

## BIDWELL PARK VEGETATION MANAGEMENT UPDATE, January 2008 to May 2009

### **For the Bidwell Park and Playground Commission**

This update outlines the vegetation management techniques used to control invasive weeds, the areas of the Park where control practices have been undertaken and the restoration efforts in Bidwell Park from January 2008 to May 2009. Additional Park programs and City support services that help sustain management efforts in the Park are also described.

### **BACKGROUND**

Vegetation management in Bidwell Park is not new; control practices over the last 15 years have been documented in the Bidwell Park Vegetation Management Plan for The Bidwell Park and Playground Commission Meeting of February 26, 2008 (Exhibit A Attachments). Park Division staff, interested community members and stakeholders, known as the Vegetation Management Partners, met consistently from December 2006 through February 2009 to discuss weed control efforts for Bidwell Park. The group assisted in the formulation of the Bidwell Park 2007-2008 Vegetation Management Priorities, (also contained in Exhibit A), which were reviewed and approved by the Bidwell Park and Playground Commission (BPPC) in February 2008.

### **CONTROL OF INVASIVE WEEDS**

The Bidwell Park Division staff and Park volunteers have engaged in various control methods based on the invasive plant species targeted. Mechanical or hand removal methods by volunteers have been increasingly relied on, however, herbicides are used when deemed necessary. Often a combination of hand removal and follow-up herbicide has been found to be highly effective depending on the weed species. The information provided below has been compiled by logs kept by Park Division staff, Friends of Bidwell Park (FOBP) and Park lessees.

#### **1) PESTICIDE USE**

The use of pesticides for effectively controlling invasive, exotic weeds found in Bidwell Park has been fairly limited. Spot spraying, as well as the process of basal bark treatment (applying herbicide to the tree bark) or cut stump treatment (cutting a plant and then painting on herbicide) provides a focused application, which only affects the targeted weeds. Park crew spot spray Roundup® to follow-up in areas where volunteers or contracted crews have hand-removed invasive plants (or in areas where previous control methods were used, such as goat grazing) and along the accessible trail in the World of Trees to reduce the presence of poison oak. In December 2008, the BPPC approved the use of Milestone® for controlling yellow starthistle.

The Park Division and Park lessees report the type and amount of pesticides used to the Butte

County Agriculture Department.

## **Park Division Pesticide Applications**

Cork or Rock Elm Park staff conducted follow-up spray using Roundup® herbicide during September 2008 in the World of Trees. However, this did not appear to be effective as most of the plants resprouted in spring 2009.

### Himalayan Blackberry (*Rubus armeniacus*)

Park staff conducted follow up spraying of Roundup® herbicide on invasive blackberry in areas of previous work by volunteers, California Department of Forestry Salt Creek crew, and former goat grazing sites. Locations included: World of Trees; the Sycamore Restoration Area; the area between North Petersen Drive and the Vita Course across from picnic site 21; and in areas around picnic sites 24, 25, 34, and 35.

### Japanese Privets (*Ligustrum japonicum*)

Park staff applied Roundup® to invasive privet trees after the Salt Creek crew cut down trees east of Caper Acres.

### Puncturevine (*Tribulus terrestris*)

The City of Chico contracts with an herbicide applicator who spot sprays Roundup® as a pre-emergent along the bike path on Upper Park Road from Wildwood Avenue to the Chico Community Observatory. Puncturevine has been controlled in this location for two years (2008 and 2009) with great success.

### Tree of Heaven (*Ailanthus altissima*)

A pesticide-certified FOBP volunteer provided a 3<sup>rd</sup> year of ailanthus control with a basal bark application of Garlon 4® on ailanthus trees and root sprouts at Annie's Glen and the horse arena area, which were the park's 2 largest remaining infestations. Treatments take place in late summer and early fall so that the herbicide will translocate to the plant roots.

### Yellow Starthistle (*Centaurea solstitialis* L.)

In conjunction with a public education campaign encouraging park users to remove yellow starthistle, the BPPC approved the use of the herbicide Milestone® for a pilot project in the spring of 2008 to reduce the presence of starthistle along the trails north of the Chico Horse Arena. The application of Milestone® herbicide along this trail proved to be very effective based on visual monitoring – with a reduced number of YST appearing after the application.

With the success of the pilot project, the BPPC approved expanding the Milestone® pilot project to include the Middle Trail in Upper Park at its December 2008 meeting. The project was conducted under the auspices of the Urban Forest Manager. Two pesticide-certified volunteers (CSU, Chico agriculture students) in March 2009 applied Milestone® herbicide along the trail north of the Chico Horse Arena (at this stage of YST plant growth, Milestone serves as a pre-emergent). In May 2009, the volunteers applied the herbicide along the Middle Trail from

parking lot A to the Chico Community Observatory. Park staff will review effectiveness of this spray.

## **Park Lessee Pesticide Applications**

### **Bidwell Golf Course**

The Bidwell Golf Course (BGC) reports that overall usage of herbicides on the golf course is kept to a minimum and mostly consists of spot spraying as a post emergent for clover and dallis grass. Once a year in March, the BGC applies a pre-emergent application to control for crab grass and goose grass.

Most of the golf course consists of common Bermuda grass, which tends to choke out a lot of weeds therefore, reducing the amount of herbicides applied. The overall chemical program at the course is reported to be only about 20% herbicides and about 80% plant protectant-based fungicides, mostly used on the greens. The fairways and tee's require no fungicides because they are Bermuda grass. Herbicides used at the course are Dimension®, as a pre-emergent to control crabgrass and goose grass along the fairways, tees, and some rough along main areas of play. Spot spraying of Confront® herbicide is used to control clover and spot spraying of Weed Hoe (MSMA) is used to control for dallis grass.

The areas treated are tees, fairways, and about 25 acres (out of the 65 acres) of rough close by the main areas of play, such as along the fairways and around tees and greens. The outer areas of rough furthest from the fairways, greens and tees are not treated to reduce cost, and minimize the impact on the sensitive environment and wildlife at the course.

### **Chico Area Recreation District (CARD)**

CARD's pesticide applications have been limited to Hooker Oak Recreation Area. CARD implemented a formal turf program in the spring of 2009 in an effort to improve the quality of grass in the sports fields at this popular recreation park. CARD staff applied Dimension®, a pre-emergent, twice to control crabgrass. Then at the end of May, they applied Speedzone® to control for clover to the 3 ball fields and some of the surrounding landscaped areas.

### **Chico Creek Nature Center**

Report to be delivered

### **Chico Equestrian Association**

The Chico Equestrian Association reports no use of herbicide around the horse arena.

## **2) HAND REMOVAL & MECHANICAL METHODS**

Park Division staff and volunteers most commonly hand remove invasive weeds or use garden/field tools such as shovels, hoes, loppers and Weed Wrenches to remove invasive weed

species. An emphasis is placed on doing follow up volunteer work sessions in Bidwell Park areas where weed removal has already taken place. See Exhibit B Attachment -- Bidwell Park Volunteer Worksite Charts for 2008 and 2009.

### **Park Division Volunteer Program**

#### Algerian and English Ivy (*Hedera canariensis* and *Hedera helix*)

Algerian and English ivy are abundant in Bidwell Park, probably introduced by neighboring properties and spread through birds. Several individuals who have adopted areas of the Park, hand remove ivy from the trees using small hand saws so as not to damage Valley Oaks and Sycamores. Areas where volunteers remove ivy: wooded area between picnic areas 2 and 3; area near picnic site 21 on both sides of N. Petersen Drive; area between picnic 24 and 25 and picnic area #39.

#### American Pokeweed (*Phytolacca americana*)

American pokeweed is often the weed that returns once other weeds have been removed. It grows rapidly during the late spring and summer in areas where soil has been disturbed. An effective method for removing pokeweed is digging out 1/3 of the crown root. If berries (seeds) are present, volunteers remove and dispose of them. Areas of the Park where pokeweed has been removed are: Annie's Glen, the Caper Acres area, Sycamore Restoration site; along Woodland Avenue adjacent to One Mile Recreation Area; interior trail along creek just west of Sycamore Pool; area between Hwy 99 and Caper Acres; on the northeast side of the Sycamore Pool near the parking lot; along N. Petersen Drive; and along the northern side of the creek between Hooker Oak and Five Mile Recreation Area.

#### Bladder Senna (*Colutea arborescens*)

Since 2003, FOBP volunteers have been mapping and removing these shrubs using Weed Wrenches. Every year they monitor the 70 areas between One Mile and Five Mile where plants were found, pulling out new seedlings and any newly discovered larger plants. Removal efforts are limited to the winter and early spring due to the long tap roots of the plants. 193 hours were spent on this effort during this reporting period (1568 project hours to date).

#### Blessed Milk Thistle (*Silybum marianum*)

Volunteers remove this weed in the spring and summer with shovels in the Sycamore Restoration site and One Mile Recreation Areas.

#### Bur-chervil (*Anthriscus caucalis*)

Bur-chervil is easily removed by all ages in the early spring prior to the plant forming its Velcro-like sticky seeds. It also occupies areas where soil has been disturbed and has been removed in various locations throughout the Park.

#### Common Mullein (*Verbascum thapsus*)

Though not considered a priority weed, common mullein is becoming more common in restoration areas where other weeds have been removed. This is also an easy plant for young volunteers to hand remove.

English Hawthorn (*Crataegus laevigata*)

English hawthorn trees are one of the park's most serious plant invasions, based on reports from other areas which have tried to eradicate it and on its exponential rate of spread throughout Lower Park. In a test removal area near Madrone Ave., FOBP volunteers learned that only the smallest trees could be manually removed, even using Weed Wrenches when the soil was very wet. Eradication of this invasive species will probably require chain saw work and chipping, cut stump herbicide (Garlon 4) treatments, as well as restoration on a major scale.

European Hackberry (*Celtis australis*)

In spring 2008, FOBP started to remove privet trees from the area between picnic sites 24 and 25. Once the privets were gone, a forest of hackberry trees was revealed. About 10 years prior, park staff had cut down several hundred large hackberry trees. These trees had all resprouted, each with several trunks and, in addition, there were tens of thousands of smaller hackberries that had sprouted in the areas newly exposed to sunlight and bare ground. Since then, FOBP has spent 790 hours removing hackberry trees as well as a few dozen smaller catalpa trees. Numerous Park Volunteer sessions and CCC volunteer and paid sessions have also taken place here. About 1/3 of the 2-acre area has been cleared, to date.

Giant Reed (*Arundo donax*)

In fall of 2008, their third and final year of a grant-funded project, the Big Chico Creek Watershed Alliance treated all of the arundo in Upper Bidwell Park and in Lindo Channel to West Sacramento Avenue with a foliar application of Aquamaster® (an aquatic formulation of Roundup) and Habitat®. This final treatment appears to have successfully eradicated most of the remaining arundo. However, this treatment is less effective on arundo which was previously cut down (as was most of the park's arundo) so follow-up monitoring will be required. Also, 4 arundo sites in Middle and Lower Park and Lost Park must continue to be monitored. See Attachment F for a history of arundo treatments in Bidwell Park.

Himalayan Blackberry (*Rubus armeniacus*)

The Park Division Volunteer Program has focused on removing small patches of blackberry in all of the restoration areas of Bidwell Park, such as Annie's Glen, Caper Acres, Cedar Grove, Five Mile Recreation Area, Hooker Oak, Lost Park, One Mile Recreation Area, the Sycamore Restoration site, picnic sites 8, 11, 12, 37 and 39 and along the Yahi Trail in Upper Bidwell Park.

Beginning in the spring of 2007, the Park Division's Volunteer Program focused on the mechanical removal of blackberry north of Caper Acres, in the area now referred to officially as the Sycamore Restoration Site. The Park Volunteer Program focused its efforts there, along with former daily Park volunteer Laura Nissim. By the spring of 2009, over 4.5 acres of land had been cleared of blackberry. The restoration area now includes areas north and east of the Council Ring. These acres have also been replanted with native plant species.

Japanese Privets (*Ligustrum japonicum*)

Japanese (and European) privets have been a focus of eradication by Friends of Bidwell Park since 2004, with support from the Park Division. FOBP volunteers regularly remove privets as part of their follow-up throughout Lower Park. In this reporting period, the group removed major privet infestations in the areas between the 2 paved park trails at the Madrone Ave. entrance and between picnic sites 24 and 25. They also continued to remove smaller privet infestations at many Lower Park locations, Hooker Oak Park and Five Mile for a total of 360 privet eradication hours during this reporting period (1968 project hours to date).

The Park Division's Volunteer Program have conducted numerous privet removal sessions in the area east of Caper Acres; a large area just west of Hwy 99 along South Park Drive; inside the Caper Acres fence line and, following up on FOBP's original removal sessions there, Five Mile Recreation Area. In April 2008, the Park Division hired a CA Department of Fire (CDF) Salt Creek crew to remove hundreds of large Japanese privet trees in Lower Park between the Crister and Madrone entrances. The work was not completed, however, due to the crew being called out to a fire.

The California Conservation Corps (CCC) with guidance from Susan Mason spent over 150 hours removing privets trees across Big Chico Creek from Cedar Grove in Lower Park in 2008.

Johnson Grass (*Sorghum halepense*)

Park volunteers have removed this agricultural grassy weed in the One Mile Recreation Area and Sycamore Restoration site for several years.

Periwinkle (*Vinca major*)

Park volunteers, often youths, hand-pull vinca. Some of the locations include adopted picnic sites #8, #11, #12, 27 and 37. Kids and Creeks' elementary school program has young volunteers remove vinca at the Sycamore Restoration site. They also remove it at Cedar Grove, along with the monthly Feather River Protogrove volunteers. Removal is practicable only when an entire area can be cleared to a boundary such as a road or trail; otherwise, the plants creep back into the cleared area.

Puncturevine (*Tribulus terrestris*)

FOBP volunteers monitor and remove puncturevine from Lost Park, Annie's Glen and Lower Bidwell Park. Former Park Commissioner David Wood monitored and removed puncturevine in Upper Park.

Spanish Broom (*Spartium junceum*)

The Mt. Lassen Chapter of the California Native Plant Society (CNPS) has been removing broom from Bidwell Park for many years. CNPS spent 118 hours in this effort during the Jan '08-May '09 time period, removing broom between the upper boundary of the park through Five Mile. Broom is not found along Big Chico Creek below Five Mile as its seeds are instead carried into

Lindo Channel and the Sycamore Bypass during high water events. It should also be noted that the Forest Ranch Community Action Group BEEP (Broom Education and Eradication Program) and the Big Chico Creek Ecological Reserve (BCCER) have spent thousands of hours eradicating upstream broom populations, which are the seed source for plants in Bidwell Park. Also, BCCER employees have removed large broom infestations from the upper boundary to Iron Canyon.

Thornless blackberry (*Rubus ulmifolius* var. *inermis*)

Park staff and FOBP prepared for a Salt Creek crew project removing thornless blackberry at picnic area #8 this spring, but the crew was called out to fight fires so the project was postponed. Because of their lack of thorns, this area is popular for illegal activities.

Yellow starthistle (*Centaurea solstitialis*)

Manual removal of yellow starthistle was conducted over two work sessions at Hooker Oak Recreation Area's Sherwood Forest Disc Golf Course in March 2008 and two work sessions in May 2008 in the Lower Park meadow next to the Bryant Avenue Park entrance. As part of the public education campaign, individual volunteers joined the program manually removing YST at the Horseshoe Lake levee and parking lot C area, and west of parking lot B in Upper Park. Park neighbors started removing it along the Lower Park Meadow Trail as part of the campaign in 2008 and continue to remove this weed.

Individual volunteers continue to manually remove YST in the Lindo Channel Area and at Sherwood Forest Disc Golf Course.

## **PARK RESTORATION EFFORTS**

As the Volunteer Program's focus on invasive plant removal has increased, the need for restoring areas with plants native to Bidwell Park has become important. When weeds are removed without replanting the area, the same weed or equally invasive weeds such as American pokeweed or bur chervil fills in the disturbed soil.

### **1. Planting & Revegetation Efforts with Native Species**

Early restoration (or revegetation) efforts in Bidwell Park involved both planting new plants and transplanting of native species to the Park, taking place in various locations on a small scale. The Kids and Creeks Program (formerly Streaminders) planted around the Five Mile Recreation Area, Annie's Glen and Cedar Grove Areas as early as 1999.

The City of Chico has continued to support the Kids and Creeks (K&C) program of planting in the Park through an annual donation to K&C of native plants and by providing logistical support and tools for the program. From 2006 to 2008, K&C has supported the Park Division's restoration efforts by having elementary students remove invasive weeds and replant with native species at Cedar Grove, Five Mile Recreation Area, Council Ring and the Sycamore Restoration site. By planting in specific restoration areas, K&C's plantings can be cared for throughout the

year after their program year finishes.

In 2003 and 2004, Streaminders, under the direction of creek restoration specialist Roger Cole, began a grant-funded restoration project along Big Chico Creek adjacent to Sycamore baseball field at One Mile Recreation Area. Part of this project included the removal of Himalayan blackberry and the planting of native species along Big Chico Creek and in a large swale that runs through the site. The Streaminders project is now considered Phase I of the Sycamore Restoration Site.

In March 2007, Phase II of the Sycamore Restoration site was initiated through the efforts of daily Park volunteer Laura Nissim and the work of volunteers participating in the Park Division's *Volunteer Thursdays* and annual Park work days. These efforts resulted in the removal of approximately 3 acres of Himalayan blackberry north of Caper Acres in an area adjacent to and including part of Streaminders original restoration area. In removing blackberry and, in other areas, vinca, many beneficial, native plants in the Park were uncovered (elderberry, box elders, cottonwoods, native blackberry and others). With a native plant site plan produced by ecologist Rob Irwin, planting native species in the area has helped restore the acres.

In September 2008, Phase III of the restoration area was started by removing blackberry mounds north and east of the Council Ring. Revegetation efforts have included transplanting native plants, such as Santa Barbara sedge and planting native plants grown in the Chico High School greenhouse (project described below). As of May 2009, Phases II and III total approximately 4.5 acres of land cleared of blackberry.

## **2. Chico High School Native Plant Greenhouse Project**

In the summer of 2008, the Park Division formed a partnership with Horticulture teacher Quinn Mendez at Chico High School (CHS) in which her year-long horticulture students help cultivate California native plant species in the school greenhouse. With the advice and help of local ecologists and botanists, CHS horticulture students learned first hand about the native plants found in Bidwell Park and they planted over 20 Northern California plants in their school's greenhouse.

An added bonus of the Park Division and CHS partnership has been the interaction of students with professionals from those various ecology and horticulture fields. Volunteering their time and expertise to work with the high school students and Bidwell Park's Volunteer Program are Mike Williams, biologist at Butte College and president of CA Native Plant Society, Mt. Lassen Chapter; Jim Dempsey, Environmental Scientist for the CA Department of Parks and Recreation; Paula Shapiro, native plant cultivator with Chico Propagates; and Rob Irwin, ecologist from EcoAnalysts. Susan Mason of Friends of Bidwell Park also presented information on invasive plants and how their presence affects the native plant balance in Bidwell Park. As part of the class, the local ecologists and botanists provided presentations and hands-on guidance in the greenhouse.

The class also took two field trips to the Park. A fall field trip included sharing information



about several native plants, including valley oak trees, spicebush, CA blackberry, mugwort and Santa Barbara sedge and they collected seeds and cuttings to plant upon returning to school. Their spring field day took place at the Sycamore Restoration site, where they removed invasive blackberry and then replanted the area with mugwort, elderberry, California blackberry and willow that they cultivated in their own greenhouse. The program will start again in the fall and Park volunteers are already collecting native plant seeds to supply the students for planting at the beginning of the school year.

### **3. Oak Regeneration**

Throughout 2003 to 2009, volunteers through the Park Division have been engaged in oak regeneration in areas designated as “regeneration” areas at One Mile, Cedar Grove and at Annie’s Glen, in particular. Volunteers identified oak seedlings, staked the trees, and weeded and mulched around them to cut down the competition from annual grasses. During the summer of 2008, volunteer groups helped water blue and live oak seedlings east of Horseshoe Lake that were planted originally as a memorial planting.

### **4. Restoration Plants List**

To aid in selecting appropriate native plants for restored areas and to increase the variety of native plants to be used in park restoration projects, a list is being created of plants that will grow well in different habitats within the park. Initial entries are from existing local lists from CA State Parks, etc. As the plant inventory project progresses (see below), additions will be made from those findings also.

## **PARK PROJECTS THAT SUPPORT VEGETATION MANAGEMENT EFFORTS**

### **1. Bidwell Park Adaptive Management Framework and Mapping Internship Project**

The Park Division matched funding with a CSU Associated Students’ sustainability grant throughout 2008, which supported a CSU graduate student Rebekah Funes’ year-long internship. Ms. Funes GPS mapped all of the Park Division’s volunteer work sites as well as several of the locations where control measures such as goat grazing had taken place (see Exhibit C in Attachments). This included a park tour with former Senior Park Ranger Bob Donohue to document all of the park vegetation projects that took place during his 20 years in Bidwell Park. Her culminating project report, “Effectiveness Monitoring in an Adaptive Management Framework, includes:

- 1) A description of the relationship between monitoring and assessment as critical to the adaptive management model
- 2) Recommendations on the next steps for implementing participatory monitoring in an adaptive management framework for Bidwell Park
- 3) A description of the process of initiating effectiveness monitoring for key natural resource management objectives in the Park’s Natural Resource Management Plan.

### **2. Bidwell Park Plant Inventory**

Friends of Bidwell Park have started to prepare a complete inventory of plant species that are found in Bidwell Park. Botanist Lowell Ahart received permission from the GSD Director to collect specimens in the park. Dr. Ahart will mount the plant specimens collected so that can be used in the CSU Chico Herbarium and other herbaria. Josephine Guardino consolidated all credible existing lists of park plants and has enlisted the aid of local botanists to add their sightings to this plant inventory. Each of these species will be confirmed by field surveys. To date, about 600 native plant species and about 300 non-native plant species have been noted. One preliminary observation about the inventory is that, so far, FOBP has found that in Lower Park about 75% of the species are non-native, while in Upper Park, about 75% are native plants. The project is expected to take two to three years.

### **3. Park Work Zones**

In 2008, the Vegetation Management Partners discussed the need to divide the park into numbered zones to make it easier to track prior, current and future vegetation management projects as well as make it easier to direct volunteers to work sites. Park staff and FOBP volunteers started to prepare an initial map of proposed zones for Lower Park, but were hampered by the lack of a GIS layer for Lower Park that showed all of the park's trails (which will be used to define the boundaries of park work areas). Once the trails have been mapped by volunteers and this layer has been created by the Chico Information Services (IS) Department, volunteers will create the zones map and update the veg. mgt databases with this zone information

### **4. Vegetation Management Partners Monthly Meetings**

The Vegetation Management Partners Group, made up of Park Division staff members, community members and Park stakeholders met monthly from December 2006 to February 2009 to discuss Bidwell Park's vegetation issues. The group was responsible for formulating the 2007-2008 and proposed 2009 Vegetation Management Priorities for Bidwell Park (see Exhibit A in Attachments) that were adopted by the Bidwell Park and Playground Commission. The group also initiated the public education campaign to eradicate yellow starthistle.

### **5. GIS Vegetation Map Layers and Database**

Park staff and Rebekah Funes have worked with the city's IS Dept. to develop protocols for park GIS vegetative mapping layers and to develop the format for an invasive plant database to be used to document park weed infestations, treatment and monitoring. FOBP has already mapped a few species: bladder senna, Japanese privets, puncture, ailanthus and catalpa. A UC Davis graduate student, Clare Aslam, has mapped olive trees on the north side of Upper Park.

### **6. Vegetation Management Future Projects List**

Friends of Bidwell Park is preparing work plans for about 100 future vegetation management projects in the park. These plans will be used by the volunteer coordinator when groups call in wanting to volunteer but without a specific project in mind and also for activities on major park work days such as Earth Day and Make a Difference Day. See Attachment E for examples of site-specific and species-specific project documentation.

## NEEDED CITY SUPPORT SERVICES

Volunteers provide most of the labor for Bidwell Park’s invasive plant removal projects. However, some city support services are also needed and specific funding should be allocated in the Park’s budget to provide these services. Currently only a fraction of these services are covered:

- Project planning, team leaders, volunteer recruitment and project follow-up monitoring
- The cost of debris boxes for the invasive plants that have been removed and park staff operating a loader to fill the box most efficiently. Alternatively, staff must provide a loader and dump truck, along with flaggers and a chain saw operator with multiple trips to the compost yard.
- Follow-up spot spraying of herbicide on regrowth in areas where major blackberry removal has taken place and on resprouting tree stumps as well as basal bark herbicide treatment on large invasive trees at the appropriate time of year.
- Removal of large invasive live trees and invasive trees that have been killed using herbicide or by girdling and which now present a fall hazard.
- Stump grinding, especially in areas where prior park work has created many resprouting stumps that are too large to be hand-removed or where the stumps are very visible to the public.
- Chain saw operators where it would be unsafe or impractical for volunteers to cut tree trunks using hand saws.
- The cost of obtaining necessary permits for work in riparian areas or when there are special species (e.g. elderberry) considerations.
- Professional advice regarding the most effective species-based eradication techniques, how to set removal priorities, and creation of restoration plans, including follow-up monitoring.
- City GIS services to provide maps and database support for the invasive plant mapping/monitoring projects. Park Division staff is working directly with the City’s GIS Department on updating Park layers and creating the ability to GPS areas for use by both internal City and eventually external public users to aid with management efforts.
- Regular training for park staff about native and invasive plant identification and appropriate removal techniques for specific invasives. Perhaps it would be appropriate to design one park maintenance worker as the “invasives” specialist (as has been done for trail maintenance) and provide additional educational opportunities for that person.

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### Attachments:

- Exhibit A: Bidwell Park Vegetation Management Plan for The Bidwell Park and Playground Commission Meeting of February 26, 2008
- Exhibit B: Bidwell Park Volunteer Worksite Charts for 2008 and 2009

Bidwell Park Vegetation Management Update  
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- Exhibit C: Effectiveness Monitoring in an Adaptive Management Framework
- Exhibit D: Proposed 2009 Vegetation Management Priorities for Bidwell Park
- Exhibit E: Site and Weed-specific Projects Documentation
- Exhibit F. History of Arundo Donax Treatments in Bidwell Park