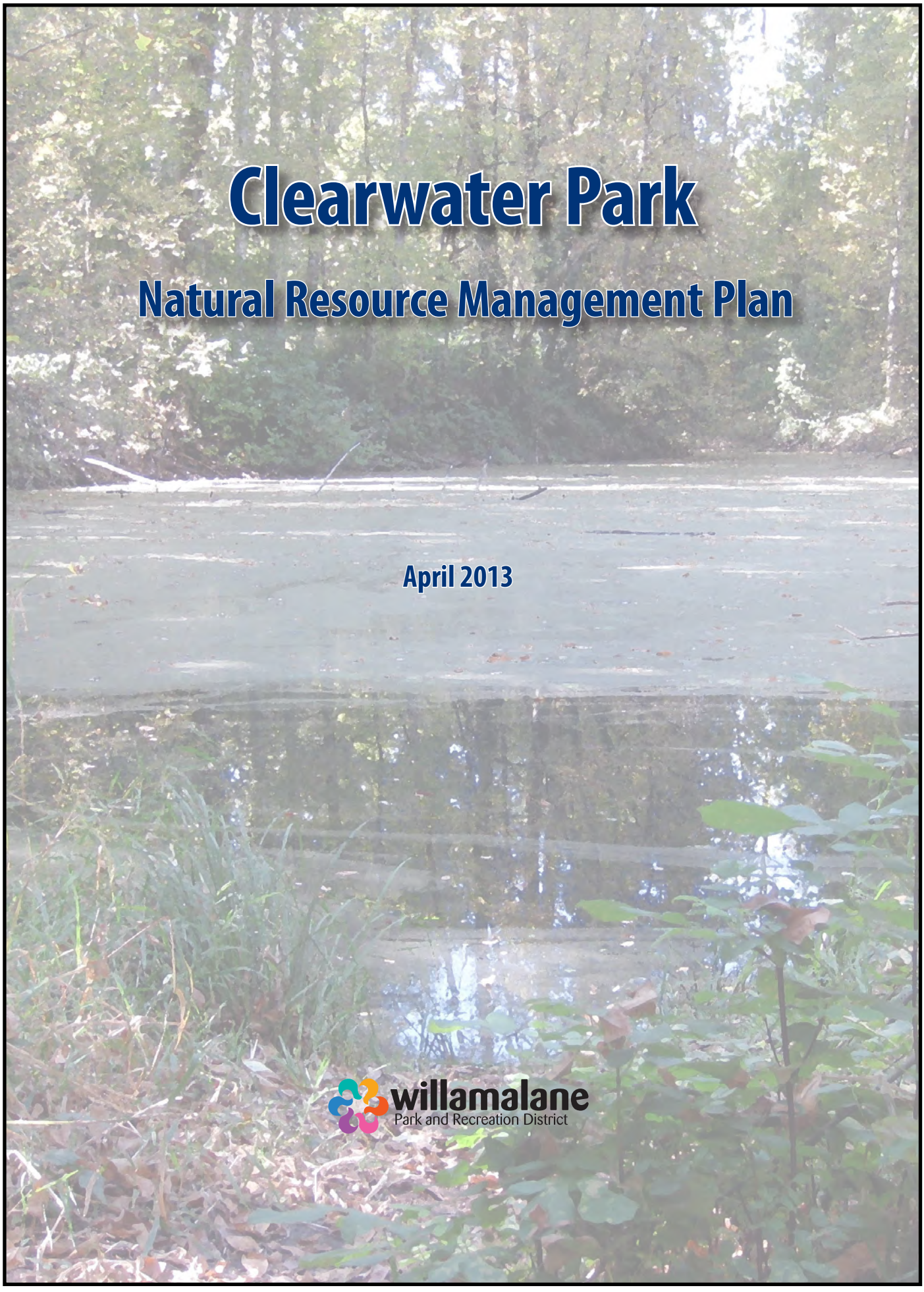

Clearwater Park

Natural Resource Management Plan

April 2013

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Park and Recreation District

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Clearwater Park

Natural Resource Management Plan



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April 2013

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1.0 Introduction and Background

1.1 Introduction

Clearwater Park is located approximately one half mile to the south of the city limits of Springfield, Oregon along the Middle Fork Willamette River. The 65-acre park has been owned and managed by the Willamalane Park and Recreation District (District) since 1989 when it was transferred from Lane County ownership, but has served as a public park for nearly 60 years. Much of the park property was previously owned by the Clearwater family from 1873 until 1954. Today, Clearwater Park is a hub for water and trail related recreation and contains a mix of habitats. Recent park improvements have included the renovation of the Springfield Mill Race intake and channel, construction of the Middle Fork Path, and installation of a new boat landing and parking area. These improvements have contributed to a substantial increase in park usage, particularly in the summer months. The increase of legitimate park use appears to be having the effect of significantly reducing illegal activities, which have long plagued the park. The park contains significant areas of riparian, aquatic, and grassland habitat and is situated just upstream from the Springfield Utility Board (SUB) well fields, so also serves an important groundwater protection function. Clearwater Park is a key component of a much broader network of permanently protected open spaces and habitats that are situated along both sides of the Middle Fork Willamette River totaling nearly 5,000 acres.

1.2 Purpose and Need

The purpose of this Natural Resource Management Plan is to document historic and existing site conditions, describe a vision for the park's natural resource areas, and provide detailed direction for short- and long-term management and restoration of a site's natural areas and related facilities. The plan provides context under which future management decisions can be made within the confines of existing adopted plans, District priorities, and available resources and funding. The recommended management actions and proposed restoration concepts contained within the plan have been prioritized to help direct available District resources. The District may seek grant funding or partnerships with other regional partners to help implement components of the plan.

Clearwater Park was identified by District staff as a high priority for management planning in part because recreational use in the area is increasing rapidly due to recent upgrades in facilities and because the park has been identified as containing some of the highest quality habitat within the District's park system *Natural Resource Areas Management Plan* (Willamalane, 2012). In addition, the recently completed *Inventory and Habitat Assessment for Clearwater Park* (Salix Associates, 2011) has identified the park as having high potential for habitat enhancement along with a number of rapidly emerging invasive species issues.

1.3 Willamalane Comprehensive Plan Guidance

Adopted by the Willamalane Board in October 2012, the *Willamalane Park and Recreation Comprehensive Plan* (Comp Plan) provides a specific, community-supported plan for the future of the District's parks and open spaces. The plan provides guidance on recreational facilities, programs, services, and natural resource area use and management. The Comp Plan is an important policy document and key elements from the plan related to natural resource area management in Clearwater Park and use are listed below:

Our community looks to Willamalane to be stewards of our natural resources. Willamalane will provide leadership in conserving these resources, and look for new and better ways to be environmentally responsible.

1.3.1 Key Comp Plan Goals Related to Natural Areas

- Provide opportunities to enjoy nature (goal): Willamalane's parks, programs, and facilities offer unique opportunities to enjoy nature, view wildlife, and develop a sense of well-being that grows from a deep relationship with nature and a connection to the natural world.
- Preserve the natural environment (goal): Our community looks to Willamalane to be stewards of our natural resources. Willamalane will provide leadership in conserving these resources, and look for new and better ways to be environmentally responsible. Willamalane will provide parks and open spaces that offer close-to-home access to recreational opportunities, while preserving important natural resources.

1.3.2 Key Comp Plan Strategies and Action Related to Clearwater Park

- Parks and Natural Areas: Provide parks, natural areas, connections to waterways, and walking and biking trails, while respecting private property rights.
- Park and Facility Operations: Manage district parks and facilities to promote recreation, user safety and sustainable environmental practices; and to protect public investment.
- Clearwater Park Master Plan Implementation (Action 5.4): Over the planning period, Willamalane will implement the improvements identified in the Draft *Clearwater Park Master Plan*. Clearwater Park is located on the Middle Fork of the Willamette River, and has been undergoing significant changes in the last few years, including development of the new inlet for the Springfield Mill Race, and a new boat landing. Additional improvements identified in the master plan include an accessible fishing pier, archery range, disc golf course, nature play area, additional waterfront trails, and native plant demonstration garden. While most of the improvements are not directly water-related, they will improve the value and use of this large riverfront park.

1.4 Other Related Studies and Plans

A number of existing plans and studies provide policy and site specific direction for the management and enhancement of Clearwater Park. The importance of Clearwater Park is highlighted from a regional perspective in The *Rivers to Ridges Regional Park and Open Space Vision* (LCOG, 2003), which identifies the Middle Fork Willamette River and Springfield Mill Race as being *Key Water-Based Connections* or *Blueways*. These are described as essential corridors for accommodating connectivity between parks and open spaces and for recreational trails. The *Willamette River Open Space Vision and Action Plan* (LCOG, 2010), is a refinement of *Rivers to Ridges*, and reinforces the importance of Clearwater Park as a key component of Middle Fork open space corridor and recommends actions and strategies related to channel complexity, habitat enhancement, and nature based recreational facilities (www.lcog.org/willamette). The concepts and recommendations from both visioning documents have been incorporated into this Management Plan where feasible and the District supports actively collaborating with other *Rivers to Ridges* partners toward implementing the regional open space vision.

The District has produced a number of plans and studies that provide specific direction on Clearwater Park. Each of these have been reviewed and reflected, as feasible, in this Management Plan. These include:

- *Clearwater Park Management Plan* (Willamalane, September 2010): This high level plan provides direction for the overall management of facilities and programs within the park, but does not include content specific to natural resource management. It recommends that a separate Natural Resource Management Plan be developed.

- *Inventory and Habitat Assessment for Clearwater Park* (Salix Associates for Willamalane, Spring 2011): This report includes an evaluation of current condition of terrestrial habitats in Clearwater Park; an evaluation of threats to those habitats; and recommendations for future habitat enhancements. **See Appendix A**.

- *Willamalane Natural Resource Areas Management Plan* (Willamalane, July 2012): The purpose of this plan is to define a clear and achievable approach for long-term management of the natural resources and specific ecological communities contained within District-owned properties. The plan provides context for District-owned natural areas in relationship to the larger regional open space system; defines and assesses the quality and potential of existing natural resource areas; provides District-wide goals and objectives for managing these resources; and outlines a framework for site-specific management planning to be implemented over time. The format and much of the content of the *Clearwater Park Natural Resource Management Plan* is based on guidance from the Willamalane NRAMP. **See NRAMP at Weblink:** http://www.willamalane.org/pages/aboutus/future.shtml, "Natural Areas" tab.

- *Clearwater Park Master Plan* (Willamalane, under development): This 20-year master plan identifies long-term desired development and facilities within the park. Although it does not include specific natural resource management recommendations, it does provide clarity on which areas of the park will be maintained as natural area over the long-term and what types of nature-based recreational facilities are planned. **See Appendix B** for the *Draft Master Plan Diagram*.

Key Definitions

Exotic Species: A plant or animal species that is not native to the Willamette Valley, also referred to as *non-native*.

Invasive species: A plant or animal species that is considered to have, or potentially have, high or medium impact on natural areas.

Native Species: Plant or animal species that are known to have occurred in the Willamette Valley prior to Euro-American settlement.

Natural Resource Area: An area of land that is managed for natural resource values including wildlife habitat, water quality function, and visual quality and that provides opportunities for nature-based recreation, education, and research (District definition).

Nature-Based Recreation: Includes recreational activities that benefit from proximity to nature and are compatible with natural resource values. Examples of nature-based recreation include wildlife viewing, nature study, walking for pleasure, jogging, bicycling, fishing, nature play, and picnicking (District definition).

Rare Species: A native plant or animal species that is currently rare to very uncommon on the Willamette Valley floor.

Path: A paved travel way designated for pedestrians and bicycles, typically ten feet in width and highly accessible (e.g. Middle Fork Path).

Trail: A soft surfaced travel way designated for pedestrian use (walking or running). Soft-surfaced trails are typically 2-4 feet in width and can be un-surfaced (bare earth) or surfaced with gravel, bark, or wood chips.

Clearwater Park Management Plan - Context Map

Legend

- Willamalane Park Ownership
- Future Park (acquisition pending)
- Willamalane Planning Area
- Clearwater Park
- Other Protected Park or Open Space

N
W E
S

0 1/4 1/2 Mile

Scale

Map produced by LCOG; Aerial Photo: 2009

December 2012

willamalane Park and Recreation District

BLM
Harvest Landing
Beltline Rd.
Gateway St.
Menlo Park
I-5
Pioneer Pkwy
McKenzie River
Guy Lee Park
Royal Delle Park
Centennial Blvd
19th St.
EWEB Path
Moe Property
Oxbow (Springfield)
MRT
Hwy. 126
Mohawk Blvd.
Kelly Butte Park
Eastgate Woodland
W. D Street Greenway
Meadow Park
Willamalane Park
Alton Baker Park
Whilamut Natural Area
MWMC
Willamette
14th St.
28th St.
42nd St.
Main
Willamalane Center
Volunteer Park
Street
Lively Park
Cedar Creek
Ruff Park
MRT
Berggren (MRT)
Vickery Park (LC)
McKenzie River
Bob Artz Park
Hwy. 126
Rob Adams Park
58th St.
Mountain Park
Jesse Maine Park
Gray Property
BLM
Island Park
S. 2nd St.
Springfield Mill Race
Dorris Ranch
Willamette Heights Park
Middle Fork Path
G-P Property
Clearwater Park
Jasper Meadows Park and JM South
Bob Straub Parkway
Hendricks Park (Eugene)
Moon Mnt. (Eugene)
Middle Fork
TNC
Willamette Confluence (The Nature Conservancy)
OPRD
LC
Coast Fork
30th Ave.
Lane Community College
I-5
Buford Recreation Area (Lane County)
Arlie Park

2.0 Site History and Existing Conditions

2.1 Site Description

Clearwater Park is bordered to the south by the Middle Fork Willamette River, which has been the major force that has shaped and reshaped the landform and ecology of the area for millennia through channel migration and flooding. Much of the park lies within the 100-year floodplain of the river and contains a number of abandoned river channels and a recently reconstructed segment of the restored Springfield Mill Race (see 2011 Aerial Photo). The undeveloped portion of the park is approximately 62 acres in size and contains significant areas of riparian forest, including a substantial amount of areas that are seasonally wet or flooded; aquatic habitat in the form of a small pond, the Springfield Mill Race, and several lower areas of remnant channels; and areas of open grassland which are currently mowed or hayed on a regular basis. Clearwater Park is bordered to the south and west by significant areas of protected natural area including the former *GP Property* (now owned by Willamalane, Springfield Utility Board, and the City of Springfield) just downstream and The Nature Conservancy's *Willamette Confluence Property* immediately across the river. Agricultural and low-density residential land uses border the park to the east and north.

2.2 Site History

Historical accounts indicate that, prior to European settlement, much of the Willamette Valley was in an open prairie or savanna condition, dominated by native grasses and forbs with widely scattered trees on the hill slopes and broad bands of riparian forest along the rivers. The native Kalapuyan people regularly set fires to improve hunting and travel and these fires helped maintain the valley's mosaic of open habitats (Oregon Conservation Strategy, ODFW, 2006). Forested areas persisted on shadier north facing hill slopes and along rivers. For thousands of years, the Willamette River and its tributaries have meandered through the flat valley bottom, changing course on a frequent basis. Regular floods inundated large areas of the valley bottom including much of what is today the city of Springfield and large areas along the McKenzie and Middle Fork Willamette River corridors, including what is today Clearwater Park. These floods shaped the landscape and deposited thick layers of rich agricultural soils and gravels. This dynamic river system also created abundant aquatic habitat by continuously carving new side channels, building sheltered alcoves, creating pools, toppling trees, and pushing sediment downstream.

The best record of the pre-settlement vegetation pattern for the Willamette Valley is derived from the General Land Office (GLO) survey notes that were recorded in the 1850s. These detailed survey notes, which documented vegetation types and location of major features such as rivers, sloughs, and hills, were translated to map form in the 1990s (Christy et al.) and are a useful resource for interpreting historic condition and documenting change over time. The GLO surveys indicate that much of what is today Clearwater Park was in riparian forest and river side channel (see map). The riparian forest lining the river in this area was approximately two miles in width, with prairie-savanna dominating to the north and south.

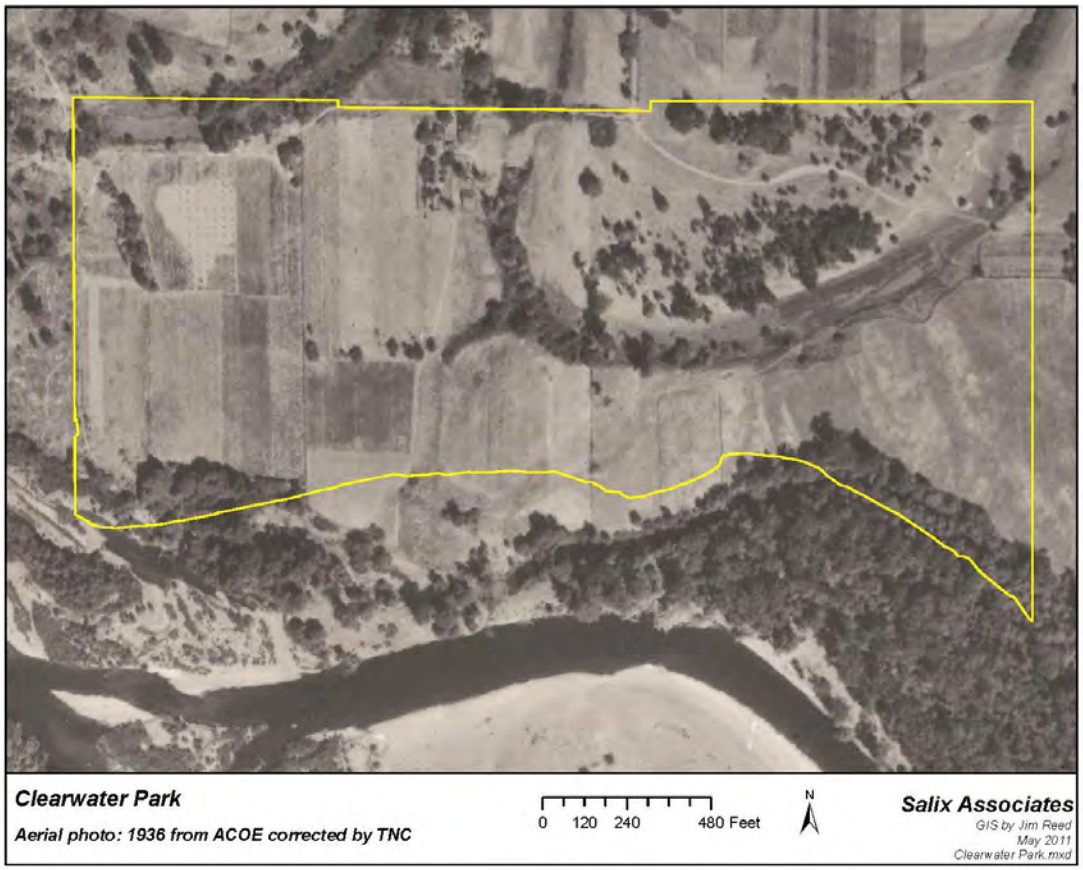
As the Willamette Valley was settled, many of the forested riparian areas were cleared and converted to agricultural uses. The 1936 aerial photo of the Clearwater Park area shows that the majority of the land within today's park boundary had been cleared and was being utilized

for hayfield, pasture, and orchard. The main river channel at this time was approximately 300 feet to the south of its current location and small patches of riparian vegetation are evident along the southern edge of the park boundary and along a former channel braid on the eastern half of the site. Records show that Martin W. Clearwater was deeded 150 acres in 1873 under the Homestead Act, much of which is today included within the park boundary. The family grew many crops over the years including alfalfa, wheat, corn, hops, and beans and also used portions of the property for grazing livestock including horses, dairy cows, and sheep (Oral History – Leonard Clearwater, 1989).

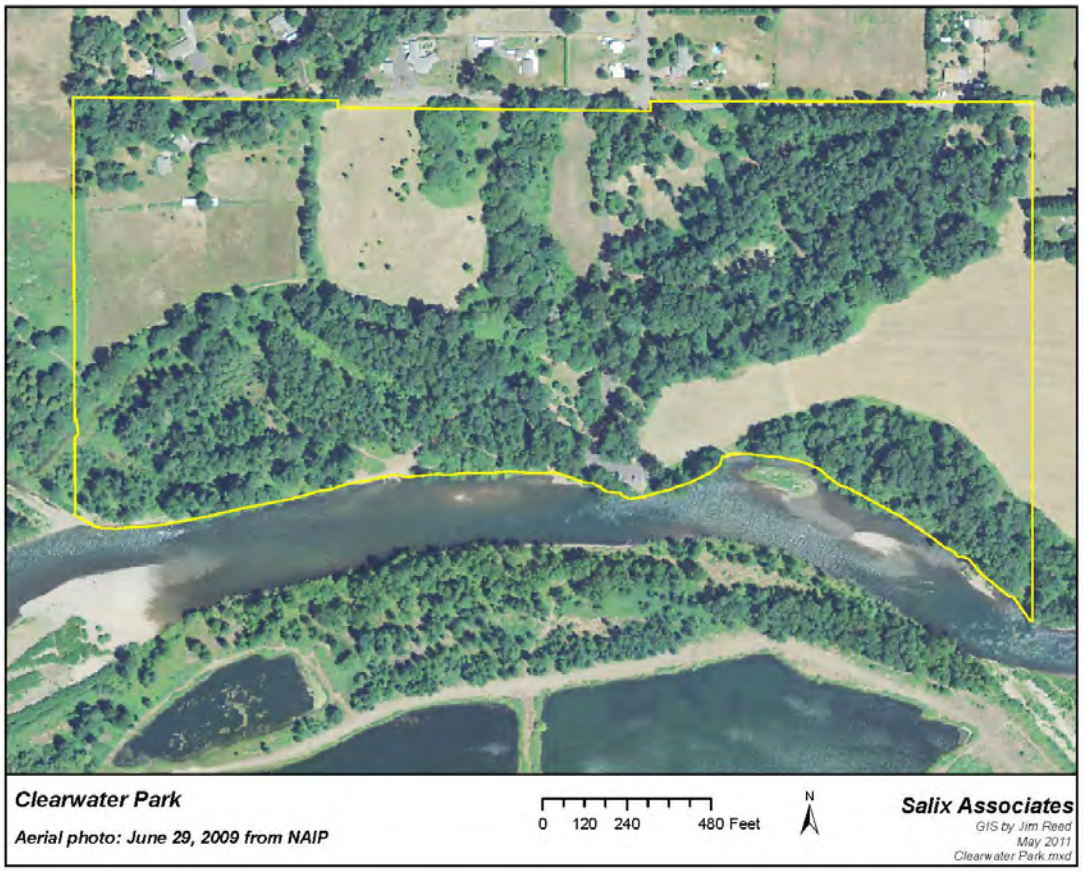
The property largely remained in the Clearwater family's ownership, until 1954, at which time a large portion of their original land claim was deeded to Lane County, who purchased the property for potential gravel mining purposes. Lane County allowed the State to extract a limited amount of gravel for road building.

A 1957 aerial photo shows a dramatic shift of the river channel northward from the 1936 position, with a side channel forming at the approximate location of the present day Mill Race channel. Based on this aerial photo, agricultural uses still covered most of the park area at that time. Aerial photos that were taken in 1979 show the river having shifted to approximately its current location, with substantial riparian forest present, also approximately in the same location as it's found today. These photos also show evidence of some small scale aggregate mining having occurred and associated access roads. These features are evident on the ground today, but have mostly re-vegetated. In 1982, Lane County deeded the portion of the property then located to the south of the migrating river to the Wildish Land Company, who has since conducted significant gravel mining in that area. In 1989, Lane County deeded the remainder to Willamalane Park and Recreation District, who expanded the park to its current extent in 2010 with the purchase of the 17.6 acre former *Vinyard Property* on the park's western end from the City of Springfield. A house remains on that property and is currently rented.

Several major site improvements have been completed in Clearwater Park in recent years and will affect how the park's natural resources are managed. The first phase of the Middle Fork Path project was completed in 2011 and included a parking area and paved multi-use path. The path extends from Clearwater Park and eastward along the Middle Fork Willamette River and will terminate at a trailhead facility near the main entrance to Dorris Ranch when phase II construction is completed, which is expected to be in 2013. The *Mill Race Ecosystem Restoration Project*, sponsored by the City of Springfield and U.S. Army Corps of Engineers (USACOE), was completed in 2011. This project included construction of a new intake to the Springfield Mill Race to divert flow from the Middle Fork Willamette River and includes a new channel segment within Clearwater Park. Installation of a new boat ramp and additional parking was completed in 2012. District staff have noted a significant increase in park use associated with these upgraded facilities.



Note: Park boundary shown in yellow



2.3 Recent Natural Resource Management Activities

Recent and ongoing natural resource-related management activities and projects within Clearwater Park have included:

- Mowing
    - All open grassy areas are mowed on a semi-annual basis for fire suppression and to control exotic and woody vegetation.
    - Since 2010, blackberries have been mowed on a semi-annual basis at the edges of open grassy areas and in a small clearing just southeast of where the Middle Fork Path intersects the soft-surface trail.
    - The shoulders of the Middle Fork Path are mowed approximately 3-4 times per year to keep the pavement clean and free of obstructions and to maintain adequate vision clearance.
    - The shoulders of soft-surface trails are mowed as needed to keep the trails free of obstructions and to maintain adequate vision clearance.
- Other Invasive Species Control
    - In 2011, Willamalane staff, working with the Northwest Youth Corps, cut ivy vines on tree trunks near the park entry and in the wooded area north of the boat launch parking lot to keep the ivy out of the tree canopies and prevent fruit/seed production.
    - False brome seed heads were removed in late spring 2008, and false brome was treated with herbicide in fall 2008 and late spring 2009, with assistance from the Oregon State Weed Board.
    - Scotch broom was removed in the area west of the boat launch parking lot in 2011.
    - Staff removed a patch of yellow archangel along the west side of the park access drive south of the Middle Fork Path trailhead in 2011, following its identification by Salix Associates. Follow up will occur in fall 2012.
- Restoration/Enhancement Projects
    - Invasive species (predominately blackberries) were removed and native vegetation planted along both banks of the new Mill Race channel in 2011 as part of the Springfield Mill Race Ecosystem Restoration Project. Also, native seed mix was planted in the large open field in the north-central portion of the site.
    - Native trees and understory plants were installed along the Middle Fork Path in 2010 as part of the path construction project.
    - Native trees and understory plants were installed around the parking lot, along the river bank near the old boat ramp, near the park access road, and near the Middle Fork Path trailhead as part of the Clearwater Park Boat Landing Improvements, Park Access Road Widening, and Park Host Site projects in 2012.
    - Several bat boxes were installed in 2012 as part of an Eagle Scout project.

- Inventory, Mapping, Monitoring
    - Willamalane staff inventoried and mapped the extent of false brome in the park in 2008. Monitoring and photo-documentation was conducted following 2008 false brome treatment and updated mapping using was completed in 2012.
    - A biodiversity inventory and habitat assessment was conducted by Salix Associates in spring 2011.
    - Willamalane staff mapped the park trails using GPS in 2012 (see Existing Conditions Map).
- Public Outreach/Education
    - Interpretive signage, including information about the area's native plants and wildlife, was installed near the boat launch parking area and at the Middle Fork Path trailhead in 2010 and 2011.
    - Temporary signage with information about false brome was installed as part of the false brome control efforts in 2008 and 2009.

2.4 Topography and Hydrology

The topography found in Clearwater Park is largely the result of proximity to the dynamic river system, which has migrated through this area over time, leaving a series of remnant channels and terraces. Remnants of small scale aggregate mining depressions and associated spoil piles and access roads are evident in floodplain areas of the northeast and southwest corners of the park. The Elevation Map, which includes Light Detection and Ranging (LiDAR) derived topography, highlights these features.

Approximately half of Clearwater Park is situated within the mapped 100-year floodplain of the Middle Fork Willamette River and many of these areas are seasonally wet (see 2011 Aerial Photo and Existing Conditions Map). Flows on the river are greatly affected by several upstream flood control dams operated by the U.S. Army Corps of Engineers, which have greatly reduced the severity and duration of flood events. It is estimated that natural peak river flows have been reduced on the Willamette system by approximately 45 percent and spring flows are lessened as snow melt is stored in flood control reservoirs and released over several months during the summer. Seasonal low (August/September) flows in the post-dam era are estimated to be roughly twice the pre-dam flows.

In Clearwater Park, a small pond, along with some of the deeper areas of the remnant side channels, contain permanent water, providing valuable areas of aquatic habitat. Almost all of the remnant channels flood on a seasonal basis in the wet months during high river flows. It is likely that these features are also fed from subsurface, or hyporheic flow, associated with the nearby river. In 2010, a new intake for the Springfield Mill Race was constructed in Clearwater Park, which included 1,800 linear feet of reconstructed channel passing through the park, roughly following the alignment of a remnant side channel. The Mill Race is designed to flow throughout the year with a goal of providing improved side channel habitat for Chinook salmon and steelhead. The Mill Race is designed to carry between 5 and 300 cubic feet per second (cfs) of water, which will vary depending on river levels.

2.5 Geology and Soils

The underlying geology of Clearwater Park consists of deep alluvial deposits laid down by thousands of years of river migration and flooding. Oregon Department of Geology and Mineral Industries (DOGAMI) mapping identifies the southern one third of the park as *Meander Belt Alluvium* made up of deep deposits of mixed grained sediments. The northern two thirds of the park is mapped as *Braided-fan Alluvium*, which consists of course grained sediments and coble. Based on U.S. Natural Resource Conservation Service (NRCS) mapping, two soil types, also associated with floodplain formation, are found in a mixed pattern through the park. *Newberg Fine Sandy Loam* [95] is located generally on the higher terraces in the park and consists of deep very well drained sandy loam. The lower areas of the park are mapped as *Fluvents* [48], which are deep well drained soils associated with island and low floodplains along major rivers or streams.

2.6 Existing Habitat Types

The vegetation and habitats found in Clearwater Park have been influenced by the dynamic nature of the Middle Fork Willamette River and more recently by human land use activities and will continue to change over time. Approximately 59.4 of the park's 65 acres are in a vegetated condition, with the remaining area being open water, gravel bars, or impervious surfaces (see *Existing Conditions Map*).

Riparian Habitat: The majority of Clearwater Park is in an undeveloped condition and contains a variety of habitat types. Riparian forest is the most predominant habitat, located along the river corridor, abandoned channels, and upper river terrace areas. Approximately one third of the riparian habitat is within the lower areas of remnant side channels and is seasonally wet and prone to seasonal flooding. The primary distinction between these areas is that the seasonally wet riparian areas contain a higher percentage of moisture-dependent species such as Oregon ash, dogwood, and slough sedge, whereas the upper terraces support more drought tolerant species such as bigleaf maple, Douglas-fir, and incense cedar. Approximately 38.4 acres of riparian habitat are currently found in the park, of which 11.1 acres are classified as *seasonally wet*.

Grassland Habitat: Grassland habit is also common in the upper terrace areas of the park. These areas are generally former agricultural fields that have been mowed or hayed seasonally for many years. These areas could also be classified as upland prairie habitat, but currently contain very few native prairie grasses or forbs. Grassland habitat, including areas planned for future recreational uses such as archery range, nature center, and disc golf course, total approximately 19.1 acres.

Aquatic Habitat: Small, but noteworthy areas of aquatic habitat are found within the park including a small pond and several low areas of abandoned river channel that retain standing water throughout the year. These areas combined total less than 2 acres, but are important from a habitat standpoint because aquatic habitats have been greatly reduced throughout the Willamette Valley due reduced flooding and provide valuable habitat conditions for declining species such as the Western Pond Turtle and red-legged frog.

Seasonally Wet Riparian Habitat (shown during inundation in December)

Upper Terrace Riparian Habitat (July 2012)

Aquatic Habitat (pond pictured in July 2012)

Grassland/Prairie Habitat (August 2012)

Middle Fork Willamette River (August 2012)

Springfield Mill Race (August 2012)

CLEARWATER LN

Middle Fork Willamette River

Clearwater Park - Elevation Map

Clearwater Park

2-foot Contour Lines derived from Lidar bare-earth model.

Elevation (LiDAR Bare Earth)

High : 520

Low : 470

N

0 200 ft

LCOG

Printing Date: September 10, 2012

Clearwater Park Natural Resource Management Plan

Legend

Clearwater Park Boundary

Mapped 100-Year Floodplain Boundary

Aerial Photo: Summer 2011

2011 Aerial Photo

N W E S

0 100 200 feet

Scale

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Map produced by LCOG

Clearwater Lane

Clearwater Lane

100-Year Floodplain

Springfield Mill Race

100-Year Floodplain

Parking Area and Boat Ramp added in 2012

Middle Fork Willamette River

100-Year Floodplain

Confluence Property (The Nature Conservancy)

Clearwater Park Natural Resource Management Plan

Legend

- Clearwater Park Boundary
- Existing Soft-Surfaced Trails

Habitat Types:

- Riparian (upper terrace)
- Riparian (seasonally wet)*
- Aquatic (water present most or all of year)*
- Upland Prairie/Grassland

**Extent of flooding is based on field observations and topography and is approximate.*

Existing Conditions Map

February 2013

N W E S

0 100 200 feet

Scale

Aerial Photo Base: Summer 2011

willamalane Park and Recreation District

Map produced by LCOG

Clearwater Lane

Clearwater Lane

Residential Rental

fence

fence

fence

Hedgerow (trees and blackberry)

Incense Cedar

Incense Cedar

Park Host

Rest Room

Parking

Leach Field

Drive

Proposed Nature Center Location

~480'

Bench

Pond

Middle Fork Springfield Path

Mill Race

~478'

~478'

Entry

~480'

Planned Nature Playground and Picnic Area

Planned Archery Range

Leach Field

Parking Area (2012)

Parking

Rest Room

Boat Ramp

Middle Fork Willamette River

Confluence Property
(The Nature Conservancy)

River-Related Habitats: Also present within Clearwater Park are the open water habitats of the Springfield Mill Race channel and Middle Fork shoreline (gravel bars). Although management of these habitats is not specifically included in this plan, the proximity of the river and mill race channel is clearly related to the quality and viability of the other park habitats. The enhanced Mill Race is expected to provide improved rearing and wintering habitat for juvenile Chinook Salmon, Steelhead, and Cutthroat Trout and other native fish species.

Table 2-1: Clearwater Park Habitat Types

Habitat Type	Approximate Size	Location
Riparian (seasonally wet)	11.1 acres	Lower terraces
Riparian (upper terrace)	27.3 acres	Upper terraces and hedgerow
Aquatic	1.9 acres	Pond and remnant channels with permanent water
Grassland (upland prairie)	19.1 acres	Upper terraces
River-Related	2.4 acres	Middle Fork and Mill Race open water and gravel bars
Other (parking lots, roads, structures, or programmed)	3.2 acres	Includes portion of Vinyard property around home site impervious areas

2.7 Vegetation and Wildlife

The vegetation and wildlife species found in Clearwater Park are similar to other Willamette River riparian zones in the southern Willamette Valley and include a mix of native and non-native species. The most comprehensive evaluation of the vegetation and wildlife of Clearwater Park was conducted in 2011 by Salix Associates and documented in the report titled *Inventory and Habitat Assessment for Clearwater Park* (see appendix A). Surveys of vegetation were conducted in the park between March and May and incidental observations of birds, butterflies, and other wildlife also were recorded. This inventory, which is not comprehensive, will serve as a starting point and can be refined in the coming years as additional information is collected. The inventory did not specifically include a rare plant survey or mapping of native or non-native vegetation populations.

2.7.1 Vegetation

During the 2011 Salix Associates inventory, a total of 163 vascular plant species were noted, including 69 native species and 94 non-native (exotic) species. Of the non-native species, a total of 34 are considered to be *invasive* and could potentially pose a significant threat of displacing native species. No rare plant species were noted during this inventory, although this is not conclusive since the focus of the inventory was not rare plants and the survey window was relatively short.

In general, the vertical composition of the riparian zones in the park is relatively good, dominated with a diversity of mostly native tree species of varying ages.

Table 2-2: Vascular Plants of Clearwater Park

Category	Native (Rare)	Exotic (Invasive)	TOTAL Species
Trees	14 (0)	5 (1)	19
Shrubs & Small Trees	15 (0)	11 (7)	26
Forbs	27 (0)	63 (18)	90
Grasses, Sedges & Rushes	8 (0)	15 (8)	23
Ferns	5 (0)	0 (0)	5
TOTAL	**69**	**94**	**163**
%	42	58	100

Source: Salix Associates, 2011

2.7.2 Wildlife

The diversity of habitats and proximity to the Middle Fork Willamette River and Springfield Mill Race make Clearwater Park present conditions ideal for supporting a diversity of native wildlife species. Clearwater Park is a component of a permanently protected block of open space totally nearly 5,000 acres, which greatly improves the park's long-term viability for supporting species. Although no formal wildlife surveys have been conducted in the park, American Beaver, Black-tailed Deer, and a diversity of migratory and resident bird species have been noted and a variety of native fish species inhabit the Middle Fork and mill race system including Chinook Salmon.

2.7.3 Rare Plant and Wildlife Species

There are seven federally endangered species that could potentially occur in this region, although only one is known to currently exist within the park boundaries. Those species include Upper Willamette River Chinook Salmon, Oregon Chub, Fender's Blue Butterfly, Willamette daisy, Bradshaw's lomatium, Kincaid's lupine, and howellia. Chinook Salmon and Oregon Chub are both present within the Middle Fork system and the Springfield Mill Race habitat restoration project was designed to provide side channel habitat for juvenile Chinook Salmon. Recent fish surveys conducted by ODFW have confirmed the presence of Oregon Chub within the Mill Race near the west side of Clearwater Park.

Western Pond Turtles are the only species with conservation status (Federal Species of Concern, State "Sensitive-Critical") for which there is recorded sighting information in the area of the park – although not from within the park (Oregon Biodiversity Information Center, 2011). Willamalane staff have reported turtle sightings in the pond in Clearwater Park, but the species is unknown. The aquatic habitat within the park would potentially provide suitable habitat for the Pond Turtle, especially with habitat enhancements such as installation of basking logs and control of Bull Frogs.

2.8 Invasive, Exotic Species

Historically, the Clearwater Park area has been subject to natural disturbances through periodic winter and spring flooding. Native plant species adapted to this disturbance regime would recolonize these areas after floods. With the abundance of non-native species present in the Willamette Valley today, any natural or human caused disturbance also tends to provide

openings for the establishment of invasive vegetation. As noted earlier, a total of 34 species of non-native invasive plant species are currently known to be present in the park. Of these, several are already wide spread and well established in the park. These include blackberry (*Rubus bifrons* and *vestitus*), English ivy (*hedera helix*), Canada thistle (*Cirsium arvense*), false brome (*Brachypodium sylvaticum*), reed canarygrass (*Phalaris arundinacea*), and shining geranium (*Geranium lucidum).* Other invasive species are present in the park, but only in small populations and could potentially be controlled or eradicated before they become widespread with aggressive management. These include yellow archangel (*Lamiastrum galeobdolon*), Scotch broom (*Cytisus scoparius*), foxglove *(Digitalis purpurea), and* butterfly bush *(Buddleja davidii).*

Introduced non-native wildlife species are also present along the Willamette River system and pose an ongoing threat to native wildlife. Within Clearwater Park, the American Bullfrog is abundant in the aquatic habitat and poses a direct threat to native species such as the Western Pond Turtle. Wild Turkeys have been noted in the park and are rapidly increasing in the southern Willamette Valley region. Turkeys pose a threat to native habitats in that they consume native seed (including acorns) and their foraging disturbs the ground, leading to weed colonization. Feral pigs are not currently found in the southern Willamette Valley, but are rapidly colonizing much of Oregon so could potentially emerge as a future threat.

2.9 Threats to Native Communities and Special Needs

Terrestrial habitats within Clearwater Park have been subject to human-caused disturbance in recent decades. The list below includes a list of disturbances common to riparian areas in the Willamette Valley and their potential effect or impact (Salix Associates, 2011).

Table 2-3: Threats to Native Communities and Special Needs Table

Disturbance	Explanation	Effect/Impact
Spread of non-native vegetation	Deliberate introduction (ornamental or agricultural) or accidental introduction of plants that do not occur naturally in the Park, and are particularly aggressive growers.	Some vigorous, non-native plants can become so numerous and compete so effectively that they modify native habitats by replacing or reducing native vegetation, and thus impacting wildlife species that may depend on it.
Spread of non-native animals	Introductions of Wild Turkeys, Largemouth and Smallmouth Bass, Mosquitofish, American Bullfrogs, Red-eared Sliders (turtles) and many other species have occurred in the area.	Many introduced animal species prey upon or compete with native species, negatively impacting them. Non-native turtles released into the wild can bring diseases fatal to native turtles and compete for habitat.
Farming and livestock uses	Diverse, native vegetation is cleared for cultivation and often for livestock grazing. The result often is large areas of low diversity, introduced species.	Native habitats are replaced by agricultural areas, which have reduced habitat values. Associated operational activities also may impact wildlife (noise, pesticides, etc.).
Soil disturbance from machinery	Use of heavy equipment for gravel extraction or construction results in large areas of soil disturbance, and can result in hydrologic alteration.	When native vegetation is removed and soil is disturbed by scraping, mixing, compaction or fill, the majority of vegetation that grows back often is non-native. See above under Non-native vegetation.
Recreation	Active and passive human, horse and pet activities may result in noise or physical disturbance during sensitive periods for wildlife and in transport of invasive plant seeds within, onto and off of the site.	Noise or chasing may be incompatible with some wildlife species and uses, especially secretive species and nesting activities. Introduction of non-native vegetation on tires (car or bike), in socks, or in pet fur may lead to impacts under “Spread of non-native Vegetation”, above.

2.10 Existing Facilities, Programs, and Recreational Use

Clearwater Park has accommodated recreational uses since it was created nearly 60 years ago, although public use has increased dramatically in recent years as the result of several significant site improvements including the Middle Fork Path, upgraded boat launch and parking area, rest rooms, and restoration of the Springfield Mill Race. Common recreational uses in the park currently include walking and running, bicycling, wildlife viewing, dog walking, fishing, horseback riding (not permitted, but occurring), geocaching, and picnicking. Swimming and water play is also a common activity during the summer months, particularly near the old boat launch. The new boat launch facility is seeing increased use as a put-in and take-out for recreational boaters. In addition to the hard-surfaced Middle Fork Path, the park includes nearly 9,400 lineal feet of designated and improved trails, plus an extensive network of unofficial trails in varying condition. The recently acquired parcel that makes up the western portion of the park (former Vinyard property) includes a house and several out-buildings. The house is currently rented, but may be used in the future to accommodate a caretaker or support facilities.

Documented past abuses of the site have included illegal dumping, loud music, poaching, use of firearms, camping, speeding, and use outside posted hours. The recent increase of legitimate park use and activity appears to have reduced some of these activities.

Clearwater Park is also routinely used for programmed recreational and educational activities. Examples of 2012 activities include the following:

- Camas Discovery Camp (June through July, 2012)
    - Variety of outdoor education activities and field trips such as Habitat Detectives, Who's Eating Who, and Great Green Growing World.
- Cabela's Family Campout (Friday-Saturday, August 10-11, 2012)
    - Dutch oven cooking lesson
    - Picnic dinner, s'mores dessert, continental breakfast
    - Free fishing lesson from Cabela's instructors
    - Archery
- Cross Country meet (October 5, 2012)
- Guided Nature Walks (May 16 and October 9, 2012)
- Cabela's Navigation and Compass Skills Class (July 28, 2012)

2.11 Site Access

The primary public access to the park is from the north on paved Clearwater Lane, a two-lane county road, and a paved access road that runs north-south through the park. A paved parking area is located at the head of the Middle Fork Path and a newly expanded parking are is located adjacent to the boat launch. The paved Middle Fork Path provides all-season recreational and maintenance access along the north side of the mill race. Access to the northwest portion of the park is also available from the east-west segment of Clearwater Lane. Multiple soft-surfaced trails pass through almost all of the riparian forest areas and many are wide enough to accommodate maintenance vehicles and mowers if desired.

3.0 Issues and Opportunities

The following natural resource related issues and opportunities have been identified for Clearwater Park by the Willamalane *Planning Team* and *Technical Assistance Committee* members:

3.1 Hydrology

Issues:

- Flows on the Middle Fork Willamette River are greatly affected by upstream flood control dams. Flood events are much less intense and less frequent than pre-dam conditions.
- District ownership does not fully correspond to hydrologic boundaries of features such as side channels and floodplains, making management challenging in some areas.
- Natural river migration could pose a threat to some park facilities over time including the Mill Race intake and boat ramp over time.

Opportunities:

- Clearwater Park is situated along the highly dynamic Middle Fork Willamette River system, which produces flooding and disturbance required to sustain healthy riparian and aquatic habitats.
- Hyporheic (sub-surface) flows associated with the Middle Fork Willamette River are believed to recharge the aquatic habitats within Clearwater Park during the dry season.
- The *Sustainable Rivers Project*, a collaboration between The Nature Conservancy (TNC) and USACOE, if implemented, could modify ecological flows from the dams to benefit river health. At Clearwater Park this could translate into increase flooding of aquatic and riparian areas and gravel bar formation.
- Bioengineering techniques such as the recently installed engineered log jam near the Mill Race intake have potential to help manage river migration if desired.

3.2 Habitat and Species Ecology

Issues:

- Relatively little quantitative baseline vegetation data has been gathered for the site beyond the 2011 *Inventory and Assessment of Vegetation* (Salix Associates).
- No formal wildlife surveys have been conducted in Clearwater Park.
- Inventory and comprehensive mapping of significant weed populations in the park has been very limited, with the exception of the 2012 false brome inventory.
- The continual input of weed seeds brought in by flooding, birds, illegal dumping, and human uses has resulted in extensive colonization of invasive plant species across the park's habitats.
- Some recently arrived aggressive invasive species have the potential to rapidly colonize habitats. These include Bohemian knotweed, false brome, butterfly bush (near house), and shining geranium.
- The extensive network of official and unofficial trails within the park contribute to the dispersal of invasive plant species such as false brome.

- A formal maintenance schedule has not yet been established for the park. This would be an important tool to guide regular maintenance activities such as mowing and herbicide application in a way that minimizes impacts to natural resources (e.g. bird nesting).
- *Riparian*: The understory areas of much of the riparian habitats are heavily colonized by invasive species including blackberry, false brome, and English ivy. Other invasive species such as Scotch broom, shining geranium, poison hemlock, Bohemian knotweed and yellow archangel are present, but not yet established over a wide area.
- *Prairie/Grassland*: All of the grassland areas within the park are dominated by non-native grasses and forbs, with very little native composition.
- *Prairie/Grassland*: Most of the perimeter of the grassland habitats is not mowed or hayed on a regular basis and heavily colonized by invasive species such as blackberry and thistle, which function as a weed vector (source) for adjacent habitats.
- *Prairie/Grassland*: Nectar producing native forbs, on which on which many insects depend, are very limited on the site.
- *Prairie/Grassland*: The existing fence lines in the former Vinyard property make mowing difficult and allow for establishment of blackberry thickets.
- *Aquatic*: Fish surveys in the park have been limited to the Mill Race and no surveys have been conducted on the other aquatic habitats within the park.
- *Aquatic*: Non-native Bull Frogs, which are known predators of native juvenile fish and turtles, currently exist in the waterways and ponds across the site.

Opportunities:

- Proximity to other permanently protected open space areas (totaling nearly 5,000 acres) contribute to the overall habitat quality of Clearwater Park.
- The park contains a diverse mix of habitat types within a relatively small area.
- The comprehensive inventory and mapping of false brome in 2012 provides good baseline data for control of this highly invasive species and could serve as a model for weed mapping of other invasive species in the park.
- Some of the more highly invasive non-native plant species that are common elsewhere along the Willamette River system such as Japanese and giant knotweeds (*Fallopia japonica* and *sachalinensis*), Yellow-flag iris (*Iris pseudacornus*), and traveler's joy (*Clematis vitalba*) have not yet established in Clearwater Park.
- The extensive network of existing trails and paths provide access to much of the park for habitat management activities and can accommodate access by maintenance equipment such as mowers if desired.
- *Aquatic*: The presence of aquatic and riverine habitats (Middle Fork Willamette River and Springfield Mill Race) provides excellent habitat conditions for a range of native fish, reptiles, and amphibian species. The presence of Oregon Chub and Steelhead have been confirmed within the Mill Race. The side channels and aquatic habitats have great potential for providing habitat for Western Pond Turtles, especially with invasive species control and placement of habitat features such as basking logs. ODFW staff may be available to conduct fish surveys within the aquatic habitats of the park.
- *Aquatic*: The Mill Race and river side channels within Clearwater Park have high potential to provide habitat for juvenile Chinook Salmon, Steelhead, and Oregon Chub and could be enhanced to improve habitat conditions. The aquatic habitats contained within the island

on the southwest side of the park could potentially be better connected to the Mill Race and provide additional habitat for native fish species including Oregon Chub and juvenile Chinook Salmon. The addition of structure such as logs and boulders within the Mill Race channel could further improve habitat conditions.

- *Riparian*: The park contains pockets of very high quality riparian habitat including diverse native understory. These areas could be identified for priority monitoring and management actions to protect these valuable existing resources.
- *Riparian*: The recently completed Mill Race Restoration Project included significant invasive species control (eg. blackberry) and planting of native trees and shrubs. With follow-up maintenance, this investment can be protected and the corridor could be managed as a core area of high quality habitat.
- *Riparian*: The tree cover within the riparian areas includes a high diversity of native riparian species of mixed ages and snags (see Objective 2c), with very few non-native trees present.
- *Prairie/Grassland*: If desired, the grassland areas have potential to be enhanced to include native upland prairie grass and forb species, providing improved habitat for native prairie wildlife species including butterflies, Camas Pocket Gopher, Western Bluebird, Northern Harrier, and Western Meadowlark.
- *Riparian*: The abundance of willow and dogwood in some areas of the park could be used as a source of *cuttings* that could easily be transplanted elsewhere in the park to help establish native cover. This is a good volunteer activity.
- *Prairie/Grassland*: Ecological (prescribed) burning may be a useful management tool for the site, especially for the grassland habitats, but could be controversial with adjacent property owners or the community at large.

3.3 Nature Based Recreation and Education

Issues:

- Illegal activities, although thought to be on the decline, are still occurring within the park and can be a deterrent to legitimate public use.
- Park boundaries are not clearly delineated, which can lead to confusion by visitor and unintended trespass. Property boundary signage is currently limited and some *no trespassing* signage has been improperly placed by adjacent property owners.
- The equestrian use occurring in the park may not be consistent with habitat goals and is not permitted under park rules. Prohibiting equestrian use or limiting access to designated trails could help contain the extent of associated impacts such as erosion and transport of invasive species.
- The extensive network of designated soft-surfaced trails are not well marked, which can be confusing to users.
- The lack of a trail map or wayfinding signage limits the usability of the trail system.
- An extensive network of unofficial and unimproved trails is also located within the park. These contribute to trail user confusion and can inadvertently lead visitors into sensitive habitats.

Opportunities:

- Recent facility upgrades including the Middle Fork Path, a new boat landing, parking areas, and rest rooms have contributed to a substantial increase in park usage, particularly in the summer months.

- The increasing legitimate public use and recent addition of a park host will likely continue to deter illegal activities. Opportunities exist to utilize park volunteers and neighbors to monitor park use and further deter illegal activities.
- Habitat enhancements that are focused in proximity to high public use areas such as path and trail corridors, parking areas, and the boat launch could be used to showcase natural habitats and provide educational opportunities and a scenic amenity for park users.
- The public interest and enthusiasm for Clearwater Park that has been generated through recent park improvements and the Master Plan process could be harnessed to establish a pool of volunteers to perform natural resource management functions. A formal adoption group could be established and trained to perform regular natural resource management and monitoring.
- Developing a comprehensive list of potential volunteer projects could aid the efficient utilization of groups that are looking for volunteer activities (e.g. school groups or *Day of Caring* volunteers).
- The existing system paths and trails provides access to all major habitat types found within the park and are well suited for educational and recreational use.
- The paved Middle Fork Path provides a high level of accessibility for those with disabilities.
- Clearwater Park offers abundant opportunities for environmental education and interpretation focused on riparian, aquatic, and prairie habitats, wildlife, water resources, and restoration methods.
- Clearwater Park has great potential to serve as an outdoor laboratory for research on topics such as river morphology, waterway restoration (Mill Race), water quality, wildlife, and habitat restoration and enhancement techniques.
- In 2006, the *Upper Willamette River Water Trail* was officially designated and passes by Clearwater Park. The park is a common put-in or take-out for trail users.
- Numerous easily accessible vista points are located in Clearwater Park, providing an outstanding visual resource to visitors, providing excellent views to nearby natural features such as the Mill Race, Middle Fork Willamette River, Mount Pisgah, and Quarry Butte. These views are important for user experience and providing visitors with a sense of place.

4.0 Desired Future Condition

4.1 Clearwater Park Master Plan Vision Statement

The following vision statement was included in the *Clearwater Park Master Plan* (Draft, 2012). It describes the desired future (long-term) condition for of the park including public uses, facilities, and natural areas.

> ***A Vision for Clearwater Park – from Clearwater Park Master Plan***
> *"With the implementation of this master plan, Clearwater Park will fulfill its potential as a special use park along the Middle Fork of the Willamette River for the entire community to enjoy. Its river access, natural features, variety of recreation opportunities and close proximity to the city, coalesce to create a unique and wonderful destination in south Springfield. Numerous, diverse features will bring people of all ages and abilities to the park. It will be both a place for recreating with family and friends and one for solitude and connecting with nature. The combination of diverse habitat types, the Willamette River and Springfield Mill Race presents an opportunity to protect natural areas, water quality and wildlife habitat while concurrently providing outdoor education and recreation amenities for the people of Springfield."*

4.2 Desired Future Condition for Clearwater Park's Natural Resources

The paragraphs below build upon the *Master Plan* vision statement (section 4.1), and provide specific details related management of the park's natural resources and how they will be maintained and enhanced over time for the benefit of recreational use, outdoor education, and native habitat.

Desired Future Condition

The rich mosaic of habitats and extensive network of trails and paths currently contained within Clearwater Park presents abundant opportunities for nature based recreational activities and outdoor education. The proximity to nearly 5,000 acres of permanently protected open space along the Middle Fork Willamette River greatly increases the viability of the park's wildlife habitat and presents unique opportunities for recreational connectivity.

The park's aquatic habitats and waterways, which are highly valuable for the life cycle of at-risk species such as Oregon Chub, Chinook Salmon, and Western Pond Turtle, will continue to be considered a high priority for future management actions. Preservation and enhancement of the park's riparian habitats, which are significantly reduced throughout the Willamette Valley, will also be a priority. Management actions in these areas will focus on controlling invasive species that have high potential for rapid spread and supplemental native plantings. The incremental restoration of native prairies within the park will be achieved over time as a way to further diversify the park's habitats and provide a visual and educational amenity for park users.

Proximity to Springfield residents and nearby schools creates a unique opportunity to expand opportunities for environmental education, research, and nature based recreation. Way finding improvements and interpretive signage will help guide park visitors as they explore and gain understanding of the park's natural resources. Partnerships with schools and environmental education groups will allow Clearwater Park to be utilized as an outstanding educational

resource, with the construction of an on-site nature center a possible future scenario. Utilization of the park for nature based recreational activities such as wildlife viewing, walking, bicycling, fishing, nature play, and picnicking will continue to increase, and facilities will be upgraded to support these uses. Habitat enhancements and demonstration projects will be clustered along areas with high public use such as the Middle Fork Path corridor to help showcase the park's natural resources and improve the visual quality of these high-use areas. Expanded opportunities for the public to participate in on-the-ground management and monitoring of the park's natural resources will not only help the District achieve its goals for the park, but also promote community pride and stewardship of this outstanding natural resource.

The western half of Clearwater park and the Springfield Mill Race (Source: RaptorViews, 2012)

The newly constructed Mill Race intake, parking area, and boat launch (Source: RaptorViews, 2012)

5.0 Management Goals, Objectives, and Actions

5.1 Overview

The purpose of this section is to provide direction for the short- and long-term management and enhancement of Clearwater Park's natural resources in a way that is consistent with the *Clearwater Park Master Plan* (draft, 2012), *Willamalane Natural Resource Areas Management Plan* (2012), and *Willamalane Comprehensive Plan* (2012) and responsive to the constraints and opportunities that have been identified in Section 3.0. The *Desired Future Condition* described in Section 4.2 is an illustrative portrayal of the long-term vision for the natural resources and related facilities within the park.

The goals, objectives, and actions listed on the following pages articulate how the vision will ultimately be achieved. The goal categories are listed below.

Goal Categories

1. Habitat Preservation, Restoration, and Enhancement
2. Ongoing Natural Resource Area Management
3. Monitoring and Mapping
4. Ecosystem Services
5. Public Access and Nature-Based Recreation
6. Education, Stewardship, and Research
7. Partnerships and Collaboration

Each of these goals includes supporting objectives describing how the goal will be achieved and a set of more detailed recommended actions, which describe how each objective will be implemented. The geographic locations of the proposed actions are shown on the *Action Plan Map*. Because the vision as described will take multiple years to achieve, the proposed actions have been prioritized.

5.2 Prioritization of Actions

The prioritization categories listed below are intended to indicate preferred implementation sequencing for proposed management actions based on the need for immediate action versus actions which can occur in the longer-term.

Prioritization Categories

The following categories have been selected to indicate overall implementation priorities:

- **I** Short Range (highest priority): Will be undertaken as soon as possible (1-2 years).
- **II** Medium Range: Less pressing, implemented when funding is available (2-5 years).
- **III** Long Range: Will be implemented over a longer period of time due to the complexity or cost of the task or is dependent on other actions being completed first (5-10 years).
- **RM** Regular Management: Management or maintenance activity performed on an annual or bi-annual basis.
- **Vol** Volunteer Opportunity: Activity that could be undertaken by volunteers (with adequate District coordination)
- **O** Ongoing: A regularly occurring or ongoing activity

Each of the *Actions* listed in Section 5.3 below has been assigned a priority code to help guide the sequencing of implementation. The order in which the recommended actions are implemented may vary based on the availability of funding or emerging issues.

5.3 Natural Resource Management Goals, Objectives, and Actions

Goal 1: Habitat Preservation, Restoration, and Enhancement
Preserve, restore, and enhance native habitats found within Clearwater Park to benefit native wildlife species and to support public appreciation and learning.

Note: The objectives below are sorted by habitat type with geographic extent and location noted as applicable (See *Existing Conditions* and *Action Plan* maps).

Objective 1a. Aquatic habitat: Preserve and enhance existing aquatic habitats including ponds and side channels for native wildlife species and look for opportunities for improved connectivity (1.9 acres).

- Action: **[I]** Work with ODFW to determine feasibility of introducing Western Pond Turtles, Oregon Chub, or other native fish or amphibian species into the main pond [zone A1] and possibly other aquatic habitats in the park.
- Action: **[I]** Place several basking logs in the main pond to improve habitat conditions for Western Pond Turtles [zone A1].
- Action: **[I in zone A1, II elsewhere]** Limit off-leash dog use within the park's aquatic areas to help protect these sensitive habitats. This can be achieved through placement of signage at the park entry kiosks and adjacent to the more sensitive aquatic habitats such as the pond. Swimming dogs will likely prevent establishment of native wildlife species such as Western Pond Turtle and flush waterfowl and wading birds.
- Action: **[II-III]** Based on the results of a fish survey (see Objective 3c), work with ODFW to determine the feasibility of eradicating non-native fish species from the main pond [zone A1] and re-introducing native fish species such as Prickly Skulpin, Northern Pikeminnow, Oregon Chub, and Speckled Dace.
- Action: **[II-III, Vol]** Work with ODFW on strategies for reducing the Bullfrog population now inhabiting the aquatic areas of the park in order to improve habitat conditions for native fish, Western Pond Turtle, Chorus Frogs, and Long-toed Salamanders. Options include training volunteers to remove Bull Frog egg masses at the proper time of year or drawing down water levels when the Bull Frogs are in their egg or tadpole stage. A pilot project could initially target the main pond [zone A1].

Objective 1b. Riparian Habitat (upper terrace): Preserve and enhance existing upper terrace riparian habitats on approximately 27.3 acres for native plant and wildlife species.

- Action: **[I-II, RM]** Control highly invasive grass and forb populations with a focus on the following high priority species:
    - False brome (*Brachypodium sylvaticum*): **[I-II, RM]** Control false brome in partnership with Middle Fork Willamette Watershed Council and other agencies

as appropriate throughout the park to prevent its further spread. Focus control efforts in zones R1, R2, and R4.
    - English ivy (*Hedera helix*): **[I-II, RM, Vol]** Control where established, with initial focus on cutting established plants that have moved into the tree canopy (where seed production is highest) and newly establishing populations to prevent further spread. Secondary focus will be on control in areas where it has formed large mats on the ground. Initial control actions will focus on zones R1 /R2.
    - Bohemian knotweed (*Fallopia bohemicum*): **[I, RM]** Eradicate if possible. A small population is located on the island to the south of the Mill Race [zone R3].
- Action: **[I-III, RM]** Control highly invasive non-native tree and shrub species, with high priority given to the following species:
    - Scotch broom (*Cytisus scoparius*): **[I, RM, Vol]** Control established populations in the riparian areas adjacent to the river and Mill Race in zones R1 and R3 and monitor other areas to ensure it does not become established.
    - Blackberry (*Rubus birons* and *Rubus vestitus*): **[I-II, RM, Vol]** Control through mowing or hand cutting, with follow-up spot herbicide application targeting regrowth. Focus initial efforts in zones R1 and R2, along trails corridors, and edges of the riparian forest.
    - Mazzard cherry (*Prunus avium*): **[III, RM]** Control through cutting or girdling and follow-up herbicide application to prevent re-sprout. Trees are concentrated primarily along the edges of the riparian forest (all zones).
    - English hawthorn (*Crataegus monogyna*): **[III, RM]** Control through cutting or girdling. Trees are distributed across the upper terrace riparian areas (all zones).
- Action: **[II-III, Vol]** Improve habitat conditions for native bird species in the park by installing nesting boxes for species such as Barn Owl, Wood Duck, Western Screech Owl, and Western Bluebird; nesting platforms for Osprey and Bald Eagle; and perches for raptors such as American Kestrel and Northern Harrier [all zones].
- Action: **[II-III, Vol]** Improve habitat conditions for native bats by installing bat boxes and roosts. Boxes should be placed high on trees, posts, or structures and have good exposure to the sun. Place in locations that allow good visual access for education and monitoring. Specifications can be found at www.batcon.org.

Objective 1c. Riparian Habitat (seasonally wet): Preserve and enhance existing seasonally wet riparian habitats on approximately 11.1 acres for native plant and wildlife species.

- Action: **[II-III, RM]** Control reed canarygrass (*Phalaris arundinacea*) in seasonally wet riparian areas on east side of park [zone R2], targeting small establishing patches through mowing or herbicide application. Replant treated areas with thicket forming shrub species such as willow, spiraea, or dogwood or plant plugs/seed of species such as slough sedge, awl-fruited sedge, softstem bulrush, and common spikerush in wetter shaded riparian areas. Spot spray any regrowth if it occurs until natives are established.

Objective 1d. Prairie/Grassland Habitat: Maintain the existing prairie/grassland habitat (approximately 19.1 acres) in an open condition, control invasive species, and enhance native grass and forb composition over time.

- Action: **[RM]** Mow or hay prairie/grassland areas to prevent colonization by woody vegetation and to help control invasive species to prevent seeding [zones P1, P2, P3]. Mowing and haying should be scheduled on an annual basis, but timed and sequenced

to minimize impacts to native wildlife species such as ground-nesting birds and reptiles (see *Natural Resource Management Schedule*). Consider bi-annual or delayed (late season) mowing in some areas in conjunction with prairie restoration efforts.

- Action: **[III]** Explore feasibility of integrating ecological burns as a tool for maintaining the park's prairie/grassland habitats over the long-term, particularly after native composition has been improved.
- Action: **[II]** Restore showy native prairie habitat totaling approximately 4.5 acres, targeting the most highly visible areas of the park including the Middle Fork Path corridor and the areas immediately adjacent to the two parking lots to maximize public appreciation and educational opportunities [zones P1 and P2]. The half-acre area adjacent to the upper parking lot [zone P1] could be completed first as a pilot project. Consult with *Rivers to Ridges* partners on preferred restoration methods and possible technical assistance. The area adjacent to the proposed nature center [zone P4] could also be restored to a showy native prairie in conjunction with that project.
- Action: **[III]** Incrementally enhance all other prairie/grassland habitats contained within the park over time, through weed management and gradual integration of native grass and forb species. [zones P3 and P4].
- Action: **[I]** Integrate widely spaced Oregon oak (*Quercus garryana*) into the prairie/grassland patches as a way of adding structural diversity and habitat conditions preferred by bird species such as Western Bluebird, White-Breasted Nuthatch, Northern Pygmy-Owl, American Kestrel, and Downy Woodpecker [zones P2/P3].
- Action: **[II-III]** Improve habitat conditions for native pollinators such as butterflies and bees by introducing larval host and nectar producing plant species such as cat's ear (*Calochortus tolmiei*), great camas (*Camassia leichtlinii* var. *suksdorfii*), Rosy checkermallow (*Sidalcea virgata*), Hooker's onion (*Allium acuminatum*), large leaf lupine (*Lupinus burkei*), Riverbank lupine (*Lupinus rivularis*), leafy willowherb (*Epilobium densiflorum*), self-heal (*Prunella vulgaris*), gumweed (*Grindelia integrifolia*), and tarweed (*Madia elegans*), yarrow (*achillea millefolium*), and wooly sunflower (*Eriophyllum lanatum*) into the prairie habitats [zones P1 and P2]. This will be achieved through supplemental planting of selected forbs (seed and plugs) and appropriately timed mowing that favors these species.
- Action: **[I]** Remove portions of the existing wire fencing and associated posts from the prairie/grassland area in the northwest corner of the park (former Vinyard property) to reduce the obstruction to mowing. An adequate portion of the fence line should be retained to help define the separation between park uses and the residential rental.
- Action: **[I]** Control the weed populations that have established along the perimeter of the eastern prairie/grassland (edges have not regularly been hayed or mowed). These areas have become a weed vector for the adjacent habitats. Weed control will be achieved through mowing (prior to seed set) and potential broad leaf herbicide application. Invasive species to be targeted include thistle (*Sonchus asper* and *Cirsium arvense*), teasel (*Dipsacus fullonum*), Cat's ear (*Hypochaeris radicata*), Tansy ragwort (*Senecio jacobaea*) and blackberry (*Rubus bifrons and vestitus*). A follow up planting of aggressive native grasses is recommended to create an effective weed buffer [zone P3].

Objective 1e. Springfield Mill Race: Work with the City of Springfield, USACOE, and ODFW to protect and improve habitat conditions along the Springfield Mill Race as it passes through Clearwater Park.

- Action: **[I-II]** Integrate habitat structure such as large woody debris and boulders into the Mill Race channel where these features are currently lacking in order to improve habitat conditions for native fish species.
- Action: **[III]** Work with ODFW to assess the feasibility of providing connections between the aquatic areas located on the west end of the park [zone R3] and the Mill Race. An open water connection could potentially provide backwater conditions suitable for Oregon chub habitat. Oregon chub are already known to inhabit the Mill Race in this area (ODFW fish survey, 2012). Consult with USACOE prior to modifying Mill Race banks to ensure consistency with the Mill Race Restoration Project.
- Action: **[I, RM]** Maintain the recently restored riparian areas that line the Mill Race to protect this public investment and to help showcase this successful project. Management will include controlling invasive species such as blackberry and teasel to prevent re-colonization of the restoration area and planting additional native riparian vegetation as needed. Special attention should be given to the north bank [zone R1] where public use along the MF Path and the soft surfaced connector trail is high.
- Action: **[I]** Establish native riparian trees and shrubs in the bank areas around the Mill Race intake where previous plantings have failed (R5). Amend soil and irrigate until established.

Goal 2: Ongoing Natural Resource Area Management
Actively manage the natural resource areas of Clearwater Park to help sustain their integrity and long-term viability and to protect the District's investments in property and completed restoration and enhancement projects. [Objectives below apply to the park in general].

Objective 2a. Newly Arrived Highly Invasive Species and Emerging Threats: Target isolated populations of highly invasive plant species that have established within the park for eradication before they become widespread and identify emerging threats.

- Action: **[I]** Eradicate the small population of yellow archangel (*Lamiastrum galeobdolon*) that has established to the west of the entrance road.
- Action: **[I]** Eradicate patch of butterfly bush (*buddleja davidii*) adjacent to the rental house on the northwest corner of the park.
- Action: **[I]** Eradicate patch of garden spearmint (*Mentha* sp.) adjacent to the rental house on the northwest corner of the park.
- Action: **[I]** Eradicate black locust (*Robinia pseudoacacia*) located to the east of the park host parking area.
- Action: **[I, RM, Vol]** Monitor for newly arriving invasive species that have potential to become wide spread in the park and eradicate as feasible (see Objective 3b). High risk species that are establishing in the upper Willamette Valley, but not known to be present in the park include yellow flag iris (*Iris pseudacorus*), purple lustrife (*Lythrum salicaria*), Portugal laurel (*Prunus lusitanica*), common pear (*Pyrus communis*), black locust (*Robinia pseudoacacia*), water primrose (*Ludwigia hexapetala*), and traveler's joy (*Clematis vitalba*).

- Action: **[O]** Coordinate with the Oregon State Weed Board, Upper Willamette Cooperative Weed Board, Oregon Department of Fish and Wildlife (ODFW), Oregon Department of Agriculture, Western Invasives Network, Middle Fork Willamette Watershed Council, and the Native Plant Society of Oregon – Emerald Chapter on identifying emerging invasive species threats. The Early Detection and Rapid Response (EDRR) process for plants and insects could be a useful tool and provides excellent materials such as invasive species identification keys and photos. Useful web resources include: www.fs.fed.us/invasivespecies/earlydetection.shtml and http://www.westerninvasivesnetwork.org/pages/cwmapage.php?region=upperwillamette)

Objective 2b. General Weed Management: Control established populations of invasive plant species (weeds) to reduce extent and limit dispersal. [See the objectives/actions listed under Goal 1 for priority areas and species.]

- Action: **[RM]** Focus invasive species control activities along avenues of dispersal such as roads, trails, ditches, parking areas, and within restoration project areas.
- Action: **[RM]** Control weeds in areas that are in the best ecological condition [e.g. zones R1 and R2]
- Action: **[RM]** Control perimeters of existing weed infestations in the absence of sufficient resources to attack the entire patch to prevent spread (e.g. blackberry patches).
- Action: **[RM]** Re-vegetate treatment areas with native plants that can occupy and dominate the site soon after control is complete.

Objective 2c. Ongoing Management Practices: Actively manage Clearwater Park's natural resource areas to help sustain their integrity and long-term viability and to protect the District's investments in property and completed restoration and enhancement projects.

- Action: **[I]** Evaluate the timing, frequency, and methods used for various ongoing management activities such as mowing, invasive species control, and trail work to minimize negative impacts to native wildlife species. For example, mowing and brush removal should be scheduled, where possible, to avoid the period between May and late June/early July to minimize impacts to nesting birds (see Section 6.0, *Management Schedule and Best Management Practices*).
- Action: **[RM]** Leave downed trees and snags in place as habitat features where they do not pose a public safety threat or block trails or paths. Where hazard trees must be removed, consider reducing snag height as an alternative to complete removal. Snags provide habitat for cavity nesting species and provides food for a wide range of birds including owls and woodpeckers and fallen trees provide excellent habitat for reptiles. Optimal snag height is between 25-35 feet, with several branches between 1-3 feet in length retained to serve as perches.
- Action: **[RM]** Mow grass areas immediately adjacent to the Middle Fork Path, trails, parking lots, and facilities as needed (2-3 times annually) to prevent tall grasses from obstructing movement and reduce wildfire risk (see Objective 2d). Mow strips should be approximately 5 to 10 feet in width.
- Action: **[I]** Develop a standard protocol for preventing transport of weed seed during maintenance activities including shoe cleaning stations and cleaning of maintenance equipment. Consult with other land management organizations such as U.S. Forest

Service, U.S. Bureau of Land Management, and City of Eugene on standards and best practices.

- Action: **[RM]** Apply environmentally-sustainable park development and management practices as specified in the District-wide Integrated Pest Management (IPM) program to guide decision making for appropriate use of management prescriptions such as herbicide and pesticide application (Note: the existing District IPM program will be evaluated for content related to natural resource area management in the coming year, and revised as needed).
- Action: **[RM, based on Master Plan guidance]** Eliminate undesignated trails where they have formed to reduce potential habitat impacts and transport of weed seed.
- Action: **[I for setting up standard process, RM]** Record standard natural resource management and maintenance activities and associated costs to help inform future management decisions.

Objective 2d. Wildfire Risk Reduction: Manage park resources during the dry season to minimize risk of wildfire.

- Action: **[RM]** Mow grass areas immediately adjacent to high use areas including the Middle Fork Path, trails, parking lots, roads, and other facilities as needed (2-3 times annually) to reduce wildfire risk. Mow strips should be approximately 5 to 10 feet in width.
- Action: **[RM]** Mow grass areas within a 100-foot radius from the park caretaker trailer and the rental home during the summer and fall as required by Lane County ordinance (2-3 times annually) to reduce wildfire risk.
- Action: **[RM]** Post signage at the park entry and kiosks during the dry season to warn visitors of potential wildfire danger and related regulations and restrictions.

Goal 3: Monitoring and Mapping
Provide adequate monitoring data on vegetation, wildlife, and hydrology for the natural resource areas within Clearwater Park to inform management decisions, track change over time, and allow for adaptive management.

Objective 3a. Vegetation Monitoring: Provide baseline vegetation data on rare plant populations, patches of high quality vegetation, and invasive species present within Clearwater Park.

- Action: **[II-III, possible Vol]** Record locations of rare or unique plant populations and other plant species of interest using GPS as feasible (initial vegetation surveys were conducted in spring 2011 by Salix Associates, but were not intended to be comprehensive or focus specifically on surveying for rare species).
- Action: **[I, RM, Vol]** Conduct weed surveys and mapping on a 2-3 year cycle to record populations of highly invasive species that have potential to rapidly spread across the site and provide baseline data to help gauge success of control efforts. This will include mapping concentrations of species such as false brome (mapped in 2012), knot weed, Scotch broom, and English ivy, and monitoring for arrival new invasive species. Early detection and rapid response is critical for effective weed management.

Objective 3b. Wildlife Monitoring: Conduct fish and wildlife surveys in Clearwater Park, focusing on listed species and species at risk.

- Action: **[I via ODFW]** Work with ODFW to conduct fish monitoring for the Springfield Mill Race and aquatic habitats within the park to determine abundance and locations of native fish populations, with a focus on key species including Oregon chub, Upper Willamette spring Chinook, bull trout, cutthroat trout, and Pacific lamprey.
- Action: **[I, Vol]** Determine if native Western Pond Turtle and Red-legged Frog populations are present in the park.
- Action: **[II, Vol]** Partner with Lane County Audubon or other qualified volunteers to conduct bird counts and breeding bird surveys within the park to help inform decisions on habitat enhancements.
- Action: **[RM]** Monitor for the presence of feral animals such as cats, domestic geese, and pigs (an emerging threat in Oregon) that negatively impact native wildlife species and take appropriate actions for control. Coordinate monitoring and control efforts with the Springfield office of the Oregon Department of Fish and Wildlife.

Objective 3c. Hydrologic Monitoring: Provide baseline data on site hydrology, river channel migration, and water quality to inform management decisions and track change over time.

- Action: **[I, RM, Vol]** Record the extent flood inundation during major events using staff gauges and photography.
- Action: **[RM]** Record major erosion and deposition in and around Clearwater Park through use of photo monitoring and aerial photo assessment to help anticipate potential river migration.
- Action: **[II-III]** Partner with SUB, University of Oregon, and/or the Springfield School District to monitor water quality. This helps gauge long-term impacts of management actions as well as providing an educational opportunity.

Objective 3d. Pre- and Post- Project Monitoring: Monitor major restoration and enhancement projects in the park as a way to gauge success of restoration and facilitate adaptive management.

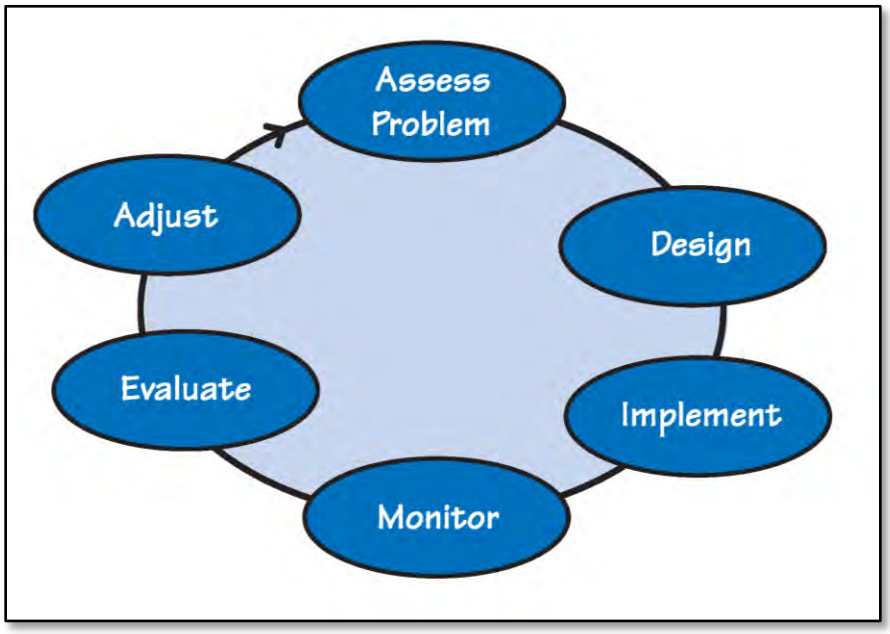
- Action: **[RM as project occurs]** Collect baseline data in the project area prior to implementation of major projects as feasible. This could include assessment of pre-project vegetation, recording hydrology, and establishment of photo points.
- Action: **[RM as project occurs]**Develop a set of vegetation and wildlife monitoring goals and protocols for the project that are both cost effective and effective at gauging change over time.
- Action: **[RM as project occurs]** Conduct adequate post-project monitoring to gauge success and inform the adaptive management process.

Objective 3e. Adaptive Management: Utilize an *adaptive management* approach to guide the long-term management of the natural areas in Clearwater Park. Adaptive management is a systematic process for continually improving management policies and practices by learning from outcomes (see diagram below).

- Action: **[RM]** Carefully record techniques, timing, and geographic extent of major management, enhancement, and restoration activities as they occur.

- Action: **[RM]** Document and evaluate the success of the management, enhancement, or restoration actions over time.
- Action: **[O]** Review results of weed mapping, rare plant surveys, wildlife surveys, water quality data, hydrologic monitoring, and other relevant information on an annual basis (December) and develop a work plan to guide the upcoming year's management actions.
- Action: **[O]** Adjust management, enhancement, and restoration actions for the site and other similar natural areas accordingly to improve future success.
- Action: **[O]** Revisit Management Plans on a regular basis and adjust as needed based on adaptive management approach. Management plans should be updated every 5-10 years as feasible.

Adaptive Management Diagram



Goal 4: Ecosystem Services
Work to ensure that the natural resource areas in the park are managed in a way that is compatible with drinking water protection, stormwater treatment, and floodplain function.

Objective 4a. Drinking Water Protection: Manage the park's natural resource areas in a way that is compatible with the protection of drinking water resources in the area.

- Action: **[II]** Work with the Springfield Utility Board to develop drinking water protection best management practices that could be implemented in the park. This could include practices such as reduced use of herbicide and pesticides or vegetation enhancements for shading and filtration. Herbicide will remain an important tool for managing invasive species within the park, but herbicide type, application timing, and possible alternatives will be carefully considered.
- Action: **[II-III]** Consider partnering with SUB to implement a *Groundwater Guardian Green Sites* program in Clearwater Park as a pilot project. Through this program, groundwater-friendly practices would be adopted and water quality progress measured

over time. For more information on Groundwater Guardian Green Sites program go to http://www.groundwater.org/gg/greensites.html.

Objective 4b. Floodplain Function: Work to preserve the function of Clearwater Park as a component of the active Middle Fork Willamette River floodplain.

- Action: **[O]** Avoid siting future facilities such as roads and structures within the park that could negatively impact floodplain function.
- Action: **[II-III]** Evaluate opportunities to further improve floodplain function within the park such as improved connections between the river, Springfield Mill Race, and the park's aquatic and seasonally wet riparian areas.

Objective 4c. Water quality function: Improve water quality function of District-owned natural resource areas and modify management approaches near waterways.

- Action: **[II-III]** Increase vegetation along rivers and streams where it is degraded to increase shading and filtration.
- Action: **[RM]** Minimize use of herbicides and pesticides near waterways, wetlands, and other aquatic habitats.

Goal 5: Public Access and Nature-Based Recreation
Provide opportunities for the public to access and enjoy the park's natural areas and to participate in nature-based recreational activities.

Objective 5a. Trails: Maintain a network of designated trails that enables park users to easily access and enjoy a diversity of habitats, points of interest, and views, while limiting impacts to sensitive habitats. [Note: a trail plan element will be included in the *Clearwater Park Master* Plan now under development].

- Action: **[I via Master Plan CIP]** Assess the existing network of soft-surfaced trails to determine need and condition and develop a trail plan or set of recommendations. This would include identification of trails that should be retained and possibly improved, identification of trail segments that could be eliminated, and defining need for any additional trail segments. Care should be taken to not over-build the trail network, especially within the more sensitive natural resource areas.
- Action: **[II-III]** Improve the quality of key segments of the park's designated trail network including enhanced surfacing and possible re-routes, bridges, or boardwalks to provide better access during the wet season. Consider seasonal closure of other trail segments that are routinely flooded.
- Action: **[I-II]** Eliminate undesignated trail segments to help limit habitat impacts and transport of invasive species. This can be achieved through placement of brush, logs, trail closure signage, or temporary fencing. Any fencing material will be selected to minimized visual impact (wood or natural colors).
- Action: **[RM]** Maintain the trail network to eliminate trail braids, desire lines, and formation of other unofficial trails. This will be achieved through improvements to clarity of the designated trail network and obliteration of unwanted trails and braids.
- Action: **[II-III]** Improve the clarity of the trail system through placement of wayfinding signage at trail junctions and by producing a trail map to be placed at park kiosks.

- Action: **[II via Master Plan CIP]** Utilizing existing trail segments, create a *Barrier Free Trail* loop option that would provide suitable access to users with limited mobility. The trail loop will access a range of habitats and areas of interest and be free of significant mobility obstacles such as steps, exposed roots, drainage dips, muddy surfaces, or steep slopes. (note: the *Clearwater Park Master Plan* will define trail routes).

Objective 5b. User Experience and Facilities: Provide opportunities and related facilities to accommodate nature-based recreational activities such as wildlife viewing, photography, nature study, walking for pleasure, jogging, running, bicycling, nature play, fishing, and picnicking and provide an outstanding user experience.

- Action: **[II via Master Plan CIP]** Provide basic user amenities within natural resource areas where appropriate including features such as benches and signage. Care should be taken to ensure that added user amenities do not detract from the visual quality of the natural resource area.
- Action: **[II via Master Plan CIP]** Construct a nature playground and picnic shelter near the lower parking area as specified in the draft *Clearwater Park Master Plan*.
- Action: **[III via Master Plan CIP]** Consider utilizing a small defined area in Clearwater Park as a location for a "nature play" pilot project. A nature play area is a designated site where unstructured play is encouraged in a natural setting and where children have the opportunity to engage in creative activities with natural elements in a natural setting. The area would be monitored on a regular basis to identify and remove potential hazards such as poison oak, stinging insect nests, and materials that could be hazardous such as boards with nails or broken glass. Signage to encourage use, define the boundary, and provide guidelines for use is critical.
- Action: **[II-III via Master Plan CIP]** Construct an accessible fishing pier near the Mill Race intake as specified in the draft *Clearwater Park Master Plan*.
  Action: **[RM, V]** Keep the District-owned natural areas trash free through regular maintenance schedule and utilization of volunteers and adoption groups.
- Action: **[RM]** Encourage dog owners to obey leash laws and remove pet waste. Pet waste is a major source of water pollution and off-leash pets can disrupt user experience and impact native habitat and wildlife.
- Action: **[I]** Provide park boundary signage at key locations around the perimeter of Clearwater Park to clarify the extent of public land and limit accidental trespass.
- Action: **[RM]** Continue to support park use for special overnight events such as the *Family Campout* (sponsored by Cabela's in 2012), as a way to expand nature based recreational opportunities in the park.
- Action: **[RM]** Allow continued placement of geocaches within the park (three currently exist) as a way to promote public use and exploration, but periodically assess cache locations to ensure they are not inadvertently harming sensitive habitats or pose a public safety risk. Locations of all existing geocaches can easily be monitored on www.geocaching.com and can be removed or relocated on request.

Objective 5c. Visual Quality: Provide and maintain publicly accessible views and vista points and improve visual quality to, from, and within the park.

- Action: **[RM]** Manage vegetation to preserve or improve important views and vistas of nearby natural features such as the Middle Fork Willamette River, Springfield Mill Race,

Mount Pisgah, and Quarry Butte. Vegetation management should be done in a way that limits natural resource impacts and maintains a pleasing and/or interesting view and can be done concurrently with vegetation management such as blackberry and English ivy removal. Special consideration of visual quality should be given to the Middle Fork Path corridor, which will receive some of the heaviest recreational use in the park.

- Action: **[RM]** Maintain viewpoints that are accessible to individuals with limited mobility, focusing on the Middle Fork Path corridor.
- Action: **[II via Master Plan CIP]** Screen views of the adjacent homes on the north side of the park from the MF Path corridor to improve the visual experience of path users. This could be achieved by planting a cluster of Douglas-fir or other native evergreen trees adjacent to Clearwater Lane (see *Action Plan Map*). Prune trees in a way that retains some visual access into the park from the homes (eyes on the park).
- Action: **[II-III]** Work to provide additional visual interest to park users, especially in high use areas such as the Middle Fork Path corridor and parking areas including enhancement of native vegetation to including flowering forbs such as cat's ear (*Calochortus tolmiei*), great camas (*Camassia leichtlinii*), Rosy checkermallow (*Sidalcea virgata*), Hooker's onion (*Allium acuminatum*), (*Gilia capitata*), lupine (*Lupinus* spp.), and wooly sunflower (*Eriophyllum lanatum*) and showy shrubs such as redflowering currant (*Ribes sanguinium*), Douglas' spiraea (*Spiraea douglasii*), creek dogwood (*Cornus sericea*)and Oregon grape (*Berberis aquifolium*).

Goal 6: Education, Stewardship, and Research
Utilize the natural resource areas contained within Clearwater Park as an educational resource for children and adults.

Objective 6a. Outdoor Education: Develop a comprehensive approach to guide formal outdoor education within Clearwater Park and plan for adequate support facilities.

- Action: **[O]** Utilize and improve Clearwater Park as a site for outdoor education through organized activities such as the Park Explorer's Club, Living History Program activities, and the Camas Discovery Camp.
- Action: **[O]** Work with area educational organizations such as Springfield Public Schools, University of Oregon, Lane Community College, SUB, Willamette Resources & Education Network (WREN), Middle Fork Willamette Watershed Council, and the City of Springfield to utilize Clearwater Park as an educational resource and work cooperatively on developing related curriculum and support facilities.
- Action: **[III via Master Plan guidance]** Assess the need over time for a nature center building within Clearwater Park to support educational programs.
- Action: **[I]** Utilize existing educational materials that have already been produced by the Middle Fork Willamette Watershed Council including watershed-specific curricula that meet state education standards and resource lists.

Objective 6b. Learning Opportunities: Provide informal learning opportunities that take advantage of unique habitat features, viewpoints, and proximity to trails and paths within Clearwater Park.

- Action: **[O]** Incorporate green architecture and site features such as roof gardens, pervious pavement, bio-swales, and native plantings into future park facilities (such as the bio-swales and native plantings in the boat launch parking area).
- Action: **[II-III]** Provide interpretive signage at select locations within Clearwater Park such as at the parking lot kiosks, along the MF Path, and unique natural features so that un-guided visitors are able to learn some basic information about natural and human history, wildlife, habitat types, invasive species, and restoration projects.
- Action: **[O]** Collaborate with ongoing water quality related outreach programs such as the Springfield Utility Board's Groundwater Guardian program and the City's Adopt-a-Waterway program.
- Action: **[I]** As specified in the draft *Clearwater Park Master Plan*, develop a native plant garden near the park entrance and adjacent to the proposed nature center to serve as an educational resource.

Objective 6c. Research: Provide research opportunities for natural resource agencies, educational institutions, and their students, with an emphasis on activities that assist the District with monitoring and natural resource management needs.

- Action: **[I-II, O]** Develop a list of potential research questions that could help improve understanding of the natural resources within the park and help guide future management actions. Research topics could include study of hyporheic flows, wildlife use, and public use patterns.
- Action: **[O]** Maintain communication and seek research opportunities with academic staff and students at the University of Oregon, Oregon State University, Lane Community College, and other regional colleges who are conducting research relevant to natural processes, wildlife, and fish populations.
- Action: **[O, Vol]** Work with local non-profit organizations such as the Native Plant Society of Oregon – Emerald Chapter, Lane County Audubon Society, the North American Butterfly Association, and the McKenzie and Middle Fork Willamette Watershed Councils to conduct research and inventories that will assist the District with natural resource area monitoring and management. Encourage these groups to maintain records and inventories using a consistent protocol that will help the District achieve its monitoring objectives.

Objective 6d. Volunteers: Promote opportunities for community members to volunteer to help improve the park's natural resources and increase the District's capacity to manage the park and monitor public use.

- Action: **[I, O]** Develop a comprehensive list of suitable management or monitoring activities that could be assigned to volunteers. This would include tasks that could be undertaken by volunteers on a regular basis (e.g. weekly hydrologic monitoring) and activities suited for larger groups of volunteers such as school groups or United Way *Day of Caring* volunteers (e.g. trail maintenance or tree planting).
- Action: **[I, Vol]** Form a pool of regular Clearwater Park volunteers or *adoption* group, and train them to perform ongoing natural resource maintenance and monitoring activities within the park. Regular management activities could include controlling invasive species such as blackberry or English ivy, watering newly planted trees and

shrubs, or collecting trash. Monitoring activities could include recording wildlife sightings, tracking invasive species, and taking photos from designated photo-points.

- Action: **[I]** Coordinate with the District's Volunteer Coordinator on project ideas at Clearwater Park and approaches for volunteer recruitment and recognition.
- Action: **[I, Vol]** Consider organizing a *park watch program* where volunteers and neighbors could be enlisted and trained to interact with park visitors, answer questions about the park's natural areas, and monitor and report illegal activities.
- Action: **[I]** Post District phone contact information at the parking lot kiosks so that park users can easily report natural resource or public safety issues.

Goal 7: Partnerships and Collaboration
Pursue and maintain partnerships with local, state, federal, and non-profit organizations as a way of collaborating on restoration, management, education, recreation, and funding.

Objective 7a. Team Springfield: Collaborate and coordinate with *Team Springfield* organizations including the Springfield Utility Board, City of Springfield, and Springfield Public Schools.

- Action: **[I, O]** Promote relationships with Springfield Public Schools for the utilization of Clearwater Park as an outdoor classroom and site for volunteer projects. Nearby schools with easy access to Clearwater Park include Agnes Stewart Middle School (2.0 miles), Douglas Gardens Elementary School (1.6 miles), and Mount Vernon Elementary School (1.3 miles). Consider utilizing the Watershed Rangers Project to engage nearby elementary schools (see Objective 7b).
- Action: **[O]** Coordinate with SUB on planning, funding, water quality monitoring, and implementing of water resource protection efforts within Clearwater Park.
- Action: **[O]** Support City efforts related to management of the *Springfield Mill Race Ecosystem Restoration Project.* The City holds the management agreement with the Corps of Engineers.

Objective 7b. Regional Coordination: Coordinate with other agencies and organizations within the southern Willamette Valley to collaborate on natural resource protection and restoration and development of recreational amenities.

- Action: **[O]** Take advantage of opportunities to get feedback and technical assistance from *Rivers to Ridges* partnership staff related to natural resource projects and monitoring in Clearwater Park. Many partner organizations have gained significant expertise in the area of habitat restoration and management in similar habitats.
- Action: **[O]** Collaborate with *Rivers to Ridges* partners on grant applications for joint funding for management actions such as invasive species control and habitat restoration. For example, an invasive species control grant application for the adjacent TNC Confluence Property could be expanded to include actions within Clearwater Park and other nearby District properties.
- Action: **[I for false brome control, O]** Partner with the Middle Fork Willamette Watershed Council on habitat management efforts such as false brome control and educational use of Clearwater Park through the MFWWC *Watershed Rangers Project* (http://www.mfwwc.org/rangers.html).

Clearwater Park Natural Resource Management Plan

Habitat Management Zones

Upland Prairie/Grassland

- P1 Establish showy native prairie as a pilot project adjacent to upper parking area.
- P2 Establish showy native prairie adjacent to high public use areas along the Middle Fork path and lower parking area.
- P3 Maintain open grassland/prairie habitat and control woody vegetation and invasive species through seasonal mowing or haying (maintain fire breaks).

Riparian (upper terrace and seasonally flooded)

- R1 Enhance riparian zones in high use areas along Middle Fork Path and at park entrance through intensive invasive species control and native plantings.
- R2 Enhance riparian zones through targeted invasive species control (false brome, English ivy, and blackberry) to protect native composition.
- R3 Preserve riparian habitat, control highly invasive species (Scotch broom and Japanese knotweed), and study options for improved aquatic connectivity.
- R4 Preserve riparian habitat and monitor for invasive species.
- R5 Enhance riparian habitat through native tree and shrub planting (adjacent to ramp and parking).

Aquatic

- A1 Enhance habitat conditions in the pond for Western Pond Turtle and native fish species.

Legend

- Clearwater Park Boundary
- Existing Soft-Surfaced Trails

Habitat Types:

- Riparian (upper terrace)
- Riparian (seasonally wet)*
- Aquatic (water present most or all of year)*
- Upland Prairie/Grassland

**Extent of flooding is based on field observations and topography and is approximate.*

Action Plan Map

April 2013

N W E S

0 100 200 feet

Scale

Aerial Photo Base: Summer 2011

willamalane Park and Recreation District

Map produced by LCOG

Plant vegetated buffer to visually screen houses

Clearwater Lane

Remove fence segments to improve access for mowing. Retain a portion of fencing to provide separation from residential rental.

Retain hedgerow as a visual screen and to define park boundary

Incorporate large woody debris and boulders into Mill Race to improve fish and turtle habitat

Study feasibility of improved connection between aquatic area and Mill Race

Control invasive species along forest edge

Residential Rental

100' Fire Break

Park Host

Proposed Native Plant Garden

Proposed Nature Center Location

Rest Room

Parking

Leach Field

Drive

Entry

Bench

Pond

100'

Middle Fork Path

Springfield Mill Race

Planned Nature Playground and Picnic Area

Planned Picnic Area

Planned Fishing Pier

Planned Archery Range

Leach Field

Parking Area (2012)

Parking

Rest Room

Boat Ramp

Middle Fork Willamette River

Confluence Property
(The Nature Conservancy)

6.0 Recommended Maintenance Schedule and Best Management Practices

The management schedule and best management practices (BMPs) listed below are recommendations for Clearwater Park. Actual approaches and timing will be based on availability of resources and may be modified based on guidance from the District's Integrated Pest Management Plan, direction from the Park Services Division Director, and insight gained from the adaptive management approach (see Objective 3e).

Table 6-1: Recommended Maintenance Schedule and Best Management Practices

Action	Habitats	Objective/Purpose	BMP and Schedule
Rough Mowing	Grassland/ Prairie	Control woody vegetation; control invasive species; wildfire prevention; limit impacts to ground nesting birds, reptiles, and pollinating insects.	Mow annually or bi-annually in late August to September to prevent impact to ground nesting birds, reptiles. and pollinators; Sequence mowing over multiple weeks if possible to minimize wildlife habitat impacts and consider mowing some areas on alternate years if feasible. Optimal mowing deck height is 5-6" if feasible with available equipment. Mow 6-8' swath (where feasible) immediately along MF Path, roadways, and parking lots as needed to maintain user clearance and wildfire prevention (standard deck height).
Planting	Grassland/ Prairie, Riparian	Re-vegetate treatment areas with native plants following invasive species control; adding native diversity	Grasses, forbs, sedges, rushes: broadcast seed between October 15 and February 15; or plant as plugs during the same period. No irrigation required. Trees and shrubs: Plant between November and March. Cage if necessary to protect from beaver, nutria, and deer. Irrigate through the summer/fall for a minimum of one year.
Equipment Cleaning	All	Limit invasive species spread	Clean equipment such as mowers, tractors, and mechanical trimmers prior to utilizing in Clearwater Park in an effort to limit the spread of invasive species seed. Cleaning can also be done before moving equipment from one area of the park to another. Special care should be taken in late summer and fall when seed transport is most likely. Operators can use a handheld two-cycle blower to blow off equipment or power-washer if feasible.
Habitat Snags and Downed Wood	Riparian	Snags provide habitat for cavity nesting species and provides food for a wide range of birds including owls and woodpeckers and fallen trees provide excellent habitat for reptiles.	Leave downed trees and snags in place as habitat features where they do not pose a public safety threat or block trails or paths. Where hazard trees must be removed, consider reducing snag height as an alternative to complete removal. Optimal snag height is between 25-35 feet, with several branches between 1-3 feet in length retained.
Invasive Species Control			
False Brome (*Brachypodium sylcaticum*)	Riparian	Control spread (note: false brome prefers shade, so is less likely to invade prairie habitats)	Mow/string trim to prevent flowering in May or June; herbicide application during growing season (2-3% Aquamaster®, 0.5% LI 700, and blue dye at a rate of 2oz/gal recommended).
Scotch broom (Cytisus scoparius)	Riparian	Control	Pull by hand or weed wrench plants with stems less that 1.5" diameter, cut/mow plants with diameter larger than 1.5"; or foliar herbicide application in spring with aminopyralid or similar.

Action	Habitats	Objective/Purpose	BMP and Schedule
Teasel (*Dipsacus* sp.)	Riparian	Control	Cut or mow flowering plants at base during full flower, but prior to seed formation. Flowering dates are highly variable for teasel, ranging from May – August, so on-site observation is important for catching before seed is viable.
Bohemian knotweed (*Fallopia bohemicum*)	Riparian	Eradicate	Stem injection with 100% glyphosate (5ml/stem) in fall; or broadcast glyphosate 2-5% solution. Do not cut unless dead or senesced and remove cuttings from the site to prevent re-sprout.
English ivy (*Hedera helix*)	Riparian	Control	Manual removal between October 15 and February 15 – cut vines at base of trees and pull ground covering plants; foliar spray (triclopyr) during periods of cold clear weather December – February 15.
Yellow-flag iris (*Iris pseudacornus*)	Aquatic	Eradicate if detected (not currently established)	Cut above ground foliage and stems, wipe cut surfaces with 100% glyphosate. Time spot herbicide application to avoid wet season.
Yellow archangel (*Lamiastrum galeobdolon*)	Riparian	Eradicate small established population	Dig roots manually removing all fragments; Foliar spray regrowth (2% glyphosate).
Garden spearmint (*Mentha* sp.)	Garden area near rental house	Eradicate small population	Hand weed prior to seed formation.
Butterfly bush (*Buddleja* sp.)	Garden area near rental house	Eradicate small population	Pull with roots of if necessary. If cut, treat the stump surface with triclopyr or glyphosate in late summer to early fall to prevent re-sprout.
Reed Canarygrass (*Phalaris arundinacea*)	Riparian (seasonally wet)	Control in select patches to prevent expansion into adjacent high quality habitats	Mow or cut with string trimmer prior to June 15 to prevent flowering, cut (2-3 times) during summer to weaken, foliar spray (1.5% glyphosate) in fall; Re-plant treated areas with thicket forming shrub species such as willow, spiraea, or dogwood. Planting plugs/seed of species such as slough sedge, awl-fruited sedge, softstem bulrush, and common spikerush recommended in wetter shaded riparian areas of Clearwater Park. Spot spray any RGC regrowth if it occurs until natives are established.
Cherry (*Prunus avium*),English hawthorn (*Craetegus monogyna*), and black locust (*Robinia psuedoacacia*)	Riparian	Control	Hand-pull if small. Cut and stump grind larger trees in areas accessible to equipment. In areas not accessible with equipment, cut and wipe with 100% tricloyr (Garlon 3A) in fall.
Blackberry (*Rubus bifrons* and *vestitus*)	Riparian and grassland	Control/Eradicate	To reduce spread, cut/mow 1 to 3 times annually to control flowering. Avoid mowing mature plants between April 1 and July 15 to avoid impact to nesting birds. To eradicate patches, mow area in mid-summer, and spot spray (1.5 % triclopyr) once re-growth is approximately 18” in height, mid-summer through late fall. Re-treat in spring if necessary.

Willamalane Park and Recreation District
Clearwater Park Natural Resource Management Plan

Appendices

Appendix A
Inventory and Habitat Assessment for Clearwater Park

Appendix B
Draft Clearwater Park Master Plan Map

Inventory and Habitat Assessment for Clearwater Park (Springfield, Oregon)

Background

This assessment entails 1) an evaluation of the current condition of terrestrial habitats in Clearwater Park (Willamalane Park and Recreation District, Springfield, Oregon) and 2) an evaluation of threats to those habitats. It also contains recommendations for future habitat enhancements.

Clearwater Park is about 65 acres in size within the lower Middle Fork Willamette watershed. When considered within a landscape context, it lies within an approximately 5,000 acre node of public-private lands. These lands are targeted for habitat restoration efforts, with recreation as a major element in many portions.

Historic Conditions

Before EuroAmerican settlement in the mid-19th century, the area likely flooded every winter and spring and was subject to occasional effects (at least on the edges) of burning by the Kalapuya people. They burned many areas of the southern Willamette Valley late in each summer over a period of at least several thousand years. This burning over such a long period resulted in the long-term establishment and maintenance of prairie-savanna biotic communities, with some forests present – particularly in riparian areas.

The coarse scale 1850's vegetation map for the area shows that riparian forest was the dominant vegetation type in and around the area of the Park, with prairie-savanna dominating to the north. Because these once-common prairie-savanna communities now are extremely rare in the landscape, so are many of the species that depended on them. (See the Oregon Conservation Strategy, ODFW 2006, for more details.)

Ecologists presently emphasize restoration and protection of these habitat remnants, which then can provide habitats for the rare species that need them. Ecologists also recognize the protection and restoration of riparian forest areas for flood protection, filtration, carbon storage, recreation, providing important inputs to aquatic systems, and other purposes.

Current Conditions and Threats

A brief reconnaissance (March 22) and two surveys of vegetation (April 19 and May 3) were undertaken at the park, including incidental observations noted of any birds, butterflies, other pollinators and other wildlife seen (lists are included later in this report). Because the spring of 2011 was unusually cool and wet through early May, normal phenology (plant development) was set back by about 2 to 3 weeks and butterfly and other pollinator presence was extremely low. Because of the cool weather, the plant inventory likely shows a slightly lower number of species in comparison to a "normal," warmer, drier spring. The peak of bird migration occurred a week or more after the last inventory, so mid- and late-spring migrants also are sparse on the inventory.

Exclusive of developed areas, current terrestrial habitats in the park include:

- Riparian forest
- Meadow/prairie
- Shoreline (Willamette River and Millrace)

Terrestrial habitats on the site have been subject to human-caused disturbance in recent decades, including the following:

Disturbance	Explanation	Effect/Impact
Spread of non-native, habitat-modifying vegetation	Deliberate introduction (ornamental or agricultural) or accidental introduction of plants that do not occur naturally in the Park, and are particularly aggressive growers.	Some vigorous, non-native plants can become so numerous and compete so effectively that they modify native habitats by replacing or reducing native vegetation, and thus impacting wildlife species that may depend on it.
Spread of non-native animals	Introductions of Wild Turkeys, Largemouth and Smallmouth Bass, Mosquitofish, Eastern Bullfrogs, Red-eared Sliders (turtles) and many other species have occurred in the area.	Many introduced animal species prey upon or compete with native species, negatively impacting them. Non-native turtles released into the wild can bring diseases fatal to native turtles.
Farming and livestock uses	Diverse, native vegetation is cleared for cultivation and often for livestock grazing. The result often is large areas of low diversity, introduced species.	Native habitats are replaced by agricultural areas, which have reduced habitat values. Associated operational activities also may impact wildlife (noise, pesticides, etc.).
Soil disturbance from machinery	Use of heavy equipment for gravel extraction or construction results in large areas of soil disturbance, and can result in hydrologic alteration.	When native vegetation is removed and soil is disturbed by scraping, mixing, compaction or fill, the majority of vegetation that grows back often is non-native. See above under Non-native vegetation.
Recreation	Active and passive human, horse and pet activities may result in noise or physical disturbance during sensitive periods for wildlife and in transport of invasive plant seeds within, onto and off of the site.	Noise or chasing may be incompatible with some wildlife species and uses, especially secretive species and nesting activities. Introduction of non-native vegetation on tires (car or bike), in socks, or in pet fur may lead to impacts under Non-native Vegetation, above.

The area of Clearwater Park has been subject to natural disturbances as well, the most important of which likely is periodic winter and spring flooding. Historically, a few native plant species adapted to this disturbance would colonize after floods, but these species now do not colonize as effectively as do

introduced, non-native species. And since construction of the upstream dams in the mid-20th century, flows have been greatly modified and channel complexity greatly reduced.

Because of this disturbance, there are many non-native species on the site, and many are invasive. The Floristics table at the beginning of the plant list (following later in the report) shows a very high proportion of non-native and invasive species when compared to other sites in the area.

An important aspect to remember regarding infestations of non-native plants and animals is that there are no "walls" around a population or a site. That is, non-native plants and animals from surrounding areas will continue to enter Clearwater Park, and non-native plants and animals existing within the Park will continue to expand within it, and continue to exit the Park and infest other private and public property. It is a dynamic problem, rather than a static problem, and increases in severity over time unless action is taken to control or eradicate the invasive species.

Connectivity of Clearwater Park habitats is best to the west and south, and lowest to the north. If adjacent and nearby restoration occurs to the west and possibly to the east, these connections can increase. Restoration already is scheduled across the River to the south on lands owned by The Nature Conservancy.

Western Pond Turtles are the only species with conservation status (Federal Species of Concern, State "Sensitive-Critical") for which there is recorded sighting information in the area of the park – although not from within the park. (Data from Oregon Biodiversity Information Center, 2011.) It may be possible to increase some management for turtle habitat within the park in conjunction with other habitat restoration. This could include restoration of native vegetation where it could facilitate turtle movement, increasing basking logs in ponds, controlling Eastern bullfrogs and increasing opportunity for quiet, undisturbed conditions in some potential turtle use areas.

Recommendations

Considering that riparian and prairie-savanna habitats are rare, and that the opportunity for restoring both exists at Clearwater Park, both could be targeted. When goals for the site are established, two major considerations – restoration and subsequent maintenance – should be weighed and compared against other options in light of those goals.

Preparation of a restoration plan should be undertaken if restoring habitat is a goal for the site. It would necessarily contain much more detail than this brief assessment, including specific prescriptions for future treatments, maintenance and monitoring to evaluate success.

If restoration is considered for Clearwater Park, Willamalane would benefit greatly from engaging partners in the area who have similar experience. The Friends of Buford Park/Mt. Pisgah have undertaken 3 phases of floodplain restoration at Lane County's Howard Buford Recreation Area, and are re-establishing riparian floodplain forest at another parcel to the south of the HBRA (the BPA/Sorenson parcel). More recently, The Nature Conservancy has embarked on planning and restoration at the Willamette Confluence site, directly across the river and downstream from Clearwater Park. Lastly, the McKenzie River Trust has been conducting floodplain restoration for several years at Green Island, at the confluence of the Willamette and McKenzie rivers. In all of these cases, lessons learned could be applied to Clearwater. The cities of

Springfield and Eugene have not undertaken significant restoration projects along the Willamette, but perhaps can lend expertise, equipment and/or equipment operator.

Restoration, particularly of forest understories, will be a difficult task primarily because of the large amount of invasive vegetation present in the Park and the effort needed to control or eradicate it – with people, waterways and trees present as important factors to consider. Guidelines in a restoration plan potentially could include:

- experiment: test restoration methods in smaller areas before applying to larger areas;
- consider scale: restore portions of habitats, rather than entire habitat patches, so as to create easier areas to maintain;
- reference areas: identify the best spots as "reference" areas to mimic; some may be on nearby properties;
- ecological burning: prescribed fire may be a useful tool for management of prairie/oak savanna;
- build local interest: work with nearby schools to create "adopt-a-park" program, etc.;
- power in numbers/economies of scale: combine efforts with The Nature Conservancy, Middle Fork Willamette Watershed Council, Friends of Buford Park and the cities of Springfield and Eugene to accomplish restoration; this could include grant-writing, sharing materials and equipment and expertise, etc.;
- take advantage of lessons learned: glean from floodplain restoration experiences from FBP projects at South Meadow and BPA/Sorenson parcel, and MRT at Green Island;
- think long term: plan for immediate replanting where weed control is used to prevent re-establishment; and
- prevention: eradicate early infestations of new invasive species to prevent their spread; for example, a new invader in the Park that could be addressed now before it spreads farther is Yellow Archangel (*Lamiastrum galeobdolon*). Photos of this species taken in Clearwater Park are at the end of the plant list. The listing includes the approximate location of the population.

The following is a simple list of riparian forest planting species for Clearwater Park for average moisture conditions. Most of these plants were seen in the Park during the spring 2011 inventory. The list could be lengthened when a restoration project is designed.

TREES
Bigleaf Maple (*Acer macrophyllum*)
Black Cottonwood (*Populus trichocarpa*)
Chokecherry (*Prunus virginiana* var. *demissa*)
Oregon Ash (*Fraxinus latifolia*)
Oregon White Oak (*Quercus garryana* var. *garryana*)

SHRUBS
California Hazel (*Corylus cornuta* var. *californica*)
Osoberry (*Oemleria cerasiformis*)
Ninebark (*Physocarpus capitatus*)

Snowberry (*Symphoricarpos albus* var. *laevigata*)

HERBACEOUS PLANTS

Bleeding Heart (*Dicentra formosa*)
Bluebells (*Mertensia platyphylla*)
Candyflower (*Claytonia sibirica*)
False Solomon's Seal (*Maianthemum racemosum*)
Fringecups (*Tellima grandiflora*)
Hooker's Fairy-bells (*Prosartes hookeri*)
Pacific Waterleaf (*Hydrophyllum tenuipes*)
Sessile Trillium (*Trillium albidum*)
Sitka brome (*Bromus sitchensis*)
Star-flower Solomon's Seal (*Maianthemum stellatum*)
Stream Violet (*Viola glabella*)
Tall Larkspur (*Delphinium trolliifolium*)
Western Meadowrue (*Thalictrum occidentalis*)

Clearwater Park: Spring 2011 Biodiversity Inventory

The following lists show species encountered during 3 surveys in spring 2011. Additional species could be added by additional inventories during other times of year. Spring of 2011 was subject to "La Niña" weather conditions, resulting in a cooler and wetter spring than normal.

Site Information

Visit Dates	March – early May 2011	**Personnel**	B. Newhouse (Salix Associates)	
Location	County: LANE	**TRS**	T18S, R02W Sections 5 (S ¼) & 8 (N ¼)	
Approx. size	65 acres	**Elevation**	478 feet – 490 feet	
Approx. UTM centroid	WGS 84	Zone 10	503461 mE	487475 mN
Access	Public park, owned by Willamalane Park and Recreation District, Springfield, OR			
Notes	Nomenclature follows the Oregon Flora Project (http://www.oregonflora.org/atlas.php)			

Floristics

Category	Native (Rare)	Exotic (Invasive)	TOTAL Species
Trees	14 (0)	5 (1)	19
Shrubs & Small Trees	15 (0)	11 (7)	26
Forbs	27 (0)	63 (18)	90
Grasses, Sedges & Rushes	8 (0)	15 (8)	23
Ferns	5 (0)	0 (0)	5
TOTAL	**69**	**94**	**163**
%	42	58	100

Type and Abundance Key (to the following list)

N/E: Native/*Exotic (introduced; in italics);* **R/I:** Rare (ORBIC listed)/Invasive (forms a monoculture in a vegetation layer in wildland habitats)

* = Native species suitable for planting in riparian understory areas in average moisture conditions.

VASCULAR PLANT LIST

Latin name	Common name	N/E	R/I	Comments
Trees				
Abies grandis	Grand Fir	N		Small, primarily in riparian forests
Acer macrophyllum	Bigleaf Maple	N		
Aesculus hippocastanum	*Horsechestnut*	*E*		*One patch on R side of entrance road, between parking lots*
Alnus rhombifolia	White Alder	N		
Alnus rubra	Red Alder	N		
Calocedrus decurrens	Incense-cedar	N		
Cedrus deodara	*Himalayan Cedar*	*E*		*Planted in central row of trees*
Fraxinus latifolia	Oregon Ash	N		

Malus ×domestica	*Domestic Apple*	*E*		
Pinus ponderosa	Ponderosa PIne	N		One tree seen
Populus trichocarpa	Black Cottonwood	N		
Prunus avium	*Sweet/Mazzard Cherry*	*E*	*I*	
Prunus cerasiformis "Thundercloud"	*Thundercloud Plum*	*E*		
Prunus virginiana var. demissa	Chokecherry	N		Fairly common on edges of natural forests and in gaps.
Pseudotsuga menziesii	Douglas-fir	N		
Quercus garryana	Oregon White Oak	N		
Rhamnus purshiana	Cascara	N		
Salix lasiandra ssp. lasiandra	Pacific Willow	N		
Salix scouleriana	Scouler's Willow	N		
Shrubs				
Acer circinatum	Vine Maple	N		
Berberis aquifolium	Tall Oregongrape	N		Needs some sun. Languishes when overtopped.
Buddleja davidii	*Butterfly Bush*	*E*	*I*	*In landscaping at caretaker's house*
Cornus sericea	Creek/Redstem Dogwood	N		
Corylus avellana	*European Filbert*	*E*		*Native C. cornuta var. californica may be present as well, but spring is a difficult time of year to separate them.*
Crataegus monogyna	*English Hawthorn*	*E*	*I*	
Crataegus monogyna × suksdorfii	*Hybrid Hawthorn*	*E*		*Non-native hawthorn is hybridizing with native.*
Crataegus suksdorfii	Suksdorf's Hawthorn	N		
Cytisus scoparius	*Scot's Broom*	*E*	*I*	
Ilex aquifolium	*English Holly*	*E*		
Ligustrum vulgare	*Common Privet*	*E*		
Oemleria cerasiformis	Osoberry	N		
Physocarpus capitatus	Ninebark	N		Some is planted.
Ribes divaricatum	Straggly Gooseberry	N		Uncommon.
Rosa eglanteria	*Sweetbriar Rose*	*E*	*I*	
Rosa multiflora	*Multiflora Rose*	*E*	*I*	
Rubus bifrons	*Himalaya Blackberry*	*E*	*I*	*Formerly known as R. armeniacus.*
Rubus parviflorus	Thimbleberry	N		
Rubus ursinus	Trailing Blackberry	N		
Rubus vestitus	*European Blackberry*	*E*	*I*	*Most common as "shade form" of Himalayan Blackberry. Stays lower.*
Salix hookeriana	Hooker's Willow	N		
Salix sitchensis	Sitka Willow	N		
Sambucus racemosa var. arborescens	Red Elderberry	N		
Spiraea douglasii	Douglas' Spiraea	N		
Symphoricarpos albus var. laevigatus	Snowberry	N		
Toxicodendron diversilobum	Poison-oak	N		Toxic to skin; avoid contact.
Forbs				
Arabidopsis thaliana	*Common Wall Cress*	*E*		
Arctium minus	*Burdock*	*E*		
Artemisia douglasiana	Douglas' Mugwort	N		
Arum italicum	*Italian Lords & Ladies*	*E*	*I*	*Very difficult to eradicate.*
Barbarea orthoceras	American Wintercress	N		

Bellis perennis	*English Daisy*	*E*		
Brassica rapa	*Field Mustard*	*E*		
Capsella bursa-pastoris	*Shepherd's Purse*	*E*		
Cardamine hirsuta	*European Bittercress*	*E*		
Cerastium glomeratum	*Sticky Chickweed*	*E*		
Cirsium arvense	*Canada Thistle*	*E*	*I*	
Cirsium vulgare	*Bull Thistle*	*E*		
Claytonia sibirica	Candyflower	N		
Conium maculatum	*Poison Hemlock*	*E*	*I*	*Very toxic.*
Crassula tillaea	*Moss Pygmyweed*	*E*		
Daucus carota	*Wild Carrot*	*E*	*I*	
Delphinium trolliifolium	Tall Larkspur	N		
Dicentra formosa	Bleeding Heart	N		
Digitalis purpurea	*Foxglove*	*E*	*I*	
Dipsacus fullonum	*Teasel*	*E*	*I*	
Erodium cicutarium	*Crane's Bill*	*E*		
Fallopia ×bohemicum	*Bohemian Knotweed*	*E*	*I*	
Galium aparine	Cleavers, Bedstraw	N		
Geranium lucidum	*Shining Geranium*	*E*	*I*	*Extremely invasive.*
Geranium molle	*Soft Geranium*	*E*		
Geranium robertianum	*Stinky Bob*	*E*	*I*	
Hedera helix/hibernica	*English/Irish Ivy*	*E*	*I*	
Heracleum lanatum	Cow Parsnip	N		
Hyacinthoides cf. non-scripta	*cf. English Bluebells*	*E*		
Hydrophyllum tenuipes	Pacific Waterleaf	N		
Hypericum perforatum	*St. John's Wort; Klamath Weed*	*E*		
Hypochaeris radicata	*Cat's Ear*	*E*		
Lactuca serriola	*Prickly Lettuce*	*E*		
Lamiastrum galeobdolon	*Yellow Archangel*	*E*	*I*	*Office derived UTM (WGS 84): 503490mE, 4874719mN; just west of entrance road in forested area.*
Lamium purpureum	*Red Dead Nettle*	*E*		
Lapsana communis	*Nipplewort*	*E*	*I*	
Leontodon saxatilis ssp. saxatilis	*Hairy Hawkbit*	*E*		
Leucanthemum vulgare	*Oxeye Daisy*	*E*	*I*	
Linum bienne	*Blue Flax*	*E*		
Lonicera hispidula	Hairy Honeysuckle	N		
Lotus corniculatus	*Birdsfoot Trefoil*	*E*		*Needs confirmation in flower or fruit.*
Lotus uliginosus	*Greater Birdsfoot Trefoil*	*E*		*Needs confirmation in flower or fruit.*
Lupinus rivularis	Riverbank Lupine	N		Planted in large meadow in seed mix
Maianthemum stellatum	Star-flowered Solomon's Seal	N		
Marah oreganus	Wild Cucumber	N		
Melissa officinalis	*Lemon Balm*	*E*	*I*	
Mentha sp.	*Garden Spearmint*	*E*		*In landscaping near house*
Mertensia platyphylla	Bluebells	N		
Muscaria botryoides	*Grape Hyacinth*	*E*		
Myosotis discolor	*Yellow-&-blue Forget-Me-Not*	*E*		
Myosotis laxa	Small-flowered Forget-Me-	N		

	Not			
Narcissus pseudonarcissus	*Daffodil*	*E*		
Nemophila parviflora	Small-flowered Grove-Lover	N		
Oenanthe sarmentosa	Water Parsley	N		
Osmorhiza berteroi	Sweet Cicily	N		
Plantago lanceolata	*Narrow-leaved Plantain*	*E*		
Plantago major	*English Plantain*	*E*		
Prosartes hookeri	Hooker's Fairybells	N		
Prunella vulgaris var. vulgaris	*European Heal-all*	*E*		
Ranunculus occidentalis	Western Buttercup	N		
Ranunculus uncinatus	Disappointing Buttercup	N		
Raphanus raphanistrum	*Jointed Charlock*	*E*		
Rumex acetosella	*Red or Sheep Sorrel*	*E*		
Rumex conglomeratus	*Clustered Dock*	*E*		
Rumex obtusifolius	*Bitter Dock*	*E*		
Sanicula crassicaulis var. crassicaulis	Pacific Snakeroot	N		
Saponaria officinalis	*Bouncing Bett*	*E*		*Near Middle Fork, in sand & gravel.*
Scleranthus annuus	*Annual Knawel*	*E*		
Senecio jacobaea	*Tansy Ragwort*	*E*	*I*	
Senecio sylvaticus	*Wood Groundsel*	*E*		
Senecio vulgaris	*Common Groundsel*	*E*		
Sonchus asper	*Prickly Sow Thistle*	*E*		
Stachys cooleyae	Cooley's Hedge Nettle	N		
Stachys cf. rigida	Rigid Hedge Nettle	N		
Taraxacum officinale	*Common Dandelion*	*E*		
Tellima grandiflora	Fringecups	N		
Thalictrum occidentale	Western Meadowrue	N		
Trifolium dubium	*Least Hop Clover*	*E*		
Trifolium pratense	*Red Clover*	*E*		
Trifolium subterraneum	*Subterranean Clover*	*E*		
Trillium albidum	Sessile Trillium	N		
Urtica dioica	Stinging Nettle	N		Painful to touch, but excellent butterfly host plant.
Verbascum blattaria	*Moth Mullein*	*E*		
Verbascum thapsus	*Common Mullein*	*E*	*I*	
Veronica arvensis	*Corn Speedwell*	*E*		
Veronica persica	*Persian Speedwell*	*E*		
Veronica serpyllifolia	*Thyme-leaved Speedwell*	*E*		
Vicia cracca	*Common Vetch*	*E*	*I*	
Vicia hirsuta	*Hairy Vetch*	*E*		
Vinca major	*Periwinkle*	*E*	*I*	
Graminoids				
Agrostis stolonifera	*Creeping Bluegrass*	*E*	*I*	
Aira caryophyllea	*Silver Hairgrass*	*E*		
Anthoxanthum odoratum	*Sweet Vernalgrass*	*E*		
Brachypodium sylvaticum	*False Brome*	*E*	*I*	*Extremely invasive, mostly in understories*
Bromus diandrus	*Ripgut Brome*	*E*	*I*	
Carex leptopoda	Slender-footed Sedge	N		
Carex obnupta	Slough Sedge	N		
Carex pachystachya	Thick-headed Sedge	N		

Cortaderia sp.	*Pampas Grass*	*E*	*I*	*One clump in center tree row; non-flowering*
Dactylis glomerata	*Orchardgrass*	*E*	*I*	
Elymus glaucus	Blue Wildrye	N		
Festuca rubra	*Red Fescue*	*E*		
Holcus lanatus	*Velvetgrass*	*E*	*I*	
Juncus bufonius	Toad Rush	N		
Juncus laccatus	Lacquered Rush	N		
Juncus occidentalis	Western Rush	N		
Phalaris arundinacea	*Reed Canarygrass*	*E*	*I*	
Poa annua	*Annual Bluegrass*	*E*		
Poa bulbosa	*Bulbous Bluegrass*	*E*		
Poa compressa	*Canada Bluegrass*	*E*		
Poa pratensis	*Kentucky Bluegrass*	*E*		
Schedonorus arundinaceus	*Tall Fescue*	*E*	*I*	
Scirpus microcarpus	Small-Fruited Bulrush	N		
Ferns & Allies				
Equisetum arvense	Field Horsetail	N		
Equisetum hyemale var. affine	Common Scouring Rush	N		
Polypodium glycyrrhiza	Licorice Fern	N		
Polystichum munitum	Sword Fern	N		
Pteridium aquilinum var. pubescens	Bracken Fern	N		
Non-vascular: Algae				
Trentepohlia sp. (on POPTRI trunk)	Red-colored Green Alga	N		Common, especially in riparian areas.

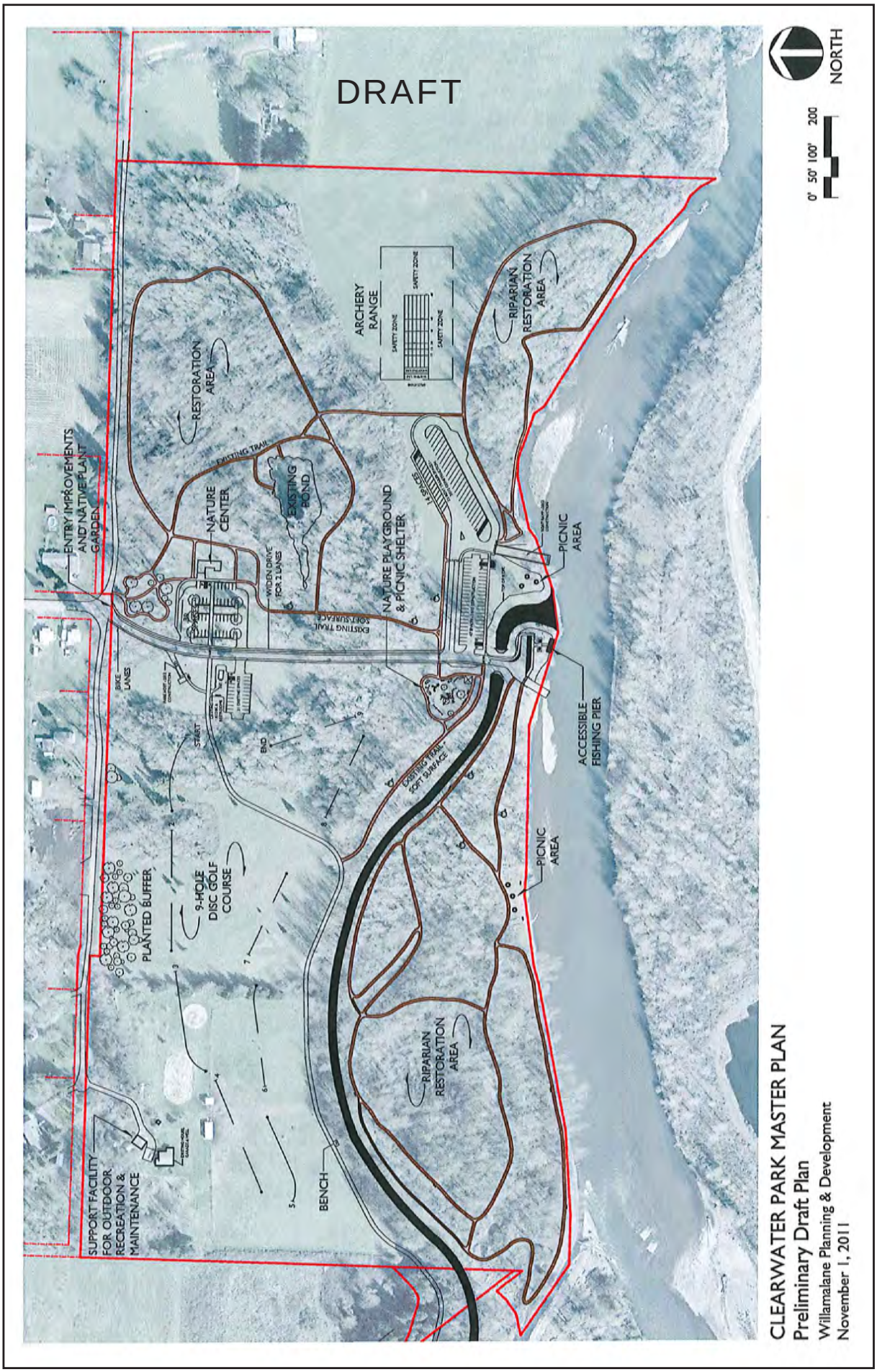
FUNGI	Common Name
Ganoderma applanatum	Artist's Conk
Peziza sp.	Brown Cup Fungus (in disturbed area)
Stropharia sp.	Stropharia (photographed)

Yellow Archangel (*Lamiastrum galeobdolon*)

WILDLIFE of Clearwater Park, Springfield, OR

General Surveys March – early May 2011

AMPHIBIANS	Comments
Eastern Bullfrog	*Non-native, introduced from Eastern US; impact native species*
Pacific Tree Frog	Fairly common
BIRDS	
American Crow	Year-round resident
American Goldfinch	Year-round resident; local migration
American Robin	Year-round resident; some migratory
Belted Kingfisher	Year-round resident
Bewick's Wren	Year-round resident
Black-capped Chickadee	Year-round resident
Canada Goose	Year-round resident; some migratory
Downy Woodpecker	Year-round resident
European Starling	*Non-native, introduced from Europe; year-round resident*
House Finch	Year-round resident
Lesser Goldfinch	Year-round resident; local migrations
Mallard	Year-round resident
Mourning Dove	Year-round resident
Northern Flicker	Year-round resident
Orange-crowned Warbler	Spring & fall migrant; summer breeder
Osprey	Spring & fall migrant; summer breeder; rarely overwinters
Purple Finch	Spring & fall migrant; summer breeder
Red-breasted Sapsucker	Year-round resident
Red-tailed Hawk	Year-round resident; seen overhead, only
Ring-necked Duck	Winter resident in pond and river sloughs
Rough-winged Swallow	Spring & fall migrant; summer breeder
Ruby-crowned Kinglet	Winter resident
Song Sparrow	Year-round resident
Spotted Towhee	Year-round resident
Steller's Jay	Year-round resident
Tree Swallow	Spring & fall migrant; summer breeder; rarely overwinters
Turkey Vulture	Spring & fall migrant; summer breeder; overhead, some landed in POPTRI near River
Varied Thrush	Winter resident
Western Scrub-jay	Year-round resident
Wood Duck	Year-round resident; inhabit central pond
Yellow-rumped Warbler	Year-round resident, but most migratory
INVERTEBRATES	
Cabbage White (butterfly)	*Non-native, introduced from Europe*
European Honeybee	*Non-native, introduced from Europe; two commercial hive areas noted in park*
MAMMALS	
American Beaver	Gnawings seen in several areas.
Black-tailed Deer	Fairly common
REPTILES	
Red-spotted Garter Snake	Very large individual(s?) on site


DRAFT
NORTH
0' 50' 100' 200
CLEARWATER PARK MASTER PLAN
Preliminary Draft Plan
Willamalane Planning & Development
November 1, 2011
ENTRY IMPROVEMENTS AND NATIVE PLANT GARDEN
RESTORATION AREA
EXISTING TRAIL
NATURE CENTER
EXISTING POND
WIDEN DRIVE FOR 2 LANES
ARCHERY RANGE
SAFETY ZONE
RIPARIAN RESTORATION AREA
NATURE PLAYGROUND & PICNIC SHELTER
EXISTING TRAIL SOFT SURFACE
PICNIC AREA
BIKE LANES
START
END
ACCESSIBLE FISHING PIER
EXISTING TRAIL SOFT SURFACE
PLANTED BUFFER
9-HOLE DISC GOLF COURSE
PICNIC AREA
RIPARIAN RESTORATION AREA
BENCH
SUPPORT FACILITY FOR OUTDOOR RECREATION & MAINTENANCE